Submission No 254

SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Organisation: Glencore

Date Received: 24 September 2020

GLENCORE

24 September 2020

Legislative Assembly Committee on Environment and Planning
Parliament of New South Wales
Macquarie Street
SYDNEY NSW 2000

Via email: environmentplanning@parliament.nsw.gov.au

SUBMISSION - SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Glencore welcomes the opportunity to make a submission to the Legislative Assembly Committee on Environment and Planning on the sustainability of energy supply and resources in NSW.

We support the NSW Minerals Council submission that was made on behalf of the industry. In this submission, we will provide more information about Glencore's position on this important topic.

New South Wales has an abundance of natural resources to power our State's industry, businesses and households, including coal, gas and renewables (which are dependent in part on metals and minerals like copper). In 2019 coal generated 77% of NSW's electricity[1], and the State's coal resources are so abundant that this represents only a small percentage of overall production.

Mined metals are also essential inputs in a wide range of applications that include household construction, consumer goods, electrical networks, transport and industrial machinery. More specifically, copper is used in electrical wiring, air conditioning units, plumbing, electronic medical devices like ultrasound machines, smart phones, electricity production and transmission. A range of other metals, including nickel, cobalt and zinc are critical inputs in Electric Vehicle batteries, wind turbines, solar panels and many applications key to a lower carbon economy.

Over several decades, NSW has successfully attracted investment capital to develop many resources that are currently in production.

In Glencore's view, there remains significant potential for NSW to continue attracting the capital investment required to develop many more such resources in the years ahead, on the proviso that policy settings for energy supply and resources are effective.

[1] *Australian Government Department of Industry, Science, Energy and Resources: Electricity generation by fuel type 2019*

Glencore Coal Assets Australia Pty Limited ABN 48 163 821 298
Bulga Coal Complex
567 Broke Road · Singleton · NSW 2330 · Australia
Tel +61 2 6570 2416 · Fax +61 2 6570 2520 · www.glencore.com.au

Overview

Glencore would like to highlight the following key issues to the Committee, as part of its deliberations on the sustainability of energy supply and resources in NSW.

- NSW has abundant reserves of natural resources, including coal, which have the potential to attract significant capital investment for the benefit of the State.
- We acknowledge the public concerns around climate change and Glencore has proactively made a range of commitments to align itself with the goals of the Paris Agreement, while continuing to operate a world-class coal business in Australia.
- Glencore's diverse commodity suite is well suited to a transition to a low carbon economy given our exposure to energy (coal) and metals, which will both be required.
- Glencore's coal business has a good track record of successful investment, project development and socio economic contribution in NSW.
- Glencore is the largest coal producer in NSW and coal continues to be a major contributor to the NSW economy.
- Global demand for coal will continue to be a driver of industrial development and critical to providing access to energy in developing countries, particularly south-east Asia.
- Globally, many signatories to the Paris Agreement have included coal-fired power generation in their future energy mix.
- Fossil fuels, including coal, remain a significant part of global energy demand under every International Energy Agency (IEA) scenario.
- A broad suite of energy technologies, including Carbon Capture Use and Storage (CCUS), will be required to have any chance of achieving the ambition of net zero emissions cost effectively.
- We think the NSW Government *Strategic Statement on Coal* is an important policy framework that recognises the ongoing global demand for high quality coal exports and the socio economic benefit this brings to NSW.
- Glencore has a demonstrated track record of investment in NSW, which in turn makes a material socio economic contribution to the state and the local communities surrounding our operations.
- We are continuing to invest in a pipeline of coal projects that will continue to deliver benefits to NSW.
- We are committed to operational excellence and strive to be a responsible operator that protects our people, respects the environment and is valued by our communities.
- We acknowledge that mining has impacts and when things go wrong we step up, take responsibility and take action.
- We are a firm believer that multiple industries can coexist with coal mining and we are genuine about addressing community concerns.
- Glencore's coal business has developed a robust approach to environmental management and we lead the industry in areas like rehabilitation. We partner with community groups who will make a difference and address local needs.
- We recommend that the NSW Government continues to provide a policy framework that encourages and facilitates continued investment in the coal sector.

Glencore's commitment to the transition to a low carbon economy

Glencore has made a number of public commitments in relation to climate change and the transition to a low carbon economy.

In February 2019, we outlined:

- A commitment to limit our annual global attributable coal production capacity broadly to current levels of ~150 million tonnes and prioritise our global capital investment to grow production of commodities essential to the energy and mobility transition;
- A commitment, from 2020, to disclose our longer-term projections for the intensity reduction of Scope 3 emissions, including mitigation efforts;
- A commitment, from 2020, to report publicly on the extent to which our material capital investments and expenditure are aligned with the goals of the Paris Climate Agreement;
- A commitment to reduce our Scope 1 and Scope 2 greenhouse gas emissions intensity – we are on track to exceed our 2020 emissions intensity reduction target of 5% versus a 2016 baseline;
- A commitment to report annually on our progress;
- Our support for the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations; and
- A review of our membership of trade associations, including a consideration of whether each association aligns with our stated position on climate change matters.

In February 2020, we updated our performance against these commitments and projected a c.30% reduction in global absolute Scope 3 emissions by 2035. We also confirmed that:

- We are on track to achieve a c.10% reduction of Scope 1 and Scope 2 greenhouse gas intensity by 2020, compared to a 2016 baseline (which is nearly double our target);
- New longer-term Scope 1 and 2 targets that support the Paris goals will be announced later this year;
- Updated global energy scenarios will be published later this year incorporating global metals and coal demand;
- We continue to implement the recommendations of the TCFD in our annual reporting; and
- We are incorporating climate change into operational planning, most recently in our new Tailings Storage Facility protocol.

Glencore's portfolio of energy, metals and minerals is well-positioned to support the transition to a lower carbon economy, while also meeting the need for universal access to reliable energy.

The decision to limit Glencore's attributable global coal production to around 150 million tonnes a year was a business decision, made in response to shareholder prioritisation of climate change issues, including a number of shareholders who also belong to the Climate Action 100+ initiative.

Glencore is not moving away from coal. Glencore has, and will continue to have, a world-class coal mining business in Australia.

For more than 20 years, we have built our Australian business through acquisitions, mergers, plus development of greenfield and brownfield mining projects and today it encompasses 17 coal mines in NSW and Queensland. We will continue to consider acquisitions, divestments, expansions and projects against our investment criteria and within the stated production cap.

According to all credible energy forecasters, coal will continue to play an important role in the domestic and global energy mix for many years to come.

Glencore has been a long-term supporter of CCUS technology as a means to reduce emissions from fossil fuels and also service the hydrogen economy.

Our CTSCo Project in Queensland's Surat Basin is aiming to demonstrate CCUS on an industrial scale and is Australia's most advanced onshore CCUS project. It is focused on capturing CO_2 from a coal-fired power station and permanently storing it more than 2km underground.

The storage site, located 230km west of Toowoomba, has the potential to become an integrated CCUS hub, with emissions from multiple coal generators and other industrial sources – including gas, hydrogen, cement and chemicals – being captured and safely stored, in the process contributing to Australia's climate and emission reduction goals.

Glencore in New South Wales

Glencore is an integrated commodity producer and trader supported by a global network of industrial and marketing activities. We responsibly produce and market more than 60 commodities, many of which provide important inputs into the generation of both fossil fuel and renewable energy.

Australia is an important part of our global business and we have operated here for more than 20 years in the production of commodities that include coal, copper, cobalt, nickel and zinc. Our Australian coal business is headquartered in the NSW Hunter Valley.

We are NSW's largest coal producer and also operate a major copper operation at the CSA Mine in Cobar. In 2019, we managed the production of nearly 69 million tonnes of saleable coal in NSW, the overwhelming majority of which was exported to customers overseas. Less than 10% of the coal we produce in Australia goes to domestic power generation.

Our business currently provides work for about 7,250 Australians in NSW across our coal operations – at Bulga, Mangoola, Ravensworth, Integra, Mount Owen, Glendell, Liddell, Ulan, the United Wambo JV and Hunter Valley Operations (in which we have a 49% stake) – and our CSA copper mine.

We also have one of the coal industry's largest apprenticeship programs with more than 200 apprentices and 100 graduates starting mining careers with Glencore.

In 2019, Glencore directly contributed over $4.4 billion to the NSW economy. This includes $736 million in wages and salaries; $569 billion in royalties to the NSW Government; and more than $2.5 billion on procurement of goods and services, much of which was procured from small- and medium-sized businesses located close to our operations.

NSW energy exports and supply in a global context

State significance

The NSW resources sector is an important provider of energy to countries across Asia.

In FY2019, NSW mining and mineral exports generated revenues of $29.3 billion.

Coal was NSW's number 1 export by value, at $23.1 billion. These exports went to 18 different countries, demonstrating the strong demand from many sources for coal produced in this State.

Whilst investment in renewable energy around the world has increased significantly in recent years, coal remains a key input for industrial sectors and a critical source of safe, reliable and secure energy.

Global significance

In spite of global investment of over US$2 trillion in renewables over the past decade, coal is used to generate 38% of global electricity, 71% of global steel production and 90% of global cement production.

According to the International Energy Agency (IEA), more than 1 billion people around the world still have no access to electricity and 2.7 billion people rely on traditional fuels, such as biomass and wood, for cooking. About 40% of the world population does not currently cook with gas or electricity, which explains why there will be continuing demand for low cost energy from coal, particularly in south-east Asia.

The IEA also forecasts that 1.7 billion people will move from rural areas to urban centres by 2040 and that real GDP growth will grow by 3.4% per year. This projected income growth and urbanisation will result in a significant increase in overall global energy demand.

A point sometimes lost is that energy is central to several major challenges and opportunities the world faces today. It is the cornerstone of three of the United Nations Sustainable Development Goals (UNSDGs):

- Goal 7 - Ensuring access to affordable, reliable, sustainable and modern energy
- Goal 3 - Ensure healthy lives and promote wellbeing for all at all ages
- Goal 13- Take urgent action to combat climate change and its impacts

Crucially, access to energy is closely linked to economic development, particularly in developing countries.

Future demand

It is important to note the Paris commitments of 24 countries identified coal-fired power generation as an essential component of the future energy mix to enable meeting the UN Sustainability Development Goals. Globally, 21 countries are currently constructing coal-fired power plants totalling 190GW, including:

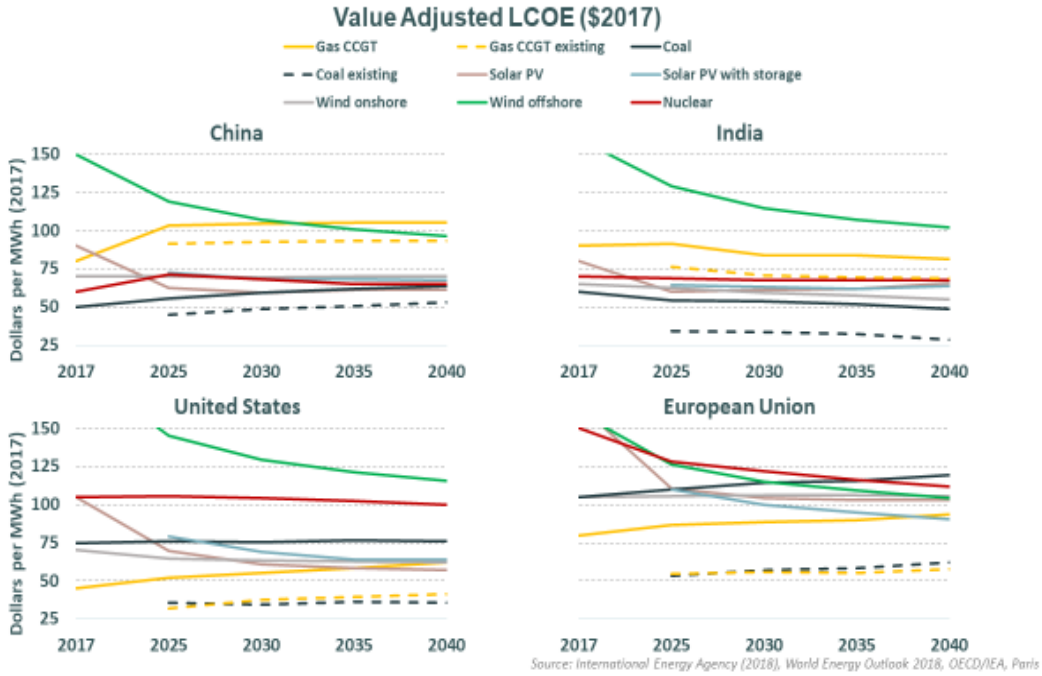
- China – Planning 456 new coal units totalling 252GW, with 98.5GW currently in construction;
- India – Planning 97 new coal units totalling 46.5GW, with 35GW currently in construction;

- Vietnam – Planning 62 new coal units totalling 16GW, with 7.4GW currently in construction;
- Japan – Planning 17 new coal units totalling 6.3GW, with 4.6GW currently in construction;
- Philippines – Planning 34 new coal units totalling 6.6GW, with 4.3GW currently in construction; and
- Rest of Asia – Planning 238 new coal units totalling 86.5GW, with 28GW currently in construction.

The reason for this is straightforward: coal remains the lowest cost fuel for generation of dispatchable power in a wide number of Asian markets.

Cost of electricity

The IEA's 2018 World Energy Outlook includes data on the Value Adjusted Lowest Cost of Energy (VALCOE) employed for various energy sources in different geographies. This data demonstrates that in many advanced economies, renewables are cost-competitive – and in some cases cheaper – than new coal generation, but existing coal generation remains economically viable. Conversely, in developing economies like India, both existing coal-fired power generation and new coal-fired power generation are currently – and will remain – cheaper than other energy sources, including renewables until after 2035.



In October 2019, the Imperial College London published a report which builds on the IEA VALCOE analysis and emphasises the increased electricity system costs if a net zero emissions goal is targeted in 2050 and only renewables electricity generation technologies are utilised.

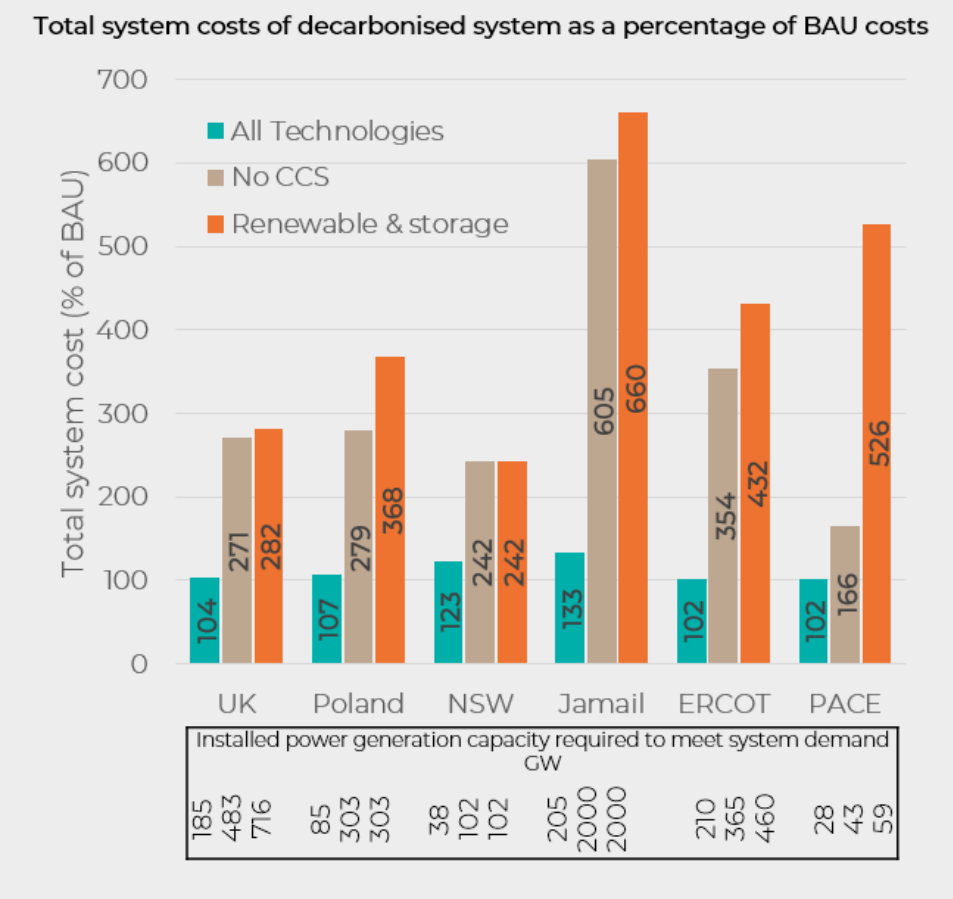
Summarised in the graphic below are the total system costs as a percentage of a business as usual (BAU) scenario in six different locations:

- United Kingdom
- Poland
- NSW, Australia
- Jamali – the Java, Madura, Bali grid of Indonesia
- ERCOT – the Electric Reliability Council of Texas, USA
- PACE – the PacifiCorp East grid, USA.

Where all technologies, including CCUS, are allowed to be deployed, a 2050 net zero emissions objective can be achieved at a cost between 102% and 133% of BAU). However, when CCUS technology is ignored, or only renewables and grid storage technologies are deployed, the cost of achieving net zero in 2050 rises between 166% and 660% of BAU.

These significant cost increases are the result of substantially increased grid expenditure to manage intermittency, plus the need to build substantially more generating capacity in order to have generation supply which can cover demand when renewables supply is underperforming in various locations. This is illustrated in the graphic with the installed generation capacity figures for each region in the respective scenarios.

Importantly, even in building the generation redundancy under the 'No CCUS' and 'Renewables & Storage' scenarios, the Imperial College London modelling shows multiple periods when demand would not be satisfied, resulting in load shedding or potentially brownouts and blackouts.



Global energy demand

It is also important to note that fossil fuels remain a significant portion of the global energy mix under every scenario put forward by the IEA.

The global population is expected to reach 9 billion people by 2040. In other words, the equivalent of three times Australia's current population will be added every single year for the next 20 years.

Global GDP growth is forecast to grow 3.4% year-on-year during this time. The demand for energy – and the increase in this demand over the next 20 years – is substantial. Electrification of energy is a pivotal requirement in order to improve efficiency, reduce pollution and lower carbon emissions.

In the IEA's Stated Energy Policy Scenario, energy demand grows by 13% versus 2019 by 2030 and 77% of primary energy demand will still come from coal, oil and gas. This scenario reflects the stated *ambitions* of governments around the world as part of their commitment to the Paris Agreement.

In the IEA's Sustainable Development Scenario, which illustrates a pathway to achieve the GHG emission reductions that are required to meet the goals of the Paris Agreement, 72% of primary energy demand by 2030 will come from coal, oil and gas.

Global electricity generation increases in all of the IEA Scenarios – including by 27% in the Stated Energy Policy Scenario and by 20% in the Sustainable Development Scenario.

The IEA's World Energy Outlook 2018 says that between 2017 and 2040: "Demand for electricity increases by 60% in the New Policies Scenario… Nearly 90% of the growth in electricity demand occurs in developing countries."

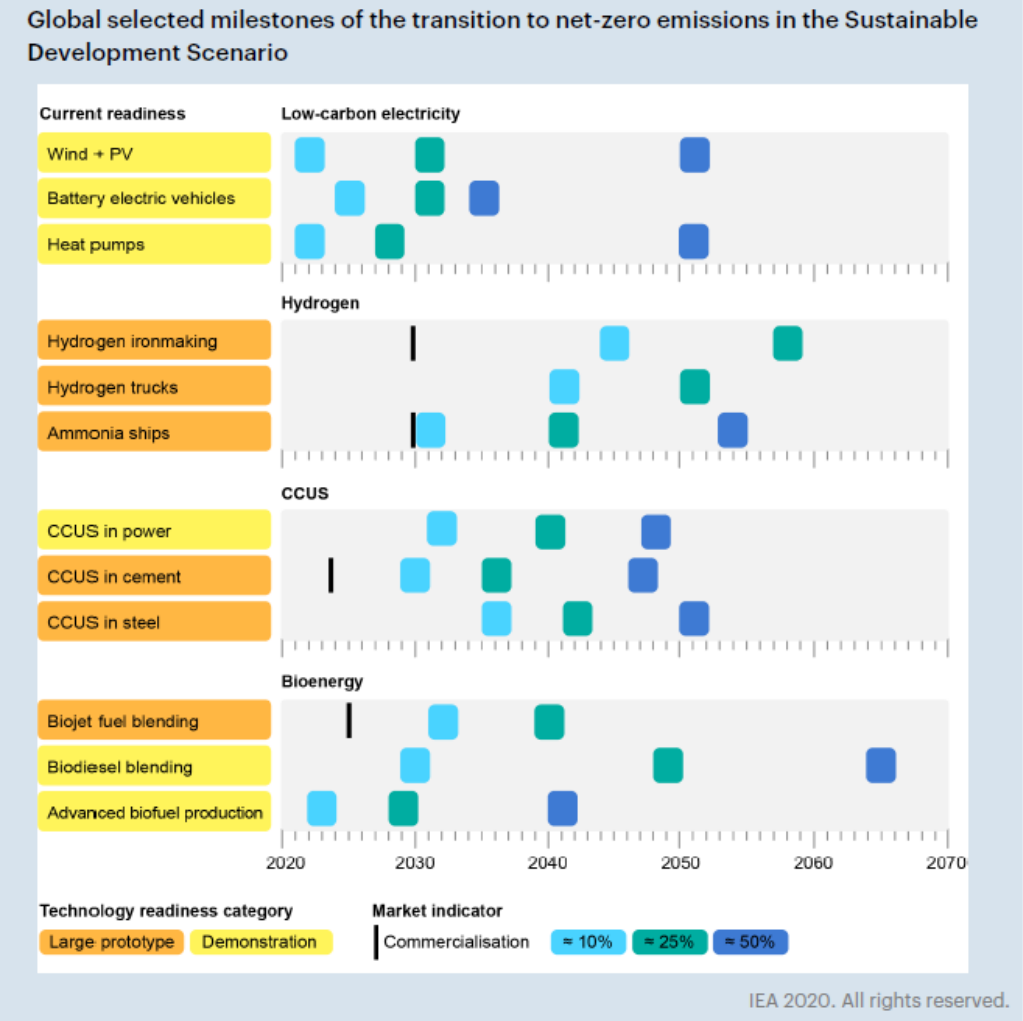
What does 1.5ºC require?

The IEA recently published its 2020 Energy Technologies Perspective Report which examines 800 technology options which could be used to reach net zero emissions globally by 2050.

Building on the Sustainable Development Scenario, which delivers net zero emissions in 2070, the Faster Innovation Case examines the emission reduction options for an additional 10Gt of CO_2e per year.

All technologies will be required with acceleration of investment necessary to bring commercialisation of hydrogen, CCUS and bioenergy within 10 years followed by rapid roll-out of installations, including CCUS with installations covering 50% of emissions globally from the power, cement and steel sectors by 2050[2].

[2] IEA Energy Technology Perspectives 2020



Glencore agrees with key international bodies, including the IEA and the Intergovernmental Panel on Climate Change (IPCC), that investment in High Efficiency, Low Emissions (HELE) technology and CCUS is vital if the world is to successfully meet the goals of the Paris Agreement.

Both technologies are proven, however, CCUS is lagging due to the failure of governments and others to effectively promote it. We believe that energy policy has to recognise the reality of ongoing fossil fuel use (in power generation and industry) and has to lead to the rapid roll-out of CCUS. Importantly, developed economies need to show leadership in demonstrating the capability and affordability of this technology so it can be used globally.

We note that the Australia Federal Government has recently released a Low Emissions Technology Statement as part of a broader Technology Investment Roadmap.

The Statement includes a commitment in a A$1.9 billion energy technology package which includes establishing Australia's first regional hydrogen export hub, a King Review Co-Investment Fund, a CCS Deployment Fund and a Future Fuels Fund to support new and emerging technologies.[3]

[3] https://www.minister.industry.gov.au/ministers/taylor/media-releases/technology-led-plan-lower-emissions-lower-costs-and-support-jobs

Current NSW energy mix

Fossil fuels, including coal and gas, continue to supply the vast majority of Australia's National Electricity Market (NEM) with renewables (wind and solar) accounting for 11.8% in the quarter ending June 2020. In NSW for the year ended June 2019, coal, gas and hydro combined generated 88% of the State's total electricity.[4]

Glencore is supportive of investment in renewable energy and the metals and minerals we produce are essential inputs for a range of lower carbon technologies. However, solar and wind energy is not dispatchable and can only be produced on an intermittent basis.

Dispatchable – always on – energy, such as that generated by coal, will remain very important for grid reliability and stability in NSW for many years to come, even with increased investment in renewable energy.

While gas is also a dispatchable generation source, the limited availability of gas in NSW brings into question the availability and cost of gas and its ability to supplement renewables generation at low cost.

Glencore supports additional comments made on this subject in the NSW Minerals Council submission to this inquiry.

We would also draw the Committee's attention to the NSW Government ***Future of NSW Coal Study*** and the modelling completed by Frontier Economics related to wholesale electricity pricing and economic impact modelling of the future electricity generation market in the National Electricity Market (NEM) and in NSW.

A key implication from the modelling shows that by the 2040s, in every scenario carbon capture and storage (CCS) from coal and/or gas electricity generation will be required in NSW to achieve a significant reduction in CO_2 emissions, including any ambition to achieve a net zero emissions target.

We note the recent announcements made by the Prime Minister regarding Australia's gas-fired recovery[5] and the Federal Government's investment in new energy technologies,[6] both of which are relevant to the terms of reference. We believe the Government's decision to invest $1.9 billion in a suite of new and emerging technologies is a very positive step towards positioning Australia for a low emission future.

The expansion of the remit of the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC) to back new technologies, including CCUS, will support significant emission reduction in Australia.

As previously stated, Glencore's CTSCo Project to capture CO_2 from a coal-fired power station and store it deep underground in the southern Surat Basin is well advanced, with a testing program on appraisal wells for CO_2 storage currently underway.

The storage component of the project provides a potential pathway to an industrial CO_2 storage hub capable of servicing multiple industrial users, including coal, natural gas and hydrogen.

[4] Source: Australian Government Department of the Environment and Energy: Table O May 2020
[5] https://www.pm.gov.au/media/gas-fired-recovery
[6] https://www.pm.gov.au/media/investment-new-energy-technologies

Glencore also considers the question of gas availability and the need to ensure grid stability as essential to this inquiry and, in this regard, discussion with gas producers and all of the major power generator market participants is necessary in order to establish a full picture of the sustainability of energy supply and resources in NSW.

NSW Government Strategic Statement on Coal

During the course of this inquiry, the NSW Government has released its *Strategic Statement on Coal Exploration and Mining in NSW*.

The Strategic Statement acknowledges the significant demand outlook for coal produced in NSW and provides a clear statement of the Government's position on the role that coal will play in both the NSW and global economies over the coming decades. It recognises that:

- 85% of coal produced in NSW is exported;
- There will be sustained demand for thermal coal from Asia for at least several decades, and demand in south-east Asia is increasing;
- Coal exported from NSW represents only 3% of global coal consumption;
- In light of sustained demand, reducing exports from NSW would 'likely have little or no impact on global carbon emissions';
- NSW coal is high quality relative to other sources; and
- Coal mining in NSW generates significant jobs, royalties and social infrastructure.

Glencore considers the NSW Government's Strategic Statement to be a positive development which provides greater certainty to industry, investors and the community on Government policy and the future of coal mining in NSW.

Glencore investment in NSW Coal Operations

Glencore has a consistent record of investment and successful delivery of mining projects in NSW. Over the past decade, Glencore's coal business has invested over $5 billion into developing coal operations in NSW, including:

- **Mangoola:** Glencore purchased the mining tenements in 2008 for $425 million and invested a further $1 billion to develop this greenfield mine near Muswellbrook. Coal production at Mangoola commenced in November 2011 and we are currently seeking Government approval to continue mining operations in a new mining area to the north of the existing activities.

- **Ulan West**: Construction of this $1.3 billion brownfield project commenced in 2011 to create a second underground mining operation at the Ulan coal complex near Mudgee. Coal production from the new Ulan West underground commenced in 2014.

- **Ravensworth North**: This $1.4 billion major brownfield project established a new mining domain in the existing mining region at Ravensworth, near Singleton in the Hunter Valley. The project was completed in 2013 and is one of Glencore's long-life, Tier 1 thermal coal assets.

- **Bulga Optimisation Project:** Bulga Coal has been one of Glencore's stalwart assets in the Hunter Valley operating since 1982. Between 2014 and 2016 Glencore invested $500 million to extend the life of the existing Bulga Open Cut operations to 2035.

- **Mount Owen Continued Operations:** Since 2016, Glencore has invested approximately $150 million in capital projects to augment a rail spur, upgrade a public road and upgrade and improve the existing mining infrastructure at the mine.

- **United Wambo Open Cut:** Together with our joint venture partner Peabody, we are investing over $300 million in this brownfield project. Nearing the end of construction, this will create a new open-cut mine in the Hunter Valley, which will utilise existing mining infrastructure, and combines the existing assets of the previously separate United and Wambo coal mines. First coal production is expected later this year. The project will provide continued employment for 250 people and a further 250 additional jobs in the region.

In 2019 these operations made a very significant contribution to NSW through payment of wages, spend on goods and services, and tax and royalty contribution to Government. In total, our NSW coal operations made the below contributions last year.

Operation	Total contribution	Direct employment
Mangoola Coal	$356 million	420 people
Ulan Coal	$625 million	780 people
Ravensworth Coal	$607 million	800 people
Bulga Coal	$681 million	840 people
Mount Owen Coal	$615 million	860 people
Liddell Coal	$273 million	450 people
Integra Underground	$236 million	330 people
Hunter Valley Operations	$987 million	1,490 people
Total	$4,380 million	5,970 people

Our business is continuing to invest in a pipeline of coal projects that will deliver the following to the State of NSW:

- $350 million investment in infrastructure;
- 1,400 continued employment, plus 645 additional jobs in construction;
- ~$520 million in royalties; and
- ~150 million tonnes of coal production.

Project Name	Type	Employment *	Net economic benefit to NSW (NPV)
Bulga Extension Project	Brownfield	850	$410 million
Mangoola Continued Operations	Brownfield	545	$409 million
Glendell Continued Operations	Brownfield	650	$300 million
Total		2,045	$1,119 million

***** *includes additional, construction & continued employment numbers*

Support for businesses across NSW

Glencore makes a very significant socio-economic contribution to regional communities in NSW. We also take numerous steps to minimise and mitigate our impact on the environment, all of which are integrated into our life-of-mine planning and involve consultation and engagement with local communities.

In addition to our direct employment and total socio-economic contribution (outlined on p1), Glencore is a major buyer of goods and services in NSW, often from small- and medium-sized businesses in regional communities.

In 2019 our Australian coal business procured goods and services from more than 5,200 suppliers. Almost 1,500 of these suppliers are based in the Hunter Valley, Newcastle, Lake Macquarie and the Mid-Western Region, with many in the Local Government Areas in which we operate.

This includes:

- 327 suppliers in Singleton (where our total spend on local goods and services last year was over $382 million);
- 326 suppliers in Newcastle (total spend over $310 million);
- 237 suppliers in Maitland (total spend over $396 million);
- 181 suppliers in Lake Macquarie (total spend over $65 million);
- 140 suppliers in Muswellbrook (total spend over $143 million);
- 181 suppliers in the Mid-Western Region (total spend over $79 million); and
- 85 suppliers in Cessnock (total spend over $286 million).

Glencore's approach to health, safety, environment and community

Glencore's coal business strives to be a responsible operator that acts in accordance with the Glencore company values.

At the heart of these values is the intent to "Protect our people", "Respect the environment" and "Be valued by our communities".

These values are incredibly important to Glencore's Australian coal operations: we simply cannot afford to get it wrong in the areas of health, safety, environment or community.
The starting point for our business is the belief our mining operations can co-exist within each of our communities.

The Hunter Valley in NSW demonstrates this with a number of diverse and successful industries. These include wine makers, horse breeders, cattle graziers, olive growers and coal mining.

It is very important for regions like the Hunter Valley – for employment, for tourism, for younger and future generations – that all these industries continue to be successful for years to come.

Glencore has been a leader in pursuing this desire to co-exist, which we believe is not just about what we say, but about what we do.

For Glencore, this means engaging openly and regularly with our local communities. It means minimising our operations' impact on land, on water, on air quality and on noise, and taking responsibility on the rare occasions that things go wrong and doing everything we can to fix them.

It also means showing that we listen to and engage with our local communities and make changes, where possible to address genuine community concerns.

Glencore's approach to community engagement and consultation

Glencore has demonstrated a preparedness to alter preferred mine plans based on community consultation and engagement.

In 2014, we received approval to extend the life of our Bulga open cut mine in the Hunter Valley. A key feature of this approval process was Glencore's ability to work co-operatively with the community and proactively respond to concerns and issues raised.

As a result our coal business made major changes to our initial mine plans after consulting with more than 400 stakeholders from the local communities and the wider region.

These included:

- Changing the mining direction away from the villages of Broke and Milbrodale;
- Deciding not to relocate a local road (Charlton Road);
- Avoiding disturbance of a sensitive ecological community (the Warkworth Sands woodlands); and
- Significantly reducing the visual and noise impacts from the operation by constructing a 9km visual and noise bund (effectively a man-made screen) around our operations.

This was a clear example of Glencore's preparedness to make material changes which addressed community concerns, but also allowed the mine to expand its operations.

More recently, we also received approval for the Bulga Extension Project (BEP), which adds a further four years to the life of mine. At a time when mining projects are robustly challenged, this approval received just two objections from the local community.

We believe this underlines the findings of our three-yearly community perception studies, for which we engage external parties to conduct surveys of those associated with the communities who host our mining operations.

The most recent of those surveys validated the favourable verbal feedback provided to our sites from local communities about Glencore's focus on mining responsibly and sustainably.

The survey found that Glencore's mean reputation score (effectively, our social licence to operate (SLO)) across all sites had remained around 3.55 out of 5 despite an increasingly challenging environment.

As a point of reference, since the first social licence survey questions were piloted in 2001, Social Licence to Operate scores from more than 2,100 interviews at 40 mining sites in Australia and overseas have produced a mean score of 3.39 out of five (*ACCSR, Stakeholder Perception Research Management Report, 1 March 2016).*

Glencore's commitment to responsible operations

Glencore acknowledges and takes responsibility, on the rare occasions, when outcomes are not aligned to our detailed planning.

In 2013, despite very careful and thorough planning for a longwall panel at our West Wallsend underground mine near Newcastle, our operations resulted in greater than expected subsidence on a steep slope within a remote area of the Sugarloaf State Conservation Area. This was followed by the leakage of grouting material during the remediation process.

Glencore deeply regrets this incident. In response, we focused on developing the best possible remediation methods to put in place to address the impact of the incident.

This resulted in removal of the grout and a subsequent decision was made not to mine an already approved longwall block under a steeper section of the Sugarloaf Conservation Area.

As a consequence of this decision, the life of the mine was shortened. Our West Wallsend mine reached the end of its economic life in 2016, but we continue to monitor and rehabilitate the site.

Environmental performance

Glencore acknowledges that mining has impacts. We are transparent about these impacts and place significant focus on mitigating them as much as possible.

We believe that mining can and does successfully co-exist with other industries in NSW, such as tourism, wine making, horse breeding, olive growing and others.

We believe successful co-existence has wide socio-economic benefits within regional communities, as successful businesses and industries generate and maintain employment, ensuring these communities remain attractive places for families and younger generations.

According to data compiled by the NSW Minerals Council, mining uses about 0.1% of all State land, compared to 77% used by agriculture and 5% for biodiversity conservation.

Throughout our Australian coal business, about 78% of the total land area we manage is used for agricultural purposes. Our wholly-owned Colinta Holdings pastoral business occupies and manages more than 1.2 million hectares of land across our Australian mining operations and projects, including 76,000 hectares (ha) in NSW.

Mine rehabilitation

We understand and accept the responsibility of managing the land we own as productively and sustainably as possible, and to ensure that we rehabilitate and restore mined land progressively during the mine life as well as after mining activities have finished. We go above and beyond Government requirements and our rehabilitation planning ensures our programs are resourced, budgeted and delivered.

In 2019, our Australian coal operations:

- Completed 1,343ha of rehabilitation, the fourth consecutive year that we have rehabilitated more than 1,000ha in a year;
- Invested more than $44 million in rehabilitation work;
- Used more than 2 million cubic metres of topsoil;
- Planted almost 70,000 tubestock and seedlings; and
- Sowed more than 29 tonnes of seed.

At each of our sites, we have land management and rehabilitation requirements that aim to minimise our active mining footprint and assist with ensuring mined land is returned to either self-sustaining native ecosystems, agricultural use, or other suitable purposes that meet requirements set down by Government. The final land use design is done in consultation with local communities surrounding our operations.

We have a number of examples of leading practice mine rehabilitation in NSW.

Our Westside Open Cut site in the NSW Lower Hunter has received Government certification for 38ha of its rehabilitated mined land, a first for the State's coal industry under contemporary mine rehabilitation criteria. Most recently, in March 2020, our Ulan Coal operation in the NSW Mid-Western region also achieved Government signoff on 50ha of its rehabilitation.

At our Liddell open cut mine in the Upper Hunter, we conducted a six-year cattle grazing trial, which concluded in 2018. This involved assessing the performance of cattle grazing on previously mined land compared with natural pastures. Throughout the trial we monitored the performance of cattle and pastures across a range of climatic conditions to ascertain if soil fertility and desirable pasture composition were maintained.

The trial showed that cattle on the rehabilitated pasture performed better than those on natural pasture. Tropical grass species introduced and established in rehabilitation areas proved resilient across the trial and provided higher quality feed than the natural pastures. Cattle on rehabilitated pasture grew significantly quicker, with weight gain on average more than 30% higher than on unmined pastures.

The insights and learnings gained from the trial have been shared across other Glencore mine sites, as well as with others across the industry.

Our Mangoola open cut mine in the Upper Hunter has pioneered the use of natural landform in its rehabilitation. In what is believed to be the largest project of its type in the region, we will return the mine's entire pit disturbance area – some 1,300 hectares – to landform and vegetation consistent with surrounding undisturbed land. The Mangoola project is also believed to be the first Geofluv™ landform design approach constructed in Australia.

Our work in rebuilding Ravensworth State Forest at our Mount Owen open cut mine in the Upper Hunter has been recognised internationally, and has been used as the model for published guidelines on re-establishing native vegetation on disturbed land.

Our rehabilitation work began in 1993 and we have created a remnant woodland area that is five times larger than the original remnant in the Ravensworth State Forest. We have also seen a return of numerous flora and fauna; since 1995, 78 bird species, 25 non-flying mammals, 13 bat species, 9 reptile and 8 amphibian species have been recorded in the rehabilitation.

At our Ulan Coal complex in central-west NSW, we are also carrying out one of the largest White Box Woodland planting programs ever undertaken in the State. To date, we have planted 100,000 trees in offset areas to connect extensive areas of native vegetation to the west of the operations with the Durridgere State Conservation Area and Goulburn River National Park to the north and east of the site.

We also integrate closure planning into our resourcing, budgeting and project delivery. Our Westside mine on the shores of Lake Macquarie, NSW, came to the end of its 20-year mine life in February 2012.

During production, we progressively rehabilitated the site and today it supports second generation tree seedlings, with flora species such as spotted gum, swamp paperbark, red mahogany and black she-oak. Recent monitoring found 69 native fauna species, including seven threatened fauna species, on the rehabilitated site, including grey-headed flying fox, masked owl, greater broad-nosed bat, little bentwing bat, powerful owl and squirrel glider.

Water management

All of Glencore's operations in Australia have comprehensive water management plans that manage water through the climate cycle. The water management plans have the following objectives:

- Secure water resources to supply the needs of a mining operation and minimise risk of production loss;
- Maintain water storages at such levels that mining operations are not substantially affected by adverse climatic conditions;
- Maximise water-use efficiency and reduce the reliance on fresh water supplies;
- Seek opportunities to recycle water; and
- Minimise impacts to the environment as a result of our mining operations.

The majority of the water used at our operations is saline water from the coal seams being mined and the runoff from the active mining areas. This water is generally unsuitable for agricultural and other non-mining uses.

To maximise the reuse of this water captured across our operations in NSW and minimise our take from the Hunter River we have constructed the Greater Ravensworth Water Sharing system that allows this water captured at our Integra, Glendell, Mt Owen, Ravensworth and Liddell operations to be transferred across the network for reuse at any of those facilities.

In 2019, across our Australian coal operations, Glencore sites reused or recycled almost 23,000 megalitres of water, equivalent to more than 9,000 Olympic-sized swimming pools.

As a result of the comprehensive Water Management Plans we have in place at all operations, raw water extraction is no longer the principal source of water for our mines.

Air / Dust / Noise management

We act at all times to go beyond minimum standards for management of air quality, noise and vibration in an effort to be good neighbours with our communities.

To effectively manage air quality, we use real-time monitoring, transparent reporting, emerging technologies and workforce education to assess our actions and improve our performance. This includes stopping operations, if necessary, to manage impacts.

As an example, in response to adverse weather conditions such as dry, dusty conditions or noise enhancing conditions caused by temperature inversions, our Hunter mining operations recorded more than 29,000 hours of downtime in 2019 and over 8,400 hours year-to-date in 2020.

To effectively manage noise and vibration issues, we use real-time monitoring, transparent reporting and emerging technologies to assess our actions and performance.

We have installed and maintain our own network of 100 real time air and noise monitors at our Hunter coal sites and within local communities to effectively gauge potential impacts and identify potential problems before they become an issue for these communities.

This is in addition to the Upper Hunter Air Quality Monitoring Network, created by the Department of Planning, Industry and Environment, in partnership with the Upper Hunter coal and power industries.

We also take practical steps on site to minimise noise and vibration wherever possible including:

- Sound suppression on our equipment: $2 billion has been spent over the last five years to build one of the largest fleets of sound-suppressed mining equipment in the world;
- 24-hour hotlines for residents to report concerns; and
- Immediate investigations into each complaint received.

Community Investment

Glencore's coal business has invested nearly $100 million over the past 14 years in community partnerships in NSW and Queensland, including the implementation of more than 40 major development projects annually with community partner organisations. All of this investment is voluntary and above regulatory requirements.

Of the 41 major partnerships implemented in 2020, all align with at least one United Nations Sustainable Development Goal and some with multiple UNSDGs. Our community partnerships focus on education, health, environment, enterprise development and specific local needs. Some of our Tier 1 partnerships in NSW include:

- Aussie Ark – Glencore has provided $650,000 to help rebuild populations of critically endangered species through the Aussie Ark conservation project in the NSW Upper Hunter.
- John Hunter Hospital – We have provided $1 million in funding that has helped make John Hunter Hospital's Neonatal Intensive Care Unit one of the world's leading units.
- Junior Sports Development Program – We have provided $1.5 million to more than 150 junior sports organisations across NSW and Queensland.
- Rescue Helicopter Services in the Hunter Valley – Our support of $1.3 million over more than a decade has helped provide specialist training for the service's pilots and crew.
- Galuwa Aboriginal Scholarship Program – We have provided more than $1 million for 140 scholarships to help Aboriginal students realise their potential through the Galuwa Program, a unique partnership with the NSW Department of Education.
- Clontarf Foundation – We have supported the establishment of a Clontarf Academy at Singleton High School since 2016, investing $500,000 to improve the education, discipline, life skills, self-esteem and employment prospects of young Aboriginal and Torres Strait Islander men and by doing so, equipping them to participate more meaningfully in society.
- Mudgee4Doctors – Since 2013 we have supported this program with more than $500,000, which has addressed long medical wait times for local residents by successfully attracting and retaining 11 new doctors and their families to the Mudgee Region.
- Upper Hunter Where There's A Will – Since 2017, we have invested $300,000 in this organisation, which works with mental health experts to build capacity, create awareness and educate children to build resilience, empowering them to recognise the challenges of maintaining good mental health.

How the NSW Government can help secure the investment required for sustainable and reliable energy supply, for both domestic and export markets

Glencore believes the most important factor in the long-term sustainability of energy and resources in NSW relates to this State's ability to attract continued investment.

Having regard to the NSW Government's stated position on coal mining in NSW (as outlined in the Strategic Statement on Coal Exploration and Mining), Glencore believes the NSW Government should focus on:

- Delivering energy policy that provides reliable access to low-cost energy for businesses and households in regional communities;
- Taking a technology-neutral approach to energy policy to ensure greenhouse gas emission reductions are delivered at least cost;
- Providing regulatory certainty and an efficient and timely approvals process, in order to provide investors with the confidence to invest in resources projects whose lives are often measured in decades;
- Ensuring transport and local infrastructure is provided and maintained;
- Supporting the development of vital skills in technology, engineering and mining in secondary and tertiary training institutions in both urban and regional areas;
- Delivering labour laws that promote the development of highly skilled and highly productive workplaces; and
- Delivering effective competition laws to provide a robust competitive environment, including appropriate levels of regulation for monopoly infrastructure owners / operators in regional economies.

ENDS