CLEAN ENERGY COUNCIL

ADDRESSING MODERN SLAVERY IN THE CLEAN ENERGY SECTOR

A white paper by the Clean Energy Council
in collaboration with Norton Rose Fulbright Australia

NORTON ROSE FULBRIGHT

Contents

Executive summary 1

Introduction 3

What is modern slavery? 3

What does the *Modern Slavery Act 2018* (Cth) require? 4

The risks of modern slavery in the supply chains supporting the renewable energy sector 5

- Solar 6
- Wind 7
- Lithium-ion batteries (cobalt) 8

Overview of the renewable energy sector in Australia 10

Strategies for managing modern slavery risks 12

- Government strategies 13
- Industry/business response 14
- Investor response 18
- Consumer response 18

Conclusion 19

This white paper has been prepared jointly by the Clean Energy Council, the peak body for renewable energy in Australia, and Norton Rose Fulbright, a leading global law firm with extensive experience in human rights issues.

CLEAN ENERGY COUNCIL | NORTON ROSE FULBRIGHT

We respectfully acknowledge Aboriginal and Torres Strait Islander people as the Traditional Custodians of the lands and waters on which we work and live. We commit to collaborate with First Nations communities, to promote sustainable practice, protect ancient sites and culture with equitable access to the benefits of clean energy. Sovereignty has never been ceded. We acknowledge Elders, past and present, and their continuing culture and connection to Country.

Disclaimer: The photos used in this white paper are for illustrative purposes only. No inference should be made that the projects or components displayed are in any way connected to modern slavery.

Executive summary

Renewable energy is the central technology required for the critical task of decarbonising global energy systems. With governments and investors around the world scaling up efforts to tackle climate change, the roll-out of renewable energy is on track for a rapid acceleration. Australia's renewable energy sector shares this trajectory, and is anticipated to grow from around 40 GW of large-scale wind/solar/hydro projects and rooftop solar capacity in 2022 to over 200 GW by 2050.

Beyond decarbonisation, this transformation of the energy sector brings significant job creation and investment. However, in recent years, evidence has emerged linking supply chains for renewable energy products to modern slavery. While renewable energy is not unique in this regard – with long and complex supply chains, the production and distribution of many products in today's economy are increasingly being linked to modern slavery – it is an issue that the renewable energy industry must take seriously. The undisputed benefits of clean energy when it comes to climate change does not absolve the industry of its impacts in other areas.

This white paper has been prepared jointly by the Clean Energy Council, the peak body for renewable energy in Australia, and Norton Rose Fulbright, a leading global law firm with extensive experience in human rights issues.

The aims of the report are to raise awareness of the issue across industry, bring focus to the possible pathways for addressing it and to hopefully create a clear starting point from which the industry and a wide range of stakeholders can collaboratively develop effective strategies and actions to eliminate modern slavery from clean energy supply chains as Australia embarks on a critical phase of its energy transformation.

This report begins with an overview of international and Commonwealth frameworks on modern slavery. The *Modern Slavery Act 2018* (Cth) has been in place since 2018 and focuses on a mandatory reporting requirement on large companies that aims to both improve transparency and bring greater corporate attention to the issue. Analysis by others of modern slavery statements submitted under the Act report on a range of shortcomings, including a tick-box approach to compliance, failure to identify or disclose obvious modern slavery risks and failure to demonstrate effective actions to address those risks. At the time of writing, the Act is in the midst of being reviewed.

This report provides a summary of available evidence linking modern slavery to clean energy supply chains, covering solar, wind and battery technologies.

The main points of exposure include the manufacture of components and the extraction of raw materials. In some instances, such as the production of the polysilicon that is a key component in solar panels, the primary market that uses the product linked to modern slavery is renewable energy. In other cases, renewable energy is just one of many end users, such as the use of copper. For some

raw materials, such as cobalt and nickel, renewable energy currently consumes only a small fraction of global output, but the accelerating energy transition will make renewable energy a dominant end-user over the coming decades. This creates the potential for the clean energy sector to wield greater influence over the integrity of these supply chains.

Despite the lower risk of modern slavery occurring in Australia, the industry still has an important role in contributing to efforts to eliminate modern slavery occurring in other countries as part of the industry's supply chains.

In that context, the report then explores a range of possible strategies that already exist for addressing the sector's exposure to modern slavery. The UN Guiding Principles on Business and Human Rights (UNGPs) provide an important framework, specifically:

- the state's duty to protect human rights
- the business responsibility to respect human rights
- providing access to remedies for victims of business-related human rights harm.

Of particular relevance to businesses is the requirement of the UNGPs to avoid causing or contributing to modern slavery through their activities.

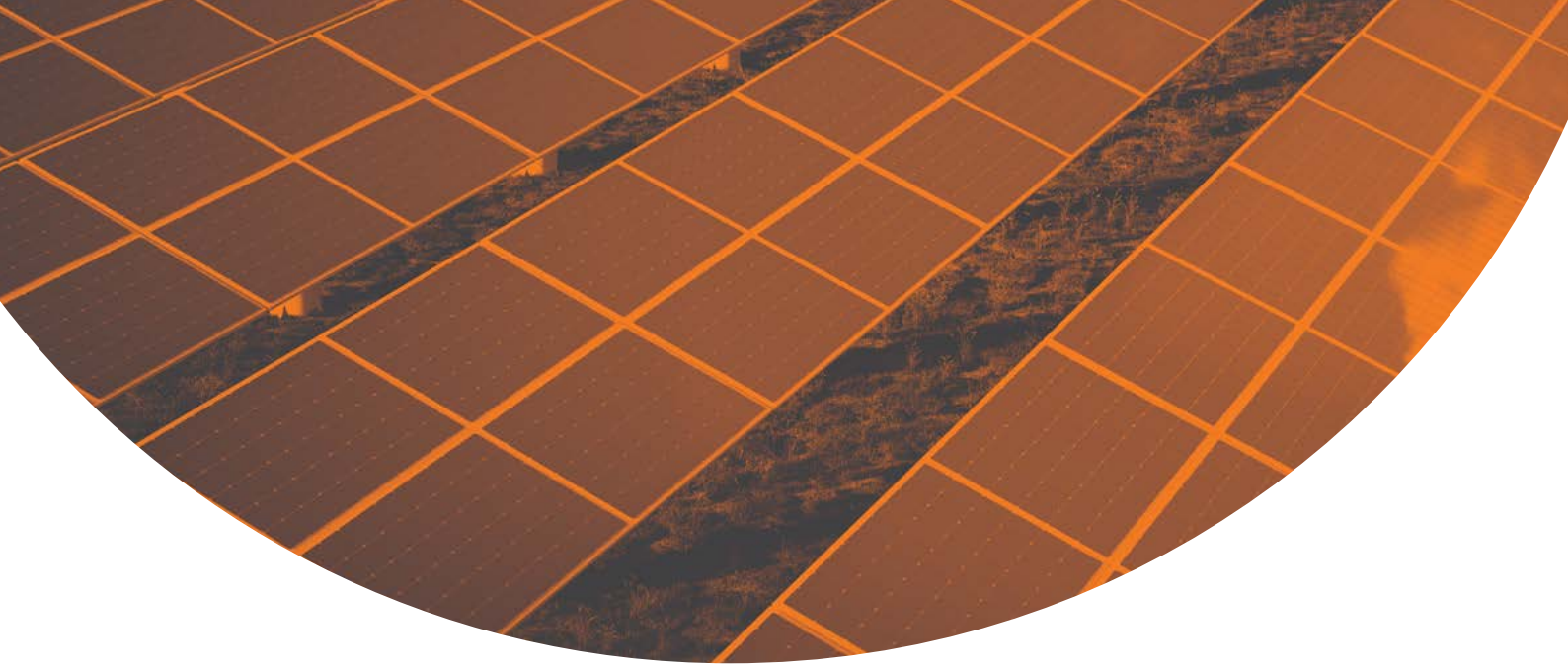
Key strategies available to governments in the context of clean energy include the development of domestic manufacturing capabilities – where better labour standards can be more clearly enforced – and implementing certification systems to support sanctions. Each of these strategies could be explored in Australia, though each has complexity and nuance that means implementation must be done carefully, both to ensure effectiveness and to minimise disruption to the country's energy transition.

Critical roles for industry include:

1. **Creating a culture of awareness.** Establishing internal commitments and creating a culture of improving awareness is an effective way to address modern slavery.
2. **Conducting supplier due diligence.** Examining supply chains and requiring clear information from suppliers is an essential step towards firstly understanding a company's exposure and then identifying actions to take. In some cases, due diligence efforts have allowed individual companies to verify that their supply chains avoid high-risk factories or regions. However, practical limitations may exist in circumstances where independent auditing of facilities in certain locations is not possible, typically due to geopolitical constraints.
3. **Using influence to drive change.** Using leverage can encourage others to adopt adequate procedures to assess and address modern slavery risks and provide remedy in accordance with the UNGPs.
4. **Understanding remedy.** Businesses should look to develop remediation frameworks for adverse human rights impacts and provide effective grievance mechanisms.
5. **Collaboration.** Recognising that modern slavery is typically part of a broader industrial ecosystem rather than one company's supply chain, businesses should seek (or create) opportunities to work collaboratively with government and non-government agencies to work towards solutions.

Investors and consumers also have an important role to play, particularly through using their financial leverage in requiring, or demonstrating a preference for, more ethically manufactured products.

Challenges of geopolitics and lack of transparency add to the complexity of finding effective strategies for reducing, and ideally eliminating, modern slavery from Australia's clean energy supply chains. However, the industry is committed to action on this issue to ensure that the very important transition to clean energy is also a just transition. We look forward to working collaboratively across industry and with government agencies and civil society stakeholders to achieve this outcome.



Introduction

Many products that feature modern technology have long and complex supply chains. Renewable energy is no different. Renewable energy is essential to decarbonising both global and Australian electricity systems and thus plays a central role in addressing climate change. However, in recent years growing evidence has emerged that some supply chains for renewable energy products are linked to modern slavery.

This white paper seeks to raise awareness of modern slavery issues that arise in the production, procurement and supply of renewable energy. It aims to provide a high-level guide in relation to the modern slavery risks in the sector globally and present some solutions on how these risks may be addressed. It does not purport to describe exhaustively the human rights impact in the sector, or provide a complete solution to a complex, ever-developing issue.

What is modern slavery?

At its broadest, the term 'modern slavery' refers to any situations of exploitation where a person cannot refuse or leave work because of threats, violence, coercion, abuse of power or deception. The Australian *Modern Slavery Act 2018* (Cth) (MSA) defines modern slavery to incorporate conduct that would constitute an offence under existing human trafficking, slavery and slavery-like offence provisions set out in Divisions 270 and 271 of the *Commonwealth Criminal Code* (Cth). As defined in the MSA, modern slavery therefore encompasses slavery, servitude, the worst forms of child labour, forced labour, human trafficking, debt bondage, slavery-like practices, forced marriage and deceptive recruiting for labour or services.

Internationally, the Forced Labour Convention 1930 (No. 29) defines forced labour as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily."[1] In April 2022, the Australian Government ratified[2] the International Labour Organization Protocol of 2014, an update to the 1930 Convention that obliges each member to "take effective measures to prevent and eliminate its use, to provide to victims protection and access to appropriate and effective remedies, such as compensation, and to sanction the perpetrators of forced or compulsory labour."[3]

---

1 International Labour Organization, *Forced Labour Convention*, 1930 (No. 29), ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/documents/genericdocument/wcms_346435.pdf

2 Australian Government, *Australia ratifies International Forced Labour Protocol*, foreignminister.gov.au/minister/marise-payne/media-release/australia-ratifies-international-forced-labour-protocol

3 International Labour Organization, *Protocol of 2014 to the Forced Labour Convetion*, 1930 ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:3174672

What does the *Modern Slavery Act 2018* (Cth) require?

The MSA imposes mandatory reporting obligations on Australian entities or those that carry on business in Australia with a minimum annual consolidated revenue of $100 million. The MSA commenced on 1 January 2019, following an inquiry by the Joint Standing Committee on Foreign Affairs, Defence and Trade into whether such legislation was required. Following the UK's enactment of the *Modern Slavery Act 2015*, the Australian legislation developed its own modern slavery reporting regime, which became the high-water mark for modern slavery reporting globally as a result of its adoption of mandatory reporting criteria.

The MSA reporting criteria relate to the risk of modern slavery in the operations and supply chain of a reporting entity (and its owned and controlled entities), as well as the steps it has taken to respond to the risks identified. Reporting entities must have a reasonable basis for any opinions expressed in their modern slavery statement. The reporting criteria are (emphasis added):

1. the identity of the reporting entity
2. the structure, operations and supply chains of the reporting entity
3. **the risks of modern slavery practices in the operations and supply chains of the reporting entity, and any entities that the reporting entity owns or controls**
4. **the actions taken by the reporting entity and any entity that the reporting entity owns or controls, to assess and address those risks**
5. how the reporting entity assesses the effectiveness of such actions
6. the process of consultation with any entities the reporting entity owns or controls or is issuing a joint Modern Slavery Statement with
7. any other information that the reporting entity, or the entity giving the statement, considers relevant.

Statements must be submitted annually to the Australian Border Force, within six months after the reporting entity's year-end. Each statement requires the approval of the Board (or equivalent) and the signature of a responsible member of the entity (e.g. a Director). Entities that are not required to submit a statement may also choose to do so voluntarily.

If a reporting entity fails to provide a statement, the Minister may ask it to explain its failure to comply, and/or require the entity to undertake specified remedial action within a set time. The Minister has discretion to publicly list the businesses along with the details of their non-compliance.

There are currently no financial penalties for non-compliance with the MSA, but the legislated three-year review of the Act (occurring in late 2022) is required to consider whether additional measures such as civil penalties are necessary or desirable.

Reviews of reporting under the MSA's requirements by both the Australian Council of Superannuation Investors[4] and the Human Rights Law Centre[5] have revealed similar trends:

- most companies provide superficial compliance but some are potentially non-compliant
- companies are failing to identify or disclose obvious modern slavery risks
- few companies apply the approach comparable to the 'cause', 'contribute', 'directly linked' continuum as set out in the UNGPs
- companies are failing to demonstrate effective actions to address these risks, such as using leverage with suppliers or providing grievance mechanisms.

The risks of modern slavery in the supply chains supporting the renewable energy sector

The expansion of renewable energy is playing, and will continue to play for many decades to come, an essential role in the collective response to climate change. It is enabling the transition away from carbon-intensive fossil fuel energy sources such as coal and gas. As electricity grids around the world decarbonise through the uptake of renewable energy, this clean electricity then facilitates further emissions reductions by electrifying other forms of energy usage, such as transport, heating of buildings and industrial processes. Combined, these sectors (for which renewable energy is the best decarbonising solution) account for around 75 per cent of global emissions.

Despite this significant public good that renewable energy provides, the industry should still be subject to the same scrutiny as any other. This scrutiny has led to concerns of the risk of modern slavery and other impacts upon worker rights in the supply chains of participants in the sector. The highest profile risks of modern slavery faced by the global clean energy sector are discussed in the following sections.

In addition to these technology-specific risks, renewable energy companies also need to manage the exposure to modern slavery that is shared by almost all organisations in their general procurement, operations, logistics and investments.

---

[4] Australian Council of Superannuation Investors, *Moving from paper to practice: ASX200 reporting under Australia's Modern Slavery Act*, July 2021, acsi.org.au/research-reports/moving-from-paper-to-practice-asx200-reporting-under-australias-modern-slavery-act/

[5] A Sinclair and F Dinshaw, Human Rights Law Centre, *Paper Promises? Evaluating the early impact of Australia's Modern Slavery Act*, February 2022, static1.squarespace.com/static/580025f66b8f5b2dabbe4291/t/6200d3d9db51c63088d0e8e1/1644221419125/Paper+Promises_Australia+Modern+_Slavery+Act_7_FEB.pdf

Solar

In recent years, media and non-government organisations have published detailed allegations of forced labour within the global solar supply chain. The reported risks are linked to the Xinjiang Uyghur Autonomous Region (Xinjiang) of China, the origin of approximately 40-45 per cent of the world's solar-grade polysilicon – a key component of 95 per cent of the world's solar modules.[6] Approximately 2.6 million Uyghur and Kazakh citizens are alleged to be subjected to "surplus labour" programs and face significant coercion, re-education programs and internment.[7] There are concerns that many workers in these programs are unable to refuse such work or are ultimately unable to leave these jobs.

Beyond solar supply chains in particular,[8] the United Nations Office of the High Commissioner (OHCHR) for Human Rights published a report in August 2022 that found that "serious human rights violations" and "severe and undue restrictions on a wide range of human rights" have been committed in Xinjiang as part of a Chinese Government program of counter-terrorism and counter-"extremism" strategies.[9] The report states

> *"The extent of arbitrary and discriminatory detention of members of Uyghur and other predominantly Muslim groups, pursuant to law and policy, in context of restrictions and deprivation more generally of fundamental rights enjoyed individually and collectively, may constitute international crimes, in particular crimes against humanity."*[10]

China vehemently denies these allegations.[11] Independent audits of the sites involved have, however, been impossible. In the absence of independent audits, the available evidence shows that there remains a significant risk that any solar cell manufactured in Xinjiang, or incorporating polysilicon manufactured in the region, is implicated in forced labour. The US Government has listed polysilicon from China as a material it has reason to believe has been produced by child/forced labour[12] and identified it as a high-priority sector for customs enforcement under its *Uyghur Forced Labor Prevention Act*.[13] The high proportion of global polysilicon that is manufactured in Xinjiang means that the risk of forced labour entering into the supply chains of Australia's solar energy industry is significant.

---

6 J Cockayne, E Rodríguez Huerta and O Burcu, University of Nottingham Rights Lab, *"The Energy of Freedom"? Solar energy, modern slavery and the just transition*, April 2022, nottingham.ac.uk/research/beacons-of-excellence/rights-lab/resources/reports-and-briefings/2022/march/the-energy-of-freedom-full-report.pdf

7 L T Murphy and N Elimä, Sheffield Hallam University and Helena Kennedy Centre for International Justice, *In broad daylight: Uyghur forced labour and global solar supply chains*, May 2022, shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/in-broad-daylight

8 The Australian Strategic Policy Institute has identified 82 well-known global brands, across a range of industries, linked to Xinjiang labour transfer programs. V Xiuzhong Xu, *Uyghurs for sale: Re-education, forced labour and surveillance beyond Xinjiang*, March 2020, aspi.org.au/report/uyghurs-sale

9 Office of the UN High Commissioner for Human Rights, *OHCHR Assessment of human rights concerns in the Xinjiang Uyghur Autonomous Region, People's Republic of China*, August 2022, ohchr.org/sites/default/files/documents/countries/2022-08-31/22-08-31-final-assesment.pdf

10 Ibid.

11 Global Times, *Chinese FM calls US 'epicenter' of forced labor after claims against Xinjiang's PV sector*, 8 June 2022, globaltimes.cn/page/202206/1267623.shtml. See also the response to the Office of the UN High Commissioner for Human Rights report by the Permanent Mission of the People's Republic of China to the United Nations Office at Geneva: ohchr.org/sites/default/files/documents/countries/2022-08-31/ANNEX_A.pdf

12 US Department of Labor, *US Department of Labor adds polysilicon from China to 'List of goods produced by child labor or forced labor'*, 24 June 2021, dol.gov/newsroom/releases/ILAB/ILAB20210624

13 Department of Homeland Security, *Strategy to prevent the importation of goods mined, produced, or manufactured with forced labor in the People's Republic of China*, 17 June 2022, dhs.gov/sites/default/files/2022-06/22_0617_fletf_uflpa-strategy.pdf

Wind

It is reported that the rapid growth in demand for balsa wood used within wind turbine blades has led to many workers in the Amazon region of Ecuador to be subject to substandard labour conditions, with payment allegedly made at least partially in the form of alcohol or drugs.[14] The increase in Amazonian logging to meet this demand has also led to concerns of deforestation and the incursion upon the land rights of the local indigenous populations, including in Peru.[15] Deforestation in the Amazon has been linked to instances of labour exploitation, where workers are subjected to modern slavery practices.[16]

Some balsa wood suppliers are now able to provide Forest Stewardship Council certifications[17], which verifies responsible forest management, community consultation, and fair wages and work environments. There is also a shift away from balsa wood. Consultancy Wood Mackenzie estimated in 2020 that volumes of balsa wood used in turbine blades will decline slightly from 2019 to 2023, with a significant growth in alternative light-weight materials such as polyethylene terephthalate (PET).[18]

The minerals used in the manufacture of wind turbines, and across many other industries, are also cause for concern. The World Bank estimates a 250 per cent rise in demand for key minerals used in wind turbines under climate action scenarios in which global temperatures are kept to within 2°C of warming. A single 3 MW wind turbine alone contains approximately 4.7 tons of copper.[19] The Business and Human Rights Resource Centre has recorded at least 74 allegations of human rights impacts in relation to copper mining companies worldwide. Manganese is similarly an important component of wind turbines and while its production has not to our knowledge been linked to modern slavery explicitly, there are broader human rights concerns in its supply chains. These include severe health conditions such as asbestos poisoning and tuberculosis, and exploitation, particularly of women and girls.[20]

---

[14] The Economist, *The wind-power boom set off a scramble for balsa wood in Ecuador*, 30 January 2021, economist.com/the-americas/2021/01/30/the-wind-power-boom-set-off-a-scramble-for-balsa-wood-in-ecuador

[15] A Rodriguez Zunino, M Norman and S Tenorio Fenton, Forest Trends, *Gone with the wind: China's balsa wood consumption is exposing flaws in Peru's forest regulations and enforcement regime*, June 2022, forest-trends.org/publications/gone-with-the-wind-balsa

[16] J L Decker Sparks, D S Boyd, B Jackson, C D Ives and K Bales, One Earth, *Growing evidence of the interconnections between modern slavery, environmental degradation, and climate change*, 2021, sciencedirect.com/science/article/pii/S2590332221000610

[17] Composites World, *3A composites core materials passes annual FSC review*, December 2021, compositesworld.com/news/3a-composites-core-materials-passes-annual-fsc-review-

[18] Wood Mackenzie, *Global wind turbine supply chain trends 2020*, woodmac.com/our-expertise/focus/Power--Renewables/global-wind-turbine-supply-chain-trends-2020

[19] N Hume and H Sanderson, Australian Financial Review, *Clean energy is driving a copper supercycle*, 9 June 2021, afr.com/companies/mining/clean-energy-is-driving-a-copper-supercycle-20210609-p57zhp

[20] A González, SOMO, *How the green energy transition fuels human rights abuses in South Africa*, 16 June 2021, somo.nl/the-green-energy-transition-could-fuel-human-rights-abuses-as-new-research-exposes-health-and-social-impacts-of-manganese-mining-in-south-africa

Some turbine manufacturers also produce either full concrete or hybrid towers in their catalogue, which are made of concrete segments. The US Department of Labor lists cement as a material it has reason to believe has been produced by child/forced labour, with the raw materials used in cement typically coming from high-risk geographies and subject to complex supply chains.[21] However, this is not understood to be an issue for Australia's clean energy industry due to the dominance of steel towers and the high domestic production of cement. Large amounts of concrete are required for the foundations for each wind turbine, but this is locally sourced.

Lithium-ion batteries (cobalt)

Lithium-ion batteries now account for over 50 per cent of global cobalt consumption, and with electric vehicle sales predicted to surge from 6.5 million in 2021 to 66 million by 2040,[22] this demand looks only set to increase. In 2021, the cobalt market showed unprecedented demand growth of 22 per cent.[23] Further, global refined cobalt production is expected to increase by 38.5 per cent by 2025, reaching 223,000 tonnes per year.[24] Despite these projections, it is worth noting that battery chemistries are shifting to requiring lower proportions of cobalt as well as cobalt-free chemistries.[25]

The modern slavery concerns surrounding cobalt primarily rest with small-scale mining in the Democratic Republic of the Congo (DRC), in which approximately 250,000 people, including at least 35,000 children, work in artisanal mines,[26] many of whom could be counted as subject to forced labour or modern slavery.[27] It is estimated that approximately 15–30 per cent of global cobalt production is sourced from DRC artisanal mining.[28] Workers in this sector are predominantly economic migrants from the DRC's less wealthy interior, increasing their risk of exploitation. Research by Amnesty International found that children as young as seven are working in cobalt mines, often for less than $2 a day.[29] Mining conditions are reported to be hazardous and workers often do not have adequate protective equipment and are exposed to toxic cobalt dust, which is a known contributor to hard metal lung disease. The pressures upon the local population to engage in dangerous mining practices has only increased with the COVID-19 pandemic, which aligned with a 26 per cent global increase in the sales of electronic devices.[30] Whilst the DRC is undoubtedly of central concern for modern slavery risk in cobalt extraction, other key producing countries have also faced accusations of forced labour, including Zambia.[31]

---

21 US Department of Labor, *2020 list of goods produced by child labor or forced labor*, September 2020, dol.gov/agencies/ilab/reports/child-labor/list-of-goods

22 M Davies, ABC News Foreign Correspondent, *Blood cobalt*, 24 February 2022, abc.net.au/news/2022-02-24/cobalt-mining-in-the-congo-green-energy/100802588

23 Cobalt Institute, *Cobalt Market Report 2021*, May 2022, cobaltinstitute.org/wp-content/uploads/2022/05/FINAL_Cobalt-Market-Report-2021_Cobalt-Institute-1.pdf

24 C Erickson, S&P Global, *Global cobalt supply deficit 'not as dire' analysts say*, 28 September 2021, spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/global-cobalt-supply-deficit-not-as-dire-analysts-say-66734094

25 B Hays, UPI, *Lithium ion batteries going cobalt-free; nickel next on the chopping block*, 13 April 2022, upi.com/Science_News/2022/04/13/cobalt-free-lithium-ion-auto-batteries/1731649255014

26 S Kara, The Guardian, *Is your phone tainted by the misery of the 35,000 children in Congo's mines?*, 12 October 2018, theguardian.com/global-development/2018/oct/12/phone-misery-children-congo-cobalt-mines-drc

27 B K Sovacool, The Extractive Industries and Society, *When subterranean slavery supports sustainability transitions? Power, patriarchy and child labor in artisanal Congolese cobalt mining*, 2021, sciencedirect.com/science/article/pii/S2214790X20303154#sec0017

28 J Cockayne, E Rodríguez Huerta and O Burcu, *"The Energy of Freedom"? Solar energy, modern slavery and the just transition*, University of Nottingham Rights Lab, April 2022, nottingham.ac.uk/research/beacons-of-excellence/rights-lab/resources/reports-and-briefings/2022/march/the-energy-of-freedom-full-report.pdf

29 Hermes, Human Trafficking Search, *Modern slavery: The true cost of cobalt mining*, 2017, humantraffickingsearch.org/resource/modern-slavery-the-true-cost-of-cobalt-mining

30 E Tria, Humanium, *The impact of Covid-19 on child labour in cobalt mines in the DRC*, 4 May 2021, humanium.org/en/the-impact-of-covid-19-on-child-labour-in-cobalt-mines-in-the-drc

31 SwedWatch, *Powering the mobile world: Cobalt production for batteries in the DR Congo and Zambia*, November 2007, germanwatch.org/sites/default/files/press_release/2269.pdf

There are also other key minerals necessary for producing lithium-ion batteries that are known to be the product of forced labour. Whilst amounts vary depending on battery type, a single car lithium-ion battery pack could contain around 8 kg of lithium, 35 kg of nickel, 20 kg of manganese and 14 kg of cobalt.[32] Nickel has come under particular scrutiny. For example, in the Philippines, which is one of the world's largest nickel producers, it was recently reported that labour hire companies were employing workers without contracts, delaying the payment of wages and not paying compulsory employee benefits (including social security and health insurance).[33] While the renewable energy industry is currently only a small fraction of the global nickel market (8 per cent in 2020), it is forecast to potentially consume over half of global supplies by 2040.[34]

Such reports emphasise the importance of remaining vigilant of the modern slavery risks present across the entire lithium-ion battery supply chain – not just cobalt from the DRC.

Further, as all renewable energy technologies and battery chemistries evolve, the industry should seek to ensure that supply chains for new materials are free from modern slavery.[35]

---

[32] D Castelvecchi, Nature, *Electric cars and batteries: How will the world produce enough?*, 17 August 2021, nature.com/articles/d41586-021-02222-1

[33] Amnesty International, *Philippines: Undermining worker's rights – Labour rights abuses in nickel supply chains*, 26 August 2021, amnesty.org/en/documents/asa35/4389/2021/en/

[34] International Energy Agency, *The role of critical minerals in clean energy transitions*, March 2022, iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary

[35] For example, PET is starting to replace balsa wood in wind turbine blades and cobalt is being replaced in some batteries with other metals. Due diligence should be conducted into the supply chains of these replacement materials.

Overview of the renewable energy sector in Australia

Due to the global nature of supply chains, renewable energy in Australia is as exposed to these modern slavery risks as much as any other country. The forecast growth in renewable energy in Australia means understanding and acting on these risks is essential.

In 2021, over 32 per cent of Australia's total electricity came from renewable energy,[36] cementing the rapid renewable transition currently unfolding across Australia's energy sector. The proportion of Australia's electricity coming from renewables has almost doubled in the past five years.[37]

Solar is the largest contributor to renewable energy in Australia, with 25 per cent of all renewable energy coming from rooftop solar and a further 13 per cent coming from large- and medium-scale solar projects.[38] Wind farms produce almost as much as solar – 36 per cent of all renewable energy generated in Australia.[39] Hydro power also represents a substantial component of the sector, accounting for 21.6 per cent.[40] Rounding out the renewable energy mix, bioenergy is responsible for 4.3 per cent of Australia's renewable energy generation.

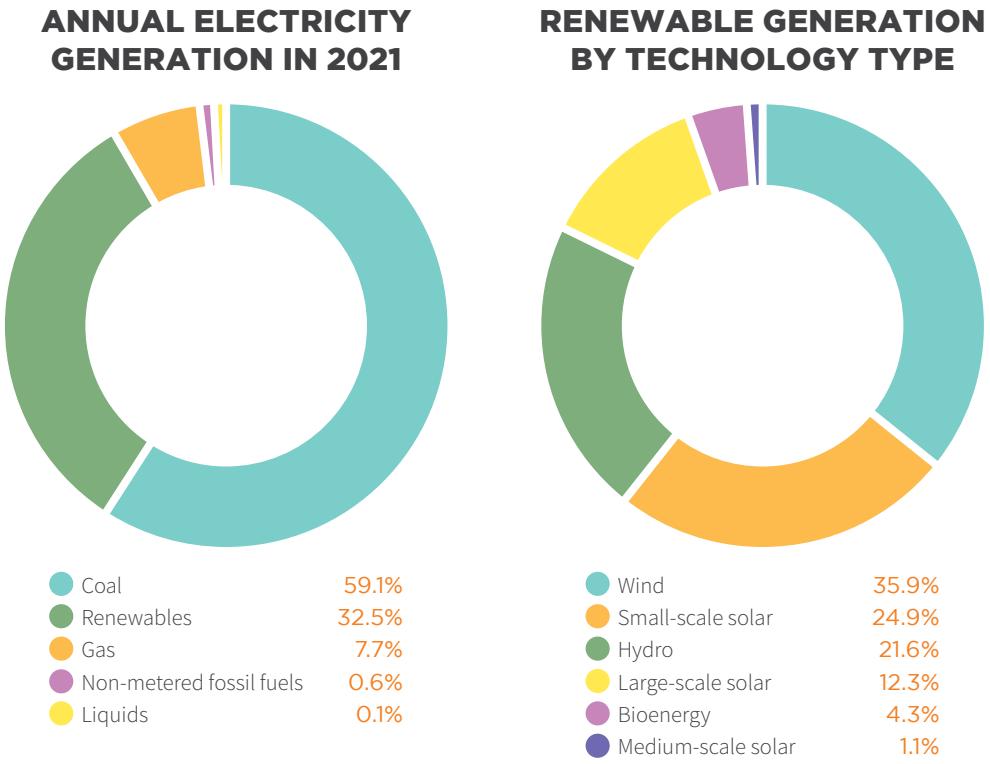


Figure 1: Renewable energy penetration in Australia: 2021

---

[36] Clean Energy Council, *Clean Energy Australia Report 2022*, 1 April 2022, assets.cleanenergycouncil.org.au/documents/resources/reports/clean-energy-australia/clean-energy-australia-report-2022.pdf

[37] Ibid

[38] Ibid

[39] Ibid

[40] Ibid

The industry is experiencing pronounced growth. Much of this recent growth is due to the small-scale solar sector, which added more than 3.3 GW of new capacity in 2021, a fifth-straight record breaking year. At the end of 2021, there were 68 large-scale wind and solar projects under construction or financially committed, representing more than 9 GW of new capacity and creating 35,000 jobs.[41] Of these projects, 42 were large-scale solar farms, 19 were wind farms, three were bioenergy plants, two were hydropower projects and two were hybrid wind and solar plants.[42]

The most likely scenario for Australia's energy mix over coming decades, according to the Australian Energy Market Operator's (AEMO) *2022 Integrated System Plan*,[43] is that around 83 per cent of Australia's electricity will come from renewable energy by 2030. By 2050, it is estimated that distributed energy (mostly rooftop solar) will have increased from the current level of 15 GW to around 69 GW.[44] Large-scale wind and solar projects will have increased ninefold, from 15 GW currently to around 141 GW.[45]

This is seen to be the lowest cost approach to supplying electricity to Australian energy consumers over coming decades. Another scenario, referred to as 'Hydrogen Superpower' by AEMO,[46] contemplates even greater levels of renewable energy that could be built to support the production of green hydrogen – an export market that could replace the expected decline in revenue from Australia's coal and gas exports. Whichever scenario unfolds, it is important to highlight the scale of growth anticipated in Australia's renewable energy industry.

This surge in renewable energy will require significant growth in energy storage. Unlike traditional fossil fuel-based power generation, renewable sources such as wind and solar are variable, meaning that electricity output will vary depending on the prevailing weather conditions. This has given rise to a rapidly evolving renewable energy storage industry. One of the core components of this industry is lithium-ion batteries, which are playing an increasingly essential role in providing storage capacity for both household solar systems and grid-connected facilities.

Another major component of the future energy storage mix is pumped hydro energy storage, which aims to create a "closed loop" form of hydro power, whereby water released to generate electricity is captured in a lower reservoir and then pumped back uphill (likely at times of high wind and solar production) so it can be released again when required.

---

41 Ibid

42 Ibid

43 Australian Energy Market Operator, *2022 Integrated System Plan*, June 2022, aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp

44 Ibid

45 Ibid

46 Ibid

Strategies for managing modern slavery risks

Given the complexity of the human rights impacts deep within the supply chains of the renewable energy sector, the issues must be addressed strategically and collectively. As described above, the links between the renewable energy sector and modern slavery are not homogenous; actions need to be targeted to the specific risks identified and their causes. The strategies that follow are presented as starting points and need to be reviewed and assessed for relevance to a specific risk being managed.

One challenge for Australia in responding to modern slavery in renewable energy is our role as a relatively minor player in the global industry. Australia has around 2 per cent of installed global solar power capacity. Despite a high per capita rate of installations, only around 1 per cent of solar panels installed in 2021 were installed in Australia. Our purchasing patterns alone will not influence global supply chains, but we still have a responsibility to play our role to eliminate modern slavery from our own supply chains and to contribute to global efforts.

The UNGPs provide the framework to respond to these risks.[47] The UNGPs are an authoritative global standard that operates on a three-pillar framework, known as the Protect, Respect, Remedy Framework, which consists of:

- Pillar I: The state duty to protect human rights.
- Pillar II: The business responsibility to respect human rights.
- Pillar III: Access to remedy for victims of business-related human rights harm.

Pillar II requires businesses to avoid "causing or contributing to adverse human rights impacts through their own activities", covering its business partners and supply chains. Corporate policy commitments, due diligence processes and provision of or cooperation with remediation mechanisms are part of meeting the expectations of this Pillar.

These three pillars must form the foundation of strategic responses from business (including investors) and government in responding to modern slavery. Parallel action is also needed from non-institutional investors and consumers.

Aligned with the UNGPs are the Organisation for Economic Co-operation and Development's (OECD) *Guidelines for Multinational Enterprises – Responsible Business Conduct Matters*. These provide guidance on risk-based due diligence (including for particular sectors, including minerals) and using leverage in supply chains to support businesses to make positive contributions to sustainable development.[48]

---

[47] United Nations Office of the High Commissioner for Human Rights, *Guiding principles on business and human rights: Implementing the United Nations "Protect, Respect, Remedy" Framework*, 2011, ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf

[48] Organisation for Economic Co-operation and Development, *OECD Guidelines for Multinational Enterprises – Responsible Business Conduct Matters*, mneguidelines.oecd.org/MNEguidelines_RBCmatters.pdf

Government strategies

Government policy responses, at both federal and state level, to the modern slavery risks in renewable energy is a critical factor in the sector's ability to address this issue.

Domestic manufacturing capabilities

Australia would stand to benefit significantly from vertical integration in domestic production of clean energy raw materials and finished products, which will also reduce reliance on foreign supply chains.[49]

In terms of the solar industry, there are currently no significant polysilicon manufacturing facilities in Australia.[50] Australian solar panel production, which is still partly reliant on imported components, makes up less than 0.3 per cent of the global PV market.[51] In the early 2000s, Australia built and assembled solar modules and had the largest solar panel factory in the Southern Hemisphere.[52] However, production ceased in 2009 as the local cost of manufacture could not compete with China's booming solar economy, which was originally informed by Australian know-how.[53]

Simply shifting solar panel manufacturing from one country to another does not eliminate the risks. Some experts have estimated that 95 per cent of every silicon-based solar panel on the market will likely contain some element of Xinjiang polysilicon.[54, 55] Australia could consider developing the capacity to extract, process and manufacture solar panel materials and components. Domestic manufacturing capabilities of wind turbines and lithium batteries should also be considered closely.

Creating alternative production for key components such as polysilicon can support a shift in Australia's supply chains away from modern slavery. However, it does not necessarily lead to a reduction in overall forced labour as materials produced with forced labour may still be sold in jurisdictions that do not apply these standards or even used within the country of production. For example, China provides almost 40 per cent of global demand for solar panels,[56] which is equivalent to the estimated polysilicon production from Xinjiang.

This potentially also leads to "bifurcation" of supply chains, in which manufacturers produce "slavery-free" products for developed countries but continue to use forced labour for products going into other markets. The premium on "slavery-free" products may in effect be providing a cross-subsidy to firms engaged in ongoing forced labour practices.[57]

Implementation of a global certification system to support sanctions

There have been calls to impose trade sanctions on products believed to be linked to modern slavery unless the importer can prove they are slavery free. Such an approach needs to be underpinned

---

[49] Australia is currently a leading exporter of lithium, graphite, manganese, cobalt, vanadium, copper and aluminium, many of the raw materials needed for battery production, which is currently done overseas.

[50] M Mazengarb, RenewEconomy, *Could Australia follow US ban on solar panel materials linked to forced labour?,* 6 July 2021, reneweconomy.com.au/could-australia-follow-us-ban-on-solar-panel-materials-linked-to-forced-labour

[51] J Purtill, ABC News, *The world is hungry for solar panels. Why did we stop making them?*, 19 September 2021, abc.net.au/news/science/2021-09-19/solar-panels-why-australia-stopped-making-them-china/100466342

[52] Ibid

[53] For example: L Caldicott, UNSW News, *Father of photovoltaics: UNSW solar expert awarded Global Energy Prize in Moscow*, 5 October 2018, unsw.edu.au/news/2018/10/father-of-photovoltaics--unsw-solar-expert-awarded-global-energy

[54] C S Hendrix, Peterson Institute for International Economics, *Third-party auditing won't solve US solar industry's Xinjiang problem*, June 2021, piie.com/blogs/realtime-economic-issues-watch/third-party-auditing-wont-solve-us-solar-industrys-xinjiang

[55] A Hernandez-Morales, K Mathiesen, S Lau and G Leali, Politico, *Fears over China's Muslim forced labor loom over EU solar power*, February 2021, politico.eu/article/xinjiang-china-polysilicon-solar-energy-europe

[56] International Energy Agency, *Solar PV global supply chain: An IEA special report*, July 2022, iea.org/reports/solar-pv-global-supply-chains

[57] J Cockayne, *Making Xinjiang sanctions work: Addressing forced labour through coercive trade and finance measures*, July 2022, xinjiangsanctions.info

by an accepted and accessible means for businesses to assess and prove that imports are not the product of modern slavery. In its absence, the adoption of sanctions could severely impact the viability of the renewables sector.

In mid-2022, the *US Uyghur Forced Labor Prevention Act* came into force, creating a presumption that any products made in Xinjiang are linked to modern slavery and therefore cannot be imported into the US.[58] To overcome this "rebuttable presumption", importers must provide "clear and compelling evidence" of the absence of modern slavery in the product's supply chain. The opacity of Xinjiang polysilicon supply chains makes this standard of proof difficult to overcome.

One option is for the Australian Government to collaborate with key nations to promote the implementation of a globally recognised certificate of origin that serves to certify that goods are not the product of modern slavery. The task is complex but imperative to achieving landmark change. Examples of this include:

- The United States International Development Finance Corporation is currently working with its local government agencies to create a certification system, improve traceability and conduct audits.[59]
- The Solar Stewardship Initiative was launched in September 2022, with a focus on developing a Code of Conduct and assurance systems to drive more responsible and transparent supply chains.[60]
- The Global Battery Alliance, which includes governmental and non-governmental entities, is collectively developing a "battery passport" that serves as a digital representation to be used for each physical battery moving through supply chains to assist in traceability.[61]

As a precursor, the government must continue to support the United Nations' request for unhindered audit access to areas known to be of high risk around the world.

A 2022 report on Xinjiang sanctions finds that, where sanctions are in place, governments have a role to also implement industry policy to encourage investment that supports the rapid emergence of alternative supply.[62] The report also notes the potential to create a win-win narrative that shows the targets of government-imposed sanctions how moving away from forced labour presents an opportunity for sustainable development and suggests governments offer support to enable such reforms to take place.[63]

Industry/business response

Business entities operating in the renewable energy sector can play an important role in mitigating the risks of modern slavery in their supply chains.

It is the responsibility of business enterprises to respect internationally recognised human rights.[64] Respecting human rights requires a business to take adequate measures to prevent, mitigate and

---

[58] Department of Homeland Security, *Strategy to prevent the importation of goods mined, produced, or manufactured with forced labor in the People's Republic of China*, 17 June 2022, dhs.gov/sites/default/files/2022-06/22_0617_fletf_uflpa-strategy.pdf

[59] A Saldinger, Devex, *DFC races China forced-labor challenges with solar investments*, 17 May 2022, devex.com/news/dfc-faces-china-forced-labor-challenges-with-solar-investments-103201

[60] Solar Stewardship Initiative, solarstewardshipinitiative.org

[61] Global Battery Alliance, *A vision for a sustainable battery value chain in 2030: Unlocking the full potential to power sustainable development and climate change mitigation* September 2019, weforum.org/docs/WEF_A_Vision_for_a_Sustainable_Battery_Value_Chain_in_2030_Report.pdf

[62] J Cockayne, *Making Xinjiang sanctions work: Addressing forced labour through coercive trade and finance measures*, July 2022, xinjiangsanctions.info

[63] Ibid

[64] United Nations Office of the High Commissioner for Human Rights, *Guiding principles on business and human rights: Implementing the United Nations "Protect, Respect, Remedy" Framework*, 2011, ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf

account for its impacts.[65] The actions taken to meet the responsibility to respect human rights will depend on a business's size and leverage. Strategies include the implementation of polices, supplier due diligence measures, remediation processes and stakeholder collaboration. We explore each of these strategies in the following sections.

Policy stances supported by training

The adoption of a meaningful human rights or modern slavery commitment forms the foundation of a program to respect rights. It should be approved at the most senior level of management, be informed by relevant expertise, and stipulate the human rights expectations of personnel, business partners and other parties directly linked to its operations, products or services.[66]

The Clean Energy Council, in recognition of the global prevalence of modern slavery, has prepared a pledge, that can be adopted by participants in the sector, which declares their corporate responsibility to respect human rights and to:

- adopt adequate procedures to manage the risk of modern slavery in our operations and supply chains
- take into account modern slavery risk when selecting and managing suppliers
- seek to contractually oblige our suppliers to have in place adequate procedures to manage their modern slavery risk
- build awareness of modern slavery risks in the various forms of clean energy
- collaborate with Clean Energy Council members, suppliers and other relevant third parties on fulfilling each of the above commitments, in accordance with competition laws.

The entity's employees and contractors should be trained about the importance of the commitment and educated to recognise and report instances of adverse human rights impacts. Once policy commitments have been adopted, it is important to ensure that they been embedded into relevant business functions and their implementation assessed regularly. A business-wide human rights risk assessment will flow from such a commitment, which will inform how a business prioritises and responds to risks.[67]

Supplier due diligence

As part of a human rights risk assessment, businesses need to carry out adequate and thorough due diligence of their suppliers. A central concept of UNGPs, human rights due diligence requires a business to identify, prevent, mitigate and account for how they impact human rights.[68]

Supplier due diligence in the renewables sector requires businesses to inform themselves in relation to the origin of goods acquired, their inherent industry risk, and the modern slavery or human rights programs and practices of their suppliers. Once that risk is better understood, supplier-specific responses should be designed to respond to the identified risks. These can include:

- Seeking information in relation to how risks are managed and using leverage to facilitate improvements. This includes asking suppliers how they seek to ensure that the goods supplied are not the product of modern slavery and considering what measures, if any, the supplier could take to improve the working conditions of those in its operations and supply chain in relation to specific modern slavery risks. For example, if a supplier is assessed as being high risk in relation to the use of child labour, consider how the supplier confirms the age of each of its workers and/or visit its worksites to inspect records that show worker age checks and speak to workers on a confidential basis to ask their age and other relevant matters.

---

[65] Ibid

[66] Ibid

[67] Ibid

[68] Ibid

- Embed assessment of modern slavery or human rights risks into procurement processes. Clearly including these issues in supplier selection criteria is the best opportunity to manage this risk and drive change within suppliers.
- Ask suppliers to agree to a supplier code of conduct that prohibits modern slavery and review compliance and other relevant contractual obligations.
- Auditing higher-risk suppliers (or seeking copies of previous audit reports), including interacting with workers of these suppliers where possible.
- Seek to train suppliers and their staff in human rights and modern slavery and their expectations.
- Where suppliers are not responding to requests to undertake their own due diligence, consider whether alternative suppliers exist. This will be simpler in some parts of the sector than others. Even if there are no risk-free alternative suppliers, continue to raise the issue and strive to achieve change.

Due diligence processes should be used not only prior to formally engaging a supplier but also periodically throughout the life of a supplier relationship.[69] Some smaller Australian suppliers or manufacturers may lack capacity to conduct deep due diligence into their supply chains, but there may be a role for government to support these companies' due diligence efforts.

Some Clean Energy Council members who have submitted statements under the *Modern Slavery Act* have used supplier due diligence measures to manage the risk of their supplies containing products from high-risk factories or high-risk areas. These measures include screening suppliers against databases, requiring suppliers to complete questionnaires, requiring compliance with supplier codes of conduct, and carrying out on-site assessments and audits.

The OHCHR report into Xinjiang human rights concerns includes a recommendation to the business community to take "all possible measures to meet the responsibility to respect human rights across activities and business relationships as set out in the UN Guiding Principles on Business and Human Rights, including through enhanced human rights due diligence, and report on this transparently."[70]

In Xinjiang, along with the opacity of key supply chains, there are restrictions on independent audits that would otherwise support supplier due diligence efforts as well as reports of intimidation of audit firms.[71] In circumstances such as these, there are limits to the ability of due diligence alone to immediately eliminate all risk of exposure to modern slavery.

Remediation

If a business causes or contributes to modern slavery, it must participate in remediation.[72] Where a business is directly linked to modern slavery, it should seek to use its leverage to encourage those who have caused or contributed to modern slavery to provide a remedy. Increasing leverage is one means to drive change.

The appropriate remedy depends on the circumstances and could include an apology, restitution and rehabilitation, as well as financial or non-financial compensation. Making grievance mechanisms available, such as whistleblowing hotlines or third-party complaints procedures, for those potentially impacted by the modern slavery practices can also be an effective means of enabling remediation in some situations.

---

[69] Ibid

[70] Office of the UN High Commissioner for Human Rights, *OHCHR Assessment of human rights concerns in the Xinjiang Uyghur Autonomous Region, People's Republic of China*, August 2022, ohchr.org/sites/default/files/documents/countries/2022-08-31/22-08-31-final-assesment.pdf

[71] J Cockayne, *Making Xinjiang sanctions work: Addressing forced labour through coercive trade and finance measures*, July 2022, xinjiangsanctions.info

[72] United Nations Office of the High Commissioner for Human Rights, *Guiding principles on business and human rights: Implementing the United Nations "Protect, Respect, Remedy" Framework*, 2011, ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf

Under the OECD's *Guidelines for Multinational Enterprises*, national governments also play a role in ensuring grievance and remediation mechanisms by providing National Contact Points for complaints.[73]

Stakeholder collaboration

Modern slavery is often not an issue with one company's supply chain, but with a broader industrial ecosystem. Where an individual company's leverage may not effect change, businesses should look for opportunities to exert collective leverage. This leverage may be directed towards suppliers (within the constraints of competition laws) or towards governments in countries where modern slavery may be occurring.

Stakeholder collaboration to tackle modern slavery in the Democratic Republic of the Congo[74]

The progress that has been made in the DRC provides a blueprint for how multiple stakeholders can work collaboratively to instigate change. In the DRC, public and private stakeholders have sought to tackle child labour and forced labour practices in artisanal mining by addressing systemic reasons for the prevalence of modern slavery.

Government, civil society, workers and companies across the cobalt supply chain have worked together to develop strategies that promote responsible cobalt practices and ensure sustainable livelihoods. Key stakeholders are working with the Cobalt Institute and investing in efforts to introduce key initiatives such as the Global Battery Alliance, the Cobalt Action Partnership and the Fair Cobalt Alliance.

The Global Battery Alliance is made up of more than 100 businesses, government and non-government organisations, collectively combating against modern slavery risks in the battery supply chain by developing a "battery passport", which serves as a digital representation to be used for each physical battery moving through supply chains to assist in traceability.

The OECD Secretariat has also convened annual meetings of governments, companies and civil society to improve information sharing, due diligence coordination and responsible business conduct. The work in the DRC demonstrates the importance of effective collaboration between different stakeholders.

Business collaboration also helps alleviate reporting and due diligence burdens. This strategy involves identifying stakeholders in the industry that can impact the traceability and monitoring of global supply chains. Larger entities can play a supportive role for small business through collaboration and data sharing (where lawful and appropriate). Business should include government, worker representatives and consumers in these collaborations.

Since 2020, the Clean Energy Council has convened a working group on modern slavery to support and promote greater industry awareness of the issue and to start working towards industry-wide approaches to reduce the prevalence of forced labour in Australia's renewable energy supply chains.

---

[73] Australian National Contact Point, ausncp.gov.au

[74] Global Battery Alliance, *A vision for a sustainable battery value chain in 2030: Unlocking the full potential to power sustainable development and climate change mitigation* September 2019, weforum.org/docs/WEF_A_Vision_for_a_Sustainable_Battery_Value_Chain_in_2030_Report.pdf

Investor response

Clean energy investors should adopt several strategies to combat modern slavery risks.

First, investment portfolios should consider how to invest to boost local renewable energy manufacturing capabilities.

Secondly, they should carry out their own due diligence processes in relation to their existing and prospective investments. The opportunity to invest in the renewable energy sector needs to be balanced with an understanding that to be sustainable, an entity needs to manage its human rights and environment impacts. Investors are starting to use their leverage to promote anti-slavery business practises throughout their investments.

Consumer response

Finally, consumers of clean energy also have a key role to play. Research commissioned by CouriersPlease in 2021 revealed that of 1010 Australians surveyed, nine in ten Australian consumers are more likely to purchase ethical and sustainable products, with 85 per cent wishing for businesses to be more transparent about the ethics and sustainability of their products.[75]

Consumers have substantial power in their purchase choices. They play a key role in continuing to inquire about the source of the products they purchase, ask questions about where materials originate, and ask what the manufacturer, producer or business supplying the product is doing to mitigate human rights abuses in its operations and supply chains. The cheapest option is not necessarily the right choice. That assessment can only be made if consumers can make informed choices, which takes us back to the importance of government-led change.

---

[75] L Liu, CouriersPlease, *New research reveals 9 in 10 Aussie consumers more likely to purchase ethical and sustainable products*, couriersplease.com.au/resources/news-blog/artmid/1413/articleid/43/new-research-reveals-9-in-10-aussie-consumers-more-likely-to-purchase-ethical-and-sustainable-products

Conclusion

This white paper provides an overview of the challenges in ensuring that Australia's, and the world's, energy transition is free of modern slavery. Different technologies have different points of exposure, from manufacturing of key components to the extraction of critical raw materials. This is an inherently global problem, but Australia and the Australian renewable energy industry must play its part. By addressing Australia's supply chains, we can contribute to influencing global supply chains.

Despite the scale of the challenge, there are many strategies available to make progress. Further, as the sector rapidly expands in coming years to meet the need to decarbonise global economies and renewable energy becomes a more dominant end user of particular materials, this presents an opportunity for the industry to wield greater influence over these important but potentially compromised supply chains.

As noted throughout this white paper, there are also significant geopolitical factors influencing both the presence of modern slavery in the supply chains of clean energy and the ability to transparently assess those supply chains. This adds a layer of complexity to any strategies or interventions that form part of an overarching approach to addressing the situation.

Carefully considered strategies aimed at reducing or eliminating modern slavery should be developed through collaboration between government agencies, industry and civil society stakeholders. These strategies should also aim to minimise any disruption to the transition to clean energy.

By drawing attention to this issue through this white paper, we hope to have sparked greater focus on modern slavery across the clean energy sector in Australia and its supply chains across the globe. The industry is committed to addressing and mitigating modern slavery risks across renewable energy operations and supply chains to ensure that the transition to renewable energy is a just transition.

CLEAN ENERGY COUNCIL

Level 20, 180 Lonsdale Street
Melbourne VIC Australia 3000

+61 3 9929 4100
info@cleanenergycouncil.org.au

cleanenergycouncil.org.au