



# Climate Change (National Framework for Adaptation and Mitigation) Bill 2020

To the Committee Secretariat:

PO Box 6021  
Parliament House  
Canberra ACT 2600

Dear Madam / Sir

On behalf of the Institute for Energy Economics and Financial Analysis (IEEFA), thank you for the opportunity for us to make a submission to the House Standing Committee on the Environment and Energy Inquiry on the Climate Change (National Framework for Adaptation and Mitigation) Bill 2020.

**IEEFA fully supports the Bill. We consider it critically important that Australia commits and legislates a Net Zero Emissions Target by 2050. The legal framework proposed in the Climate Change bills will assist every sector in assessing the risks, adaptation and resilience planning that is needed to minimise the cost to Australia and maximise the economic and community opportunities that are emerging.**

Yours Sincerely

Timothy A Buckley

[tbuckley@ieefa.org](mailto:tbuckley@ieefa.org) mobile: 0408102127

Date of Birth: 26 December 1966

31 Inverallan Avenue West Pymble 2073 NSW

## Table of Contents

Summary .....	3
1. The Long-Term Emissions Reduction Objective .....	4
India Is a Role Model on the Value of a Clear, Time-Bound Policy Ambition With a Supporting Regulatory Framework.....	4
An Economy-Wide Net Zero Target by 2050 for Australia .....	5
National Economy-Wide Emissions Budgets and Plans for Reducing Greenhouse Gas Emissions.....	6
2. Australia: A Renewables Export Superpower .....	9
The Growing Domination of Renewable Energy .....	14
Ongoing Underperformance Drives Utility Decarbonisation.....	16
3. Global Finance’s Paris Alignment Accelerates .....	18
Annex 1: Share Performance of Coal Stocks .....	19
Annex 2: Share Performance of Utilities and Oil & Gas Majors .....	20
Annex 3: US Government Benchmark Interest Rates .....	21
About the Authors .....	22

---

## Summary

The net zero emissions target by 2050 is a rational and much-needed emissions reduction target. It is key for Australia to set and meet a net zero emissions target to keep in line with the Paris Agreement to limit warming to less than 2 degrees (and aiming for 1.5 degrees) above pre-industrial levels. The emissions target of net zero by 2050 is aligned with many other countries such as the UK, France, Denmark, New Zealand, Japan and South Korea, and China by 2060.

Australia must align itself with world trends on emissions to maintain strong trade in a net zero emissions world. It is key to signal to Australian industry the need to develop green products and services that will flourish in a net zero emissions world and strengthen Australia's global competitiveness.

Deloitte has recently reported that inaction on climate change will have the effect of curtailing Australia's economic growth to the tune of \$3.4 trillion and 880,000 fewer jobs in just 50 years. However, by choosing a new growth pathway including focusing on low emissions, Australia could grow the economy by \$680 billion, with 250,000 more jobs in just 50 years.

A net zero emissions target will mitigate climate change, protecting society and the environment from huge economic losses due to unchecked climate change. Adaptation is also key as Australia is already seeing the catastrophic impacts of climate change, evidenced by the Black Summer bushfires. A net zero emissions target and a framework for reaching this target will allow Australia to develop the plans necessary to adapt to climate impacts, such as extensive pre-planning prior to bushfire season and developing drought-resistant agricultural crops.

IEEFA comments on components of the Climate Change Bill 2020 herein, and provides more detail on the increasing pressure being brought to bear by globally significant financial institutions – banks, insurers and asset owners/asset managers – as well as Australia's major trading partners and a growing number of global and Australian corporate leaders.

---

## 1. The Long-Term Emissions Reduction Objective

The financial, community and environmental risks associated with climate change are a critical issue for Australia today. The opportunities are likewise enormously significant, if we as a country can marshal our human capital, technology and engineering skills, phenomenal wind and solar resources, vast land mass, plus the financial power of Australia's world leading superannuation structure, which has built a \$2.8 trillion pool of savings. Australia should, and most likely will, be a world leader in zero emissions industries of the future. The employment, investment and export opportunities should not be underestimated.

To be effective on climate action, Australia needs a very clear objective with a clear end date, along with interim targets to build initial momentum, as well as guide policy and planning to best unlock private investment and ingenuity, at least cost.

An independent arbiter is needed to guide policy and provide crucial accountability. For too long the lack of a bipartisan approach on climate in Australia has undermined investor certainty by failing to provide required policy and regulatory framework for medium and long-term planning and decision-making.

COVID-19 highlighted the power of the National Cabinet to most effectively leverage co-ordination of Federal and State Government actions when addressing a national emergency. Our scientists have long flagged the global climate emergency and growing risks of more frequent, more extreme weather events resulting from climate change, and the significant role of human activity in this regard.

We endorse that the Act would see the establishment of a Climate Change Commission (CCC) to advise the government on policy-setting and reporting based on the advice of experts, including on business and economics, free of near-sighted political and private vested interests and rent-seekers.

### *India Is a Role Model on the Value of a Clear, Time-Bound Policy Ambition With a Supporting Regulatory Framework*

IEEFA has long researched and reported on the impressive power evident in India, the world's largest democracy, in building a consensus towards maximising the national opportunities and minimising the risks of the technology-driven energy system transformation. The clarity of the Modi government's national ambition has seen long-term policy certainty and consistency that has long been absent in Australia.

The resulting consensus has given global investors the certainty they need to mobilise huge financial resources into least-cost solutions. IEEFA expects upwards of US\$500-700bn of global debt and equity capital to be deployed in Indian energy markets just this decade.<sup>1</sup> The benefits to the country and consumers are clear. Huge

---

<sup>1</sup> IEEFA: [These 7 auctions show India's renewables sector is still primed for growth](#). 22 September 2020.

investment, new employment opportunities and the replacement of expensive, high emissions fossil fuel imports with low-cost, zero emissions domestic alternatives.

November 2020 saw the Indian Government's latest 1,070 megawatt (MW) solar tender concluded with phenomenal success. The winning tenders (from global infrastructure investors) bid prices of just Rs2.00/kWh, delivering a levelised cost of energy for the power distribution companies (discoms) of below US\$20/MWh. This record-low result is a 15% reduction in the price of electricity relative to the previous record low, established just six months earlier.<sup>2</sup> Both the Indian people and the economy will be clear beneficiaries of this investment that will drive energy cost deflation.

And the drivers of a 15% decline in Indian solar tariffs to yet another record low are clear: long term energy policy consistency and certainty; ongoing capital cost deflation, as solar module prices continue their 10% annual cost decline; and the fundamentally powerful disruptive force of multi-decade low interest rates globally (Refer Annex 3).

### *An Economy-Wide Net Zero Target by 2050 for Australia*

In line with the Paris Agreement and the Intergovernmental Panel on Climate Change's best available science, this Act to establish a net-zero target by 2050 for Australia is an excellent move that will set a clear timebound target and end destination. A legally binding goal, along with interim targets, will restore business and investor confidence that our governments at all levels are collectively heading in the right direction to best manage this critical financial risk at least cost to Australian consumers, while maximising the business, employment and export opportunities that will arise.

We believe this is critical for Australia's economic prosperity, for ensuring intergenerational equity and to start to restore Australia's international standing. Australia is far from a global leader today. China's pledge in September 2020 to peak emissions before 2030 and the aspiration to deliver net zero emissions by 2060 was a globally significant event – a clear and resounding commitment to the delivery of the Paris Agreement and the key principle of the 'ratchet-up' of ambition clause. That Japan and South Korea rapidly followed suit with formal pledges of net zero emissions targets by 2050, along with the statement of intent by President-elect Joe Biden committing to the same, means that all of Australia's main trading partners have elevated their political ambition. Any equitable understanding of the concept of 'common but differentiated responsibilities' means that it is overdue time for Australia to commit to an economy-wide net zero target by 2050, or earlier.

This is entirely consistent with the guidance from the Australian Prudential Regulatory Authority (APRA),<sup>3</sup> the Australian Securities and Investment

---

<sup>2</sup> Economic Times. [Solar tariffs plunge by 15%, set record low at Rs 2.00 per unit](#). 23 November 2020.

<sup>3</sup> Australian Prudential Regulation Authority (APRA). [Understanding and managing the financial risks of climate change](#). 24 February 2020.

Commission (ASIC)<sup>4</sup> and the Reserve Bank of Australia (RBA).<sup>5</sup> Our leading legal counsel has likewise raised expanded understandings of the Fiduciary Duties for Australian Directors with respect to climate risks.<sup>6</sup>

And momentum is building, rapidly.

November 2020 saw 22 of Australia's top corporate leaders announce a new Climate Leaders Coalition to collaborate on ways to reduce emissions in line with the Paris Agreement.<sup>7</sup>

November 2020 also saw Australian investors likewise endorse this net zero emissions by 2050 target. Led by the Investor Group on Climate Change (IGCC), which represents institutional investors with total AuM of \$2 trillion,<sup>8</sup> the Australian Sustainable Finance Initiative (ASFI) – comprising 80 organisations across major banks, insurers, super funds, civil society, and stakeholders – released its Roadmap that sets out a bold plan to align Australia's financial system to support a thriving Australian society, a healthy environment and a strong and prosperous economy.<sup>9</sup>

Global investor intent is also increasingly loud and clear. The Net-Zero Asset Owner Alliance, managing a combined US\$5 trillion, announced in October 2020 plans to lower its portfolio carbon emissions by as much as 29% over the next five years under its 2025 Target Setting Protocol. This is a clear example of the need for a timebound, long-term net zero emissions target to be accompanied by interim timebound targets.<sup>10</sup> This group's message is clear, that "deep emissions cuts are required" from all of the thousands of companies owned by the investors and that the group would work with boards willing to adjust their business models. Australia's leading companies will have to comply with this global imperative, regardless of the current lack of policy ambition evident in Australia.

## *National Economy-Wide Emissions Budgets and Plans for Reducing Greenhouse Gas Emissions*

IEEFA strongly endorses the key point that the Act will establish a process to meet net-zero emissions by 2050 by requiring the setting of five yearly emissions budgets, based on advice from the CCC which considers factors like technology readiness and the best available science. This creates the conditions necessary for

---

<sup>4</sup> Australian Securities & Investments Commission (ASIC). [19-208MR ASIC updates guidance on climate change related disclosure](#). 12 August 2019.

<sup>5</sup> Reserve Bank of Australia (RBA). [Financial Stability Risks From Climate Change](#). October 2019.

<sup>6</sup> Centre for Policy Development (CDP). [Updated Hutley opinion on directors' duties and climate risk](#). 29 March 2019.

<sup>7</sup> Australian Financial Review (AFR). [Top CEOs form exclusive climate change club](#). 25 November 2020.

<sup>8</sup> Investor Group on Climate Change (IGCC). [Australian Sustainable Finance Initiative: Bold plan launched to reshape Australia's financial system](#). 24 November 2020.

<sup>9</sup> Australian Sustainable Finance Initiative (ASFI). [A plan for aligning Australia's financial system with a sustainable, resilient and prosperous future for all Australians](#). 25 November 2020.

<sup>10</sup> Reuters. [\\$5 trillion investor group sets tougher portfolio carbon targets](#). 13 October 2020.

business to plan and invest over the medium and long term.

Setting clear interim targets is a key priority to ensure that we deliver on the long term objective of reaching net zero emissions by 2050, or sooner. IEEFA understands that the Act will require the Government to provide five yearly emissions reduction plans, one year in advance to parliament, to allow for added scrutiny. These plans will be multi-sectoral, dealing with energy, agriculture, waste etc. Emissions reduction ambitions will be balanced by cost-efficiency and affordability. For energy, specifically, the Australian Energy Market Operator (AEMO) and Energy Security Board (ESB) will continue to advise Government and the Commission. This will ensure that we manage the trilemma of security, reliability and affordability, whilst also driving decarbonisation as a fourth clearly defined priority.

By having comprehensive plans set in advance, investors and businesses can also align core objectives with government support in emissions reduction areas. Most importantly to IEEFA, in the creation of these plans, the Government must consult the community, workers, scientists, the business sector, and leverage Australia's best scientific, engineering and financial experts, and be as free as possible from private rent-seeking fossil fuel lobbyists seeking to delay and obfuscate the accepted science.

### *National Climate Risk Assessment and Planning*

As evidenced by the total unpreparedness in terms of funding, planning and Federal leadership for the breadth and severity of the 2019/20 fires across our Eastern states, Australia is uniquely susceptible to climate change impacts, and the community and environmental costs of inaction have been shown to be unbearable. These costs will only rise with the ongoing global warming that is inevitable with every year we, and the world, fail to achieve net zero emissions.

It is important that the community and business understand the full extent of those risks. The Act will provide regular risk assessments conducted by the CCC, which will identify risks across Australia's economy, society, and environment, to which Australia will need to respond. We need to bring all of our community along, and this will require a concerted public education program, including boosting public interest, fact-based media communications to counter the misinformation campaigns of largely foreign private climate science denying vested interests that dominate Australia's media landscape.<sup>11</sup>

The Government will be required to develop adaptation plans which will set out the Government's priorities in addressing those risks. These assessments and plans will help guide businesses and investors' decision making. This will drive the national co-ordination and planning to collectively deliver the least cost solutions that will ultimately be borne by Australian consumers and businesses. The increasingly likelihood that end-of-life, increasingly unreliable coal-fired power plants either suffer unexpected but predictable catastrophic failures and/or are closed ahead of

---

<sup>11</sup> The Guardian. [Q+A: Malcolm Turnbull clashes with News Corp's Paul Kelly over climate coverage](#). 10 November 2020.

current owner plans due to failing economics means that this national plan must prioritise deployment of new zero emissions capacity. This must be supported by enhanced interstate grid connectivity and sufficient firming capacity (that being demand response management (DRM), pumped hydro storage (PHS), fossil and green hydrogen blended gas fired peakers and batteries) progressively ahead of planned retirement dates to ensure grid reliability and to optimally manage increasingly frequent extreme weather conditions and the outages that this will inevitably cause.

### *Transparent Monitoring, Reporting and Accountability*

IEEFA agrees with the requirement for transparent monitoring and reporting to give businesses and financial institutions adequate information on how the Government is preparing for a net-zero economy. This will ensure efficient allocation of capital to deliver the optimal solution at least cost to consumers whilst building economic resilience and preparedness.



## 2. Australia: A Renewables Export Superpower

### *The Potential Is Huge; Capital Is Ready, the Economics and Technology Are Lining Up, Policy Clarity Is Needed*

To IEEFA, a technology readiness assessment shows that the opportunities for Australia to see huge new investment (\$200bn+ by 2040 is a conservative estimate), employment, economic and export gains are real. Australia is blessed with first class renewable resources, an exceptionally low population density, a world scale A\$2.8 trillion capital pool, record low interest rates, a history of building world-scale export industries, and strong trade relationships with the world's largest fossil fuel import nations, all of whom have just embraced a net zero emissions target.

The risks to Australia of not embracing the science and these opportunities are likewise enormous: 2018/19 saw Australia export A\$100bn of fossil fuels, and this will be just A\$70bn in 2020/21, with the risk of halving again by the end of this decade or two according to the latest October 2020 International Energy Agency (IEA) World Energy Outlook modelling of the Net Zero Emissions by 2050 (NZE2050) global outcome.<sup>12</sup>

A constructive Federal policy framework is the missing link to accelerate investment, boost employment and drive growth in research, development & deployment (RD&D). Many of the Federal tools are established (ARENA, CEFC, CSIRO), and the state governments are 100% unified by net zero emissions targets, but lacking the financial resources. But this is the next space race, Australia is far from alone.

### **A \$200bn+ Investment Opportunity for 500% Renewables**

The NSW Government has just committed to a \$32bn investment opportunity for 12GW of variable renewable energy (VRE), 2GW of storage, including pumped hydro storage (PHS), plus grid interconnect upgrades.<sup>13</sup> NSW is one-third of the Australian population, so if the equivalent of this was rolled out nationally, that is ~A\$100bn. The AEMO integrated system plan (ISP) assumes some \$10bn of investment in grid capacity expansions by 2030<sup>14</sup> and rooftop solar growing five-fold to 50GW by 2050,<sup>15</sup> a likely incremental \$40bn investment when behind-the-meter storage is included.

While some voices have said the cost to Australia's heavy industry and hence employment are too valuable to risk with actions to protect our country's future, this call for fear and vacillation is diametrically opposite to the leadership shown by Korea Zinc's Australian Sun Metals commitment to be 100% zero emissions energy

---

<sup>12</sup> International Energy Agency (IEA). [World Energy Outlook 2020](#). 13 October 2020.

<sup>13</sup> The Guardian, [NSW unveils \\$32bn renewables plan with focus on pumped hydro](#), 9 Nov 2020.

<sup>14</sup> RenewEconomy. [Regulator suggests big battery alternative to huge network spend](#). 18 Nov 2020.

<sup>15</sup> Australian Energy Market Operator (AEMO). [2020 Integrated System Plan](#). July 2020.

powered by 2040, announced in November 2020.<sup>16</sup>

But this is the small part of the investment opportunity. The export side is potentially multiples of this:

1. CWP Renewables' Asian Renewable Energy Hub (AREH) is 26GW or A\$38bn of investment potential, for just one project, generating [5,000 construction jobs/3,000 operational jobs](#).<sup>17</sup>
2. Sun Cables' A\$22bn plan for 10GW of solar, 30GWh of batteries and a 3,750km cable to Singapore.<sup>18</sup>
3. Fortescue Metals Group's (FMG) 235GW announcement starts with a \$1bn investment by 2023, but it also carries the overt, up-front threat of taking this investment offshore.<sup>19</sup>
4. Australia exports \$13bn pa of bauxite, alumina and aluminium. Rio Tinto and Alcan are likely to shut all aluminium refining down this decade absent a massive investment to drive decarbonisation + electricity cost down outcome.<sup>20</sup>
5. Australia has a 55% share of the global trade in iron ore, with export revenues valued at A\$105bn in 2020, with a profit margin of 60-70% giving A\$65-75bn EBITDA pa. As China, South Korea and Japan move to net zero emissions, Australia could value-add by processing iron ore onshore, like China allows Australia to do in our currently A\$1bn pa lithium ion export industry.

## Growing Global Consensus on Net Zero Emissions

The announcement by President Xi of a net zero emissions (NZE) 2060 target for China changed everything globally, particularly when it was followed by NZE by 2050 targets from Japan and South Korea.<sup>21</sup> The election of Joe Biden as the next President will likely put the U.S. back into the Paris Agreement with a NZE by 2050 target.<sup>22</sup> The EU is already entirely focussed on net zero and India's PM Narendra Modi has long set a path for electrification, combined with a 450GW of renewables by 2030 target.<sup>23</sup>

---

<sup>16</sup> Australian Financial Review (AFR). [Queensland's biggest zinc refinery aims for 100pc clean energy](#). 23 November 2020.

<sup>17</sup> [Asian Renewable Energy Hub](#)

<sup>18</sup> Renew Economy. [Sun Cable earmarks site for 10GW solar farm at cattle station south of Darwin](#). 22 October 2020.

<sup>19</sup> Australian Financial Review (AFR). [Forrest unveils staggering vision for Fortescue in renewables](#). 11 November 2020.

<sup>20</sup> IEEFA Australia: [Investing in renewable energy will repower aluminium and heavy industry sectors](#). 14 September 2020.

<sup>21</sup> Nikkei Asia. [South Korea joins Japan in making 2050 carbon-neutral pledge](#). 28 October 2020.

<sup>22</sup> The Guardian. [Joe Biden's move to net zero emissions will leave Australia in the \(coal\) dust: Bill Hare](#). 8 Nov 2020.

<sup>23</sup> Theweek.in. [India will achieve 450 GW renewable energy by 2030: Modi](#). 21 November 2020.

BlackRock is now demanding mandatory Taskforce for Climate Related Disclosures (TCFD) reporting.<sup>24</sup> The TCFD's October 2020 report shows significant progress in the last year, but also highlights the need for greater climate related disclosures and transparency as core to the implementation of the Paris Agreement,<sup>25</sup> key points also made in the framing of the Climate Change Bill 2020.

IEEFA has tracked 63 new or improved coal exit policies from globally significant financial institutions (GSFI) to-date in 2020, a 50% higher run-rate than in 2019.<sup>26</sup> And 2020 has also seen 59 GSFI announce formal Arctic Drilling and/or Oil Sand exclusion policies,<sup>27</sup> as divestment policies move beyond coal as the financial sector works out what is required for a viable path to 1.5-2.0 °C (Refer Section 3).

### **Growing Financial Sector Consensus on Net Zero Emissions**

May 2020 saw Westpac step up its commitments,<sup>28</sup> followed in June 2020 by HESTA<sup>29</sup> and then in July 2020 by Aware Super.<sup>30</sup>

This momentum continued building with the announcement by ANZ Banking Group in October 2020 to work with all of its clients to reach alignment with the Paris Agreement.

November 2020 saw both QBE Insurance<sup>31</sup> and AustralianSuper<sup>32</sup> commit to NZE by 2050.

November 2020 also saw the Climate Action 100+ (a group of 500 global investors, overseeing more than \$US47 trillion AuM), added three more large Australian emitters – Oil Search, Orica and Incitec Pivot – to the global list of 167 firms to urge them to provide "good faith" plans to decarbonise every aspect of their operations by 2050, in an attempt to limit temperature increases to well below 2 degrees C.<sup>33</sup>

When Prime Minister Scott Morrison says Australia won't be dictated to by foreign governments, he ignores the fact that our largest fossil fuel customer in the world – JERA of Japan - just committed to NZE by 2050 in October 2020.<sup>34</sup> And Australia's second largest fossil fuel customer - Korea's KEPCO – has committed to no new coal at the same time, under pressure from BlackRock and other globally significant

---

<sup>24</sup> Reuters. [BlackRock CEO backs mandatory climate reporting, urges U.S. action](#). 11 November 2020.

<sup>25</sup> [Third TCFD status report shows progress & highlights need for greater climate-related disclosures and transparency](#). 29 October 2020.

<sup>26</sup> [IEEFA Coal Exit Policies](#).

<sup>27</sup> [IEEFA Oil & Gas Exit Policies](#).

<sup>28</sup> Westpac. [Climate change position statement and 2023 action plan](#). May 2020.

<sup>29</sup> The Age. [Super giant HESTA divests coal, commits to 'net zero' investments by 2050](#). 25 June 2020.

<sup>30</sup> The Sydney Morning Herald. [Top super fund dumps coal miners as emissions cuts intensify](#). 9 July 2020.

<sup>31</sup> [QBE. Our approach to climate change](#). November 2020.

<sup>32</sup> PV Magazine. [Australia's biggest super fund commits to 2050 net zero](#). 17 November 2020.

<sup>33</sup> Australian Financial Review (AFR). [Three more Australian companies put on notice over emissions](#). 18 November 2020.

<sup>34</sup> Economic Times. [Japan's JERA to shut inefficient coal-fired power plants by 2030](#). 13 October 2020.

financial institutions (GSFI). They don't determine our government policy, but they certainly decide if they will still need to buy our LNG and thermal coal.

Having underestimated variable renewable energy deflation for a decade, October 2020 saw the IEA finally acknowledge that solar is the new king of global energy markets.<sup>35</sup> The world's largest and most successful renewable energy investor, that being the U.S. utility NextEra Energy, states that it expects green hydrogen to be as big a disruption of world energy markets next decade as batteries are today.<sup>36</sup> This disruption is driven by technology, economics and finance, with multi-decade low interest rates adding fuel to the fire.

### Investors into Australian NZE Industries Need Policy Clarity

The Renewable Energy Target (RET), the Clean Energy Finance Corporation (CEFC), the Australian Renewable Energy Agency (ARENA) and the CSIRO have all played a key role in driving renewable energy penetration to a record high in 2020 to-date of 26% vs just 10% in 2010.<sup>37</sup>

However, BloombergNEF calculates renewables investment collapsed 40% in 2019<sup>38</sup> as the RET was achieved, given the now energy and climate policy chaos. And investors in 2020 have seen ongoing disruption and project delays/writedowns in 2020 as the Federal Government focusses on a gas-led recovery.

Global investors recognise that infrastructure investing gives an incrementally higher return for incrementally higher risk relative to fixed income. When backed by long term power purchase agreements (PPA), renewables are a new class of infrastructure assets, free of the volatility of fossil fuel inputs and largely free of carbon emissions. Once built, PPA backed renewables have an 80-90% EBITDA margin and can provide a 25 year cashflow annuity, like a bond, with almost no technology, fuel or currency risks.

Growing investor confidence in Australian renewables was hammered in June 2018 when the AEMO announced massive Marginal Loss Factor (MLF) adjustments for the 2018/19 year.<sup>39</sup> The MLF was a relatively unknown rule that adjusts the value of the electricity generation depending upon its geographic location to reflect the local grid capacity to transmit the generation to the end demand load. One wind farm at the end of a long grid is a valuable boost to the overall system. Five wind or solar farms at the same connection point overwhelm the grid capacity and drive immediate losses, borne by the generator via the MLF, which saw the value of individual VRE project revenues cut by up to 20% - a cutting of the value of the project by up to an equivalent amount (given financial leverage, this could wipe out the project equity entirely). AEMO gave no warning of the MLF adjustments. Post this development, a renewable energy infrastructure developer must consider the

---

<sup>35</sup> Financial Times. [Will 'Black April' prove a turning point for energy?](#) 20 October 2020.

<sup>36</sup> GTM. [NextEra Energy to build its first green hydrogen plant in Florida.](#) 24 July 2020.

<sup>37</sup> [OpenNEM.](#)

<sup>38</sup> PV Magazine. [Investment in Australian renewables sank in 2019.](#) 22 January 2020.

<sup>39</sup> Renew Economy. [AEMC to consider proposed changes to marginal loss factor rules.](#) 6 June 2019.

best location for their project in terms of the ability of the grid to accommodate their project, as well as any subsequent project that might be built nearby, but with almost zero planning transparency. Renewable Energy Zones are a logical solution – AEMO works with the State and Federal Governments to determine where they want the variable renewable infrastructure to optimally be built, and before it is built, the grid capacity is established to facilitate the dispatch of this new generation.

Snowy Hydro 2.0 is a second example where a \$2bn proposal has now ballooned to be a A\$16bn total capital cost to the Federal government, with a decade build timeframe and massive scale such that the crowding out of private investor interests in storage is very material.<sup>40</sup> The grid can only handle low-cost but intermittent renewables with grid planning, including investment in a progressive buildout of storage (ideally well distributed and modular (the Tesla battery was built in 100 days, not Snowy's decade)).

The Government's preoccupation with a taxpayer subsidised fossil gas sector recovery is a third example of how investor confidence is undermined and crowded out. PM Morrison in September 2020 announced a 1,000MW gas power plant at Tomago, NSW. The gas Covid-19 committee recommended a gas floor price and a massive \$6bn capital subsidy of new gas pipelines.

Rio Tinto has committed to a global emission reduction program, writing down high cost and high emissions aluminium refineries such as Tomago and Gladstone, which is similar to Alcoa with Portland in Victoria. With an absent clear plan, heavy industry in Australia will continue to close. In IEEFA's view, the Federal Government Technology Roadmap has little tangible substance mainly focused on government subsidies for fossil hydrogen and trying to extend the pretence that carbon capture and storage (CCS) might one day work in a cost effective way absent any price on carbon.

These are just a few examples of how policy chaos has dramatically undermined global investor and zero emissions infrastructure project developer confidence in Australia. Global capital is entirely agnostic to country borders. It is IEEFA's experience that most asset owner/asset managers in Australia like HESTA, UniSuper, Catholic Super, Macquarie Group and AustralianSuper have all looked at investing in renewable energy infrastructure and they have found the policy risks of Australia to be unacceptable, so instead they have invested the majority of their funds in this space in Europe and the US.

The AREH in October 2020 gaining 'major project status' is a positive step and illustrates that the Federal Government is belatedly acknowledging the investment opportunities Australia can benefit from by having the policy certainty and clarity of a legally binding commitment to net zero emissions by 2050. This is a critical issue given it is globally a first of a kind nation building project. Likewise FMG in November 2020 very unsubtly warned that while Australia is its base, it is exploring which countries to invest its 235GW of planned renewable infrastructure.

---

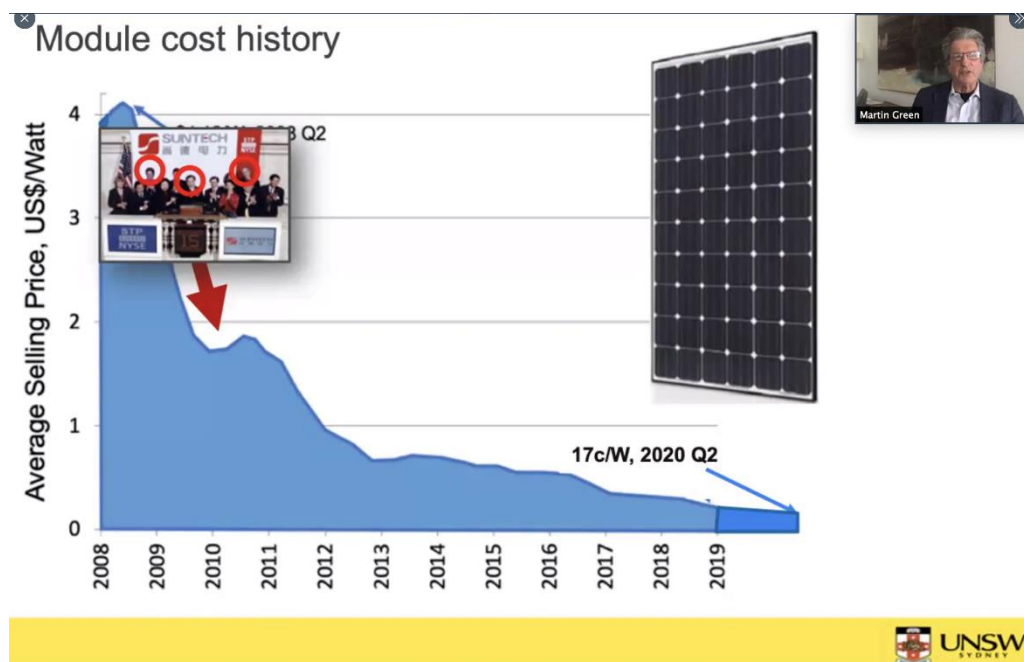
<sup>40</sup> IEEFA Australia: [Snowy Hydro gas plant expansions likely to be fuelled with taxpayer funds](#). 18 November 2020.

Australia is ideally placed to transition from a top three fossil fuel export nation to a world renewables export superpower with \$200bn+ of new regional investments, but government policy is a key enabler given the massive RD&D ‘space race’ involved, and the risk that other countries like Germany, Korea, Russia, the UAE, Chile and/or China beat us to the prize.

### The Growing Domination of Renewable Energy

IEEFA expects solar tariffs to decline by 5-10% annually. This will be driven by continued technology improvements and manufacturing scale benefits for modules (as outlined by Swanson’s Law, similar to Morse’s Law for semiconductors), plus similar gains in associated componentry and balance-of-system costs. IEEFA expects the introduction of bi-facial modules of ever larger size, plus tracking will see continued enhancements of the capacity utilisation rate of solar modules. Solar module prices have declined by 96% over the last 12 years (Figure 2.1).

Figure 2.1: Ongoing Solar Module Deflation



Source: Dr Martin Green, University of NSW.

China’s new solar factories have tripled the capacity of factories built only two to four years ago, and China’s total capacity could double in the next two years alone.<sup>41</sup> The first half of 2020 saw China commit to US\$17bn for an unprecedented 111GW of new cell and 104GW of new module manufacturing capacity. If delivered, this would double global solar manufacturing capacity by one country in just six months.<sup>42</sup>

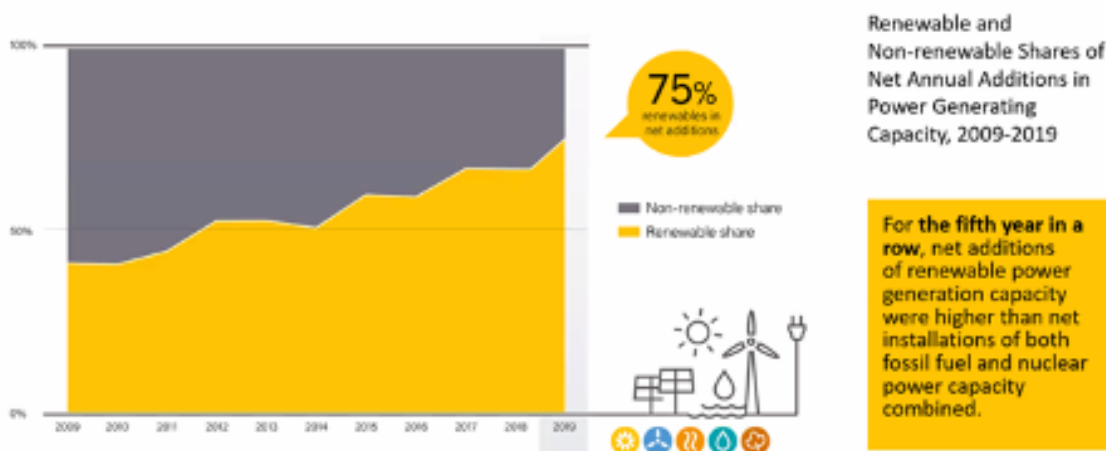
<sup>41</sup> Bloomberg. [The solar-powered future is being assembled in China](#). 15 September 2020.

<sup>42</sup> PV Magazine. [The visible hand heralds a new dawn](#). 3 October 2020.

We see increasingly widespread recognition of this thinking – an inevitable ongoing dominance of new investment going into ever-lower cost domestic renewables, with this trend being replicated across the world in the coming decade. As detailed in Figure 2.2, the acceleration of coal plant closures in Europe and the US in recent years meant that 75% of *net* electricity capacity additions globally were in renewable energy in 2019, a decade-high share and well on the way to 100% and then beyond in the coming decade.

**Figure 2.2: Renewables are the Dominant Global Investment Destination**

**MORE RENEWABLE POWER ADDED THAN FOSSIL FUEL AND NUCLEAR**



Source: IRENA.

IEEFA notes the strategic pivot in thinking in India’s leading energy group, the Adani Group. In May 2020 Adani Group founder Gautam Adani hammered home this point:

*“... a recent MIT research paper notes that the price of solar modules has dropped 99% over the past 40 years. Given what I see, I expect prices to drop by an additional 99% over the next 40 years – probably reducing the marginal cost of electricity to zero. Such a reduction, in turn, will mean the coexistence of two business models – one based on fossil fuels and the other driven by renewables – both supplementing each other in the near future but the pendulum swinging decidedly in favour of renewables in the long-term.”<sup>43</sup>*

The collapse in value of fossil fuel ‘assets’ (like Peabody Energy, Whitehaven Coal, Duke Energy, ExxonMobil (refer Annexes 1 & 2)) and massive ongoing rerating of renewable energy leaders (like NextEra Energy and Orsted) has accelerated in 2020. Financial markets in India are clearly replicating this global trend: Adani Power has halved while Adani Green Energy has quadrupled in value in 2020 to date.

The virtually unlimited potential of solar power was evidenced in the Indian government’s September 2020 announcement of a 41.5GW hybrid renewable

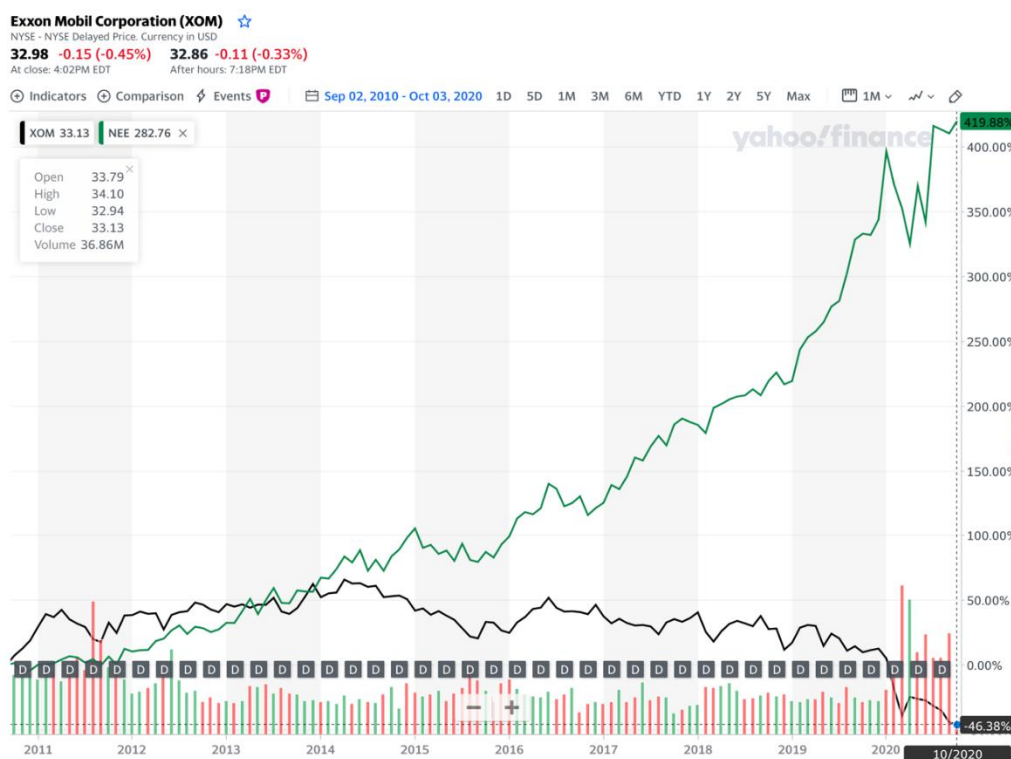
<sup>43</sup> LinkedIn, Gautam Adani. [The green energy acceleration in the post Covid world](#). 28 May 2020.

energy park at Kutch in Gujarat covering 60,000 hectares).<sup>44</sup> This would be a twenty-fold expansion. The largest two operational solar projects in the world today are the 2.25GW Bhadla solar park in Rajasthan<sup>45</sup> and the 2.2GW solar-plus-storage park in Qinghai province, China, owned by Huanghe Hydropower Development.<sup>46</sup>

### Ongoing Underperformance Drives Utility Decarbonisation

October 2020 saw the stock market capitalisation of NextEra Energy, the world’s largest renewables investor, overtake that of ExxonMobil (Figure 2.3).<sup>47</sup>

**Figure 2.3: Exxon (Black) Entirely Eclipsed this decade by NextEra (Green)**



Source: Yahoo.

September 2020 saw Vistra, Ameren Corp. and Entergy Corp. each pledging to eliminate carbon emissions from their U.S. generation fleet, joining a growing wave of utilities that includes Xcel Energy Inc., Southern Company, Dominion Energy and Duke Energy Corp.<sup>48</sup>

<sup>44</sup> Saur Energy. Proposal for 41.5 GW hybrid renewable park in Kutch approved. 10 Sept 2020.

<sup>45</sup> IEEFA India: World-leading solar parks kick-start India’s dynamic clean energy transition. 13 May 2020.

<sup>46</sup> PV Magazine. World’s largest solar plant goes online in China. 1 October 2020.

<sup>47</sup> Financial Times (FT). Clean energy group NextEra surpasses ExxonMobil in market cap. 2 October 2020.

<sup>48</sup> Bloomberg. US Coal suffers 1-2 punch as plants shut, Miner Deal nixed. 30 September 2020.



---

October 2020 saw Uniper of Germany announce it will close 3GW of coal-fired power plants, halving its coal generation capacity by 2025 and to be carbon neutral by 2035.<sup>49</sup> This follows the successful pivots of all leading EU utilities, led by Engie and EDP of France, ENEL of Italy, Iberdrola of Spain, and Orsted of Denmark.

### *European Oil & Gas Majors*

February 2020 saw Bernard Looney, the incoming CEO of BP Plc commit this oil and gas major to target a dramatic carbon emissions reduction program over the coming 30 years to 2050.<sup>50</sup> Whilst most commentators were initially sceptical of this repeat announcement of green pivot, the company's actions since provide strong evidence of the economic imperative. BP started the year committing to invest US\$500m annually in renewable infrastructure, but as COVID-19 really hit and oil, gas and coal firms globally were decimated, BP lifted their ambition to a new target for renewables investments of US\$5bn annually.<sup>51</sup>

Near net zero emissions targets have now been announced in the last year by Total of France, Shell of Netherlands, Repsol of Spain, ENI of Italy and Equinor of Norway. Actions have followed, with a string of billion-dollar investments being announced in renewables across Europe, Asia and the Americas in 2020. Total's investment of US\$500m to acquire a 50% stake in 2.1GW of renewable infrastructure owned and operated by Adani Green Energy is just one example.

September 2020 saw Macquarie Group and Total commit to a US\$5-6bn investment to develop a portfolio of 2GW of floating offshore wind in South Korea.<sup>52</sup>

---

<sup>49</sup> Fortum/Uniper. [Uniper will gradually phase out coal](#), accessed 3 October 2020.

<sup>50</sup> Financial Times. [New BP boss Bernard Looney pledges net zero carbon emissions by 2050](#). 13 February 2020.

<sup>51</sup> Renewables.biz. [BP unveils 50GW by 2030 renewables goal](#). 4 August 2020.

<sup>52</sup> Total press release. [Total and Macquarie partner to develop 2GW floating offshore wind portfolio in South Korea](#). 1 September 2020.

### 3. Global Finance's Paris Alignment Accelerates

Despite or maybe in acknowledgement of the lessons learnt during the global pandemic, there has been significant global capital momentum away from thermal coal and coal-fired power generation in 2020.<sup>53</sup> There is a growing understanding that an alignment with the Paris Agreement invariably means that globally significant financial institutions will need to move well beyond coal exclusions and policy momentum to restrict global capital flows into oil and gas has built considerably in 2020.<sup>54</sup>

Indeed, the trend of finance exiting coal has accelerated in 2020, with the number of new or improved policies running at 50% more than the run rate of 2019.

Having commenced the year referencing “A Fundamental Reshaping of Finance” in terms of the urgent need to align with the Paris Agreement and accept stranded asset risks,<sup>55</sup> BlackRock completed its divestment of thermal coal miners in May 2020.<sup>56</sup> By November 2020, Founder and CEO Larry Fink was describing this as a “Tsunami” of asset reallocation and change.

In total, IEEFA has tracked 147 globally significant banks, insurers, and asset managers/asset owners that have implemented substantial formal coal policies since 2013. This year has seen 63 new or updated policy statements (Figure 3.1).

October 2020 saw Aviva set a net zero target for its default pension funds by 2050 as yet another uplift to its fossil-fuel exclusion policy framework.<sup>57</sup>

October 2020 also saw JPMorgan Chase pledge to push clients to align with the Paris Agreement, similar to pledges from NatWest Group and Barclays PLC earlier this year. This builds on JPMorgan's February 2020 pledge to undertake \$200bn in green financing and make its own operations carbon neutral this year.<sup>58</sup>

**Figure 3.1: Global Coal Policy Exits (2018-2020 to date)**

Total announcements in	2018	2019	2020
Announcements	31	46	63
Weeks	52	51	45
Announcements per week	0.6	0.9	1.4

Source: Financial Institutions' websites, IEEFA calculations.

<sup>53</sup> The Age. Bob Carr. [While the world looked the other way, corporate giants abandoned coal](#). 15 May 2020.

<sup>54</sup> IEEFA: [From zero to fifty, global financial corporations get cracking on major oil/gas lending exits](#), 19 October 2020.

<sup>55</sup> BlackRock, CEO Letter. [A fundamental reshaping of finance](#). January 2020.

<sup>56</sup> BlackRock. [Helping our clients invest sustainably](#). May 2020.

<sup>57</sup> Business Green. [Aviva targets net zero for its default pension funds by 2050](#). 2 October 2020.

<sup>58</sup> The Wall Street Journal. [JPMorgan pledges to push clients to align with Paris Climate Agreement](#). 6 October 2020.

## Annex 1: Share Performance of Coal Stocks

The two charts below detail the two-year share price performance of Peabody Energy listed in the U.S. and Whitehaven Coal Ltd, listed in Australia (both predominantly thermal coal mining companies). Both have massively underperformed their respective share market benchmarks.

### Peabody Energy: Two Year Share Performance vs the S&P500 Index



Source: Yahoo Finance.

### Whitehaven Coal: Two Year Share Performance vs the All Ords Index

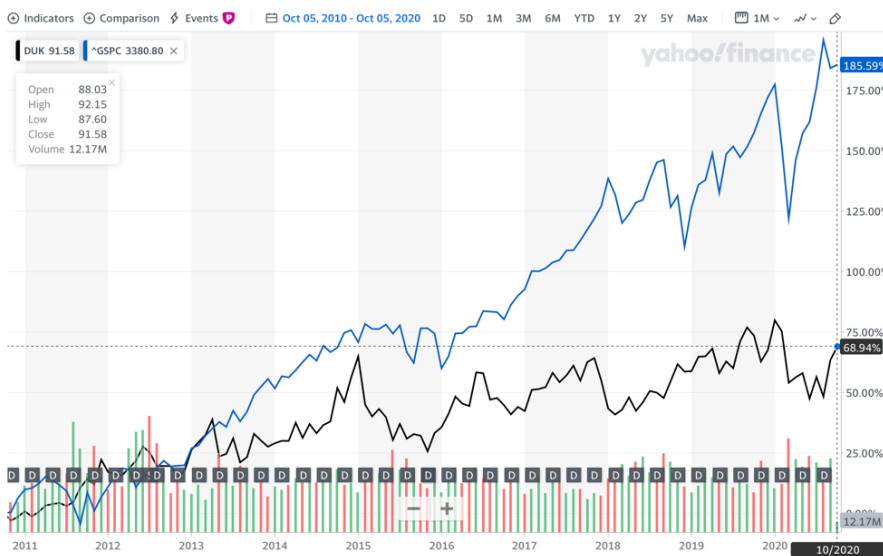


Source: Yahoo Finance.

## Annex 2: Share Performance of Utilities and Oil & Gas Majors

The two charts below detail the 10-year share price performance of Duke Energy and ExxonMobil (listed in the U.S.). Both have massively underperformed the share market benchmarks. Perhaps in an effort to relieve Duke shareholders of suffering continued market underperformance, the market in October 2020 speculated on a NextEra Energy takeover to put Duke onto a rapid decarbonisation trajectory.

### Duke Energy (Black): Decade Share Performance vs the S&P500 Index



Source: Yahoo Finance.

### ExxonMobil (Black): Decade Share Performance vs the S&P500 Index



Source: Yahoo Finance.

### Annex 3: US Government Benchmark Interest Rates

Long-Term Interest Rates, % per Annum, Jan 1990 – Oct 2020



Source: OECD Data.

## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

## About the Authors

### Tim Buckley

Tim Buckley, IEEFA's director of energy finance research, Australasia, has over 30 years of financial market experience covering the Australian, Asian and global equity markets from both a buy and sell side perspective. Tim was a top-rated Equity Research Analyst and has covered most sectors of the Australian economy. Tim was a Managing Director, Head of Equity Research at Citigroup for 17 years, as well as co-Managing Director of Arkx Investment Management P/L, a global listed clean energy investment firm that was jointly owned by management and Westpac Banking Group. [tbuckley@ieefa.org](mailto:tbuckley@ieefa.org)

### Johanna Bowyer

Lead Research Analyst for Australian Electricity Johanna Bowyer has previously worked for CSIRO, Solar Analytics and Suntech and as a management consultant at Kearney. Johanna has research experience in microgrids, energy tariffs and distribution networks. She has a degree in Photovoltaics and Solar Energy Engineering from UNSW.

This report is for information and educational purposes only. The Institute for Energy Economics and Financial Analysis ("IEEFA") does not provide tax, legal, investment, financial product or accounting advice. This report is not intended to provide, and should not be relied on for, tax, legal, investment, financial product or accounting advice. Nothing in this report is intended as investment or financial product advice, as an offer or solicitation of an offer to buy or sell, or as a recommendation, opinion, endorsement, or sponsorship of any financial product, class of financial products, security, company, or fund. IEEFA is not responsible for any investment or other decision made by you. You are responsible for your own investment research and investment decisions. This report is not meant as a general guide to investing, nor as a source of any specific or general recommendation or opinion in relation to any financial products. Unless attributed to others, any opinions expressed are our current opinions only. Certain information presented may have been provided by third-parties. IEEFA believes that such third-party information is reliable, and has checked public records to verify it where possible, but does not guarantee its accuracy, timeliness or completeness; and it is subject to change without notice.