

The antidote for modern slavery in the renewables supply chain

The complexity and opacity of the renewables supply chain is fostering the growth of modern slavery across Asia, Africa and South America. A proposed “certificate of origin” could help combat the problem before it becomes endemic.

Oliver Gordon | June 14, 2023



A young worker at a cobalt mine in the Democratic Republic of Congo. Credit: Per-Anders Pettersson via Getty Images.

The number of people around the world becoming victims of modern slavery – where they cannot refuse or leave work because of threats, violence, coercion, abuse of power or deception – has risen by 20% in just five years. Against a backdrop of increasing armed conflicts, environmental degradation and the ramifications of the Covid-19 pandemic, around 50 million people are “living in situations of modern slavery”, according to the latest Global Slavery Index by the human rights organisation Walk Free – an increase of ten million since the previous estimate five years ago.

Despite its positive environmental impact, the renewable energy industry is sadly not immune to this trend. Renewable energy is the central technology at the heart of decarbonising global energy systems, and the industry is fast expanding as the world aims to reach net-zero greenhouse gas emissions by 2050. However, in recent years, evidence is increasingly emerging linking supply chains for renewable energy products to modern slavery. While the industry is not unique in this regard, it is a problem it must address before it becomes endemic.

“As with many other modern products ubiquitous in everyday life, renewable energy technologies can have long supply chains that are linked at various points to modern slavery,” says Nicholas Aberle, policy director of energy generation and storage at Australian renewable energy association the Clean Energy Council. “The points of exposure most in need of attention are the manufacture of various key components and the extraction of raw minerals where renewables are expected to become a growing share of the market.”

One way of addressing the problem, the Clean Energy Council has proposed, is to create a “certificate of origin” scheme to identify slave labour used in renewables-related mineral extraction and manufacturing in hubs such as China, Africa and South America.

“If we don’t do anything, demand for these minerals and products is going to grow and so will the bad social practices like child labour and modern slavery,” says Paolo Natali, a principal with the Climate Intelligence programme at think tank RMI.

Modern slavery in the renewables supply chain

As the renewables industry has grown over the past decade, so have allegations against it of a broad range of serious human rights violations. London-based non-profit the Business and Human Rights Resource Centre (BHRRC) has recorded more than 200 allegations linked to the industry in the past ten years – ranging from land and water grabs to the violation of the rights of indigenous nations and the denial of workers’ rights to decent work and a living wage. Almost half of these (44%) were from the wind and solar sectors, and the lion’s share of the remainder were connected with hydropower, the world’s largest source of renewable energy.

More than 200 human rights abuse allegations have been linked to renewable energy projects in the past ten years

Number of allegations, 2010–21

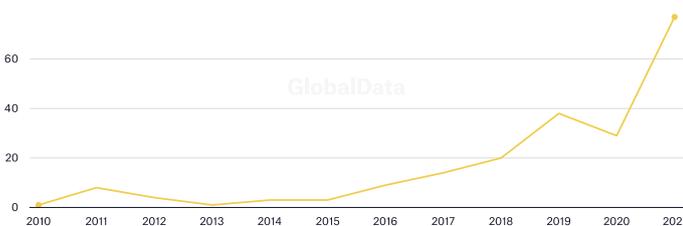


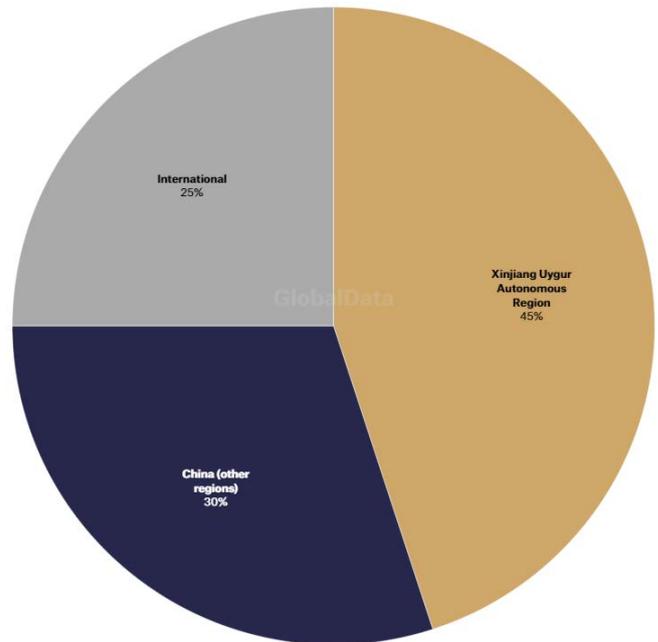
Chart: Mirela Petkova • Source: Business & Human Rights Resource Centre

Within the solar industry, there have been growing reports from media and NGOs of forced labour in the supply chain. Much of these relate to the Xinjiang Uyghur Autonomous Region of China, the source of 40–45% of the world’s solar-grade polysilicon – a key component in 95% of solar modules. Around 2.6 million Uyghur and Kazakh citizens are thought to be subjected to “surplus labour” programmes, facing coercion, re-education programmes and internment if they refuse to work.

China denies the allegations, and independent audits remain impossible. Nonetheless, there remains a significant risk that any solar cell manufactured in Xinjiang, or containing polysilicon manufactured in the region, is implicated in forced labour. In fact, the US Government has listed polysilicon from China as a material it has reason to believe has been produced by child or forced labour and identified it as a high-priority sector for customs enforcement under its Uyghur Forced Labor Prevention Act.

Almost half of the world's solar-grade polysilicon comes from a region in China accused of serious human rights abuses

Market share of origins of solar-grade polysilicon, 2020



Polysilicon, a high-purity form of silicon, is a key raw material in the solar PV supply chain. Chart: Mirela Petkova • Source: Sheffield Hallam University, Helena Kennedy Centre for International Justice

In the wind industry, the growing demand for balsa wood used in wind turbines has resulted in the exploitation of workers in the balsa industry in Ecuador, with many being paid in drugs or alcohol. The insatiable appetite for balsa has also increased illegal logging across the Amazon rainforest, leading to the increasing use of forced labour, as well as violations of the land rights of indigenous peoples in countries such as Peru.

The minerals used in the manufacture of the wind turbines, demand for which the World Bank forecasts will rise by 250% in a 2°C global warming scenario, are also a cause for concern. For instance, a single 3MW turbine contains around 4.7 tonnes of copper. The BHRRC has reported 74 allegations of human rights abuses coming from the copper mining industry. Manganese, another key ingredient for turbines, is similarly problematic, with its supply chains linked to severe health conditions such as asbestos poisoning and tuberculosis, and exploitation, particularly of women and girls. The US Department of Labor also lists cement – another core ingredient used in turbine towers – as a material often produced by child or forced labour, with the raw materials used typically coming from high-risk geographies and complex supply chains.

Finally, another pillar of the energy transition, lithium-ion (Li-ion) batteries, now account for 50% of global cobalt consumption. That demand is set to skyrocket, however, with a tenfold increase forecast for electric vehicles (EVs) by 2040, while global refined cobalt production is expected to rise by 38.5% by 2025. The modern slavery concerns surrounding cobalt primarily derive from small-scale artisanal mines in the Democratic Republic of Congo, which employ 250,000 people, including at least 35,000 children, many under forced labour conditions. Around 15–30% of the world’s cobalt comes from these mines. The conditions are reported to be hazardous, and workers often do not have adequate protective equipment and are exposed to toxic cobalt dust, a known contributor to hard metal lung disease. Furthermore, research by Amnesty International found that children as young as seven are working in the mines, often for less than \$2 a day.

The primary mineral in an EV Li-ion battery pack is nickel, and the renewables industry is forecast to consume more than half of global nickel supplies by 2040. However, in the Philippines, the world’s largest nickel producer, reports have recently emerged of labour hire companies employing workers without contracts, delaying the payment of wages and not paying compulsory employee benefits (including social security and health insurance).

“It is often the later tiers of a supply chain that are difficult to map but present the greatest risk,” says Abigail McGregor, a partner at law firm Norton Rose Fulbright and co-author of the Clean Energy Council report. “The challenge is how to identify those risks in more than a theoretical way and work with suppliers to improve the conditions of the most vulnerable workers in supply chains.

“Unfortunately, there is a lack of transparency in some existing supply chains, often linked to geopolitical challenges, which can limit the effectiveness of supply chain due diligence by individual entities. Governments should lend their support to the development of globally recognised certification programmes, as well as continuing to support UN requests for unhindered audit access to areas known to be high risk.”

Hydropower has had the most allegations of human rights abuses in the renewables sector

Number of allegations of human rights abuses related to renewable energy projects, by type, 2010–21

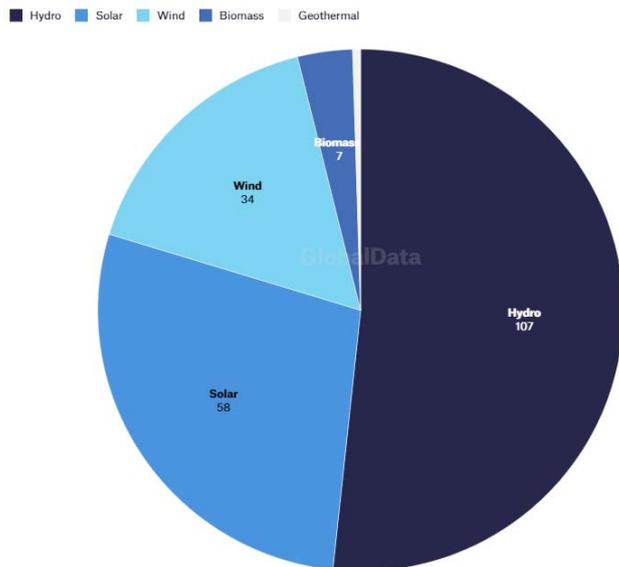


Chart: Mirela Petkova • Source: Business & Human Rights Resource Centre

“These labels drive value”

Indeed, there have been growing calls to impose trade sanctions on products thought to be linked to modern slavery – unless importers can prove otherwise. However, for this approach to work without significantly disrupting the renewables industry at a time the world needs it to grow at the fastest rate possible, it will require an accepted and accessible means by which businesses can tell the product and commodity is slavery-free.

For instance, the US Uyghur Forced Labor Prevention Act requires importers to provide “clear and compelling evidence” of the absence of modern slavery in the product’s supply chain – but given the opaqueness of the supply chains in question, that is easier said than done.

One option, as proposed by the Clean Energy Council, is for governments to collaborate on a globally recognised “certificate of origin” that serves to certify that goods are not the product of modern slavery. It would be a complex but potentially transformative endeavour.

“[A certificate of origin] would need two components: one is about having a solid system for monitoring at the source, to make sure that that particular impact is measured and tracked; and the other is having a system that has the appropriate chain of custody for those impacts to remain visible in the supply chain and to avoid plausible deniability from buying companies,” says Natali. “The latter often happens when different batches of materials coming from different places arrive at the same facility and are processed into the same output.”

It is my personal hope that a generation from now we will look back at this time in disbelief and think: ‘Wow, we really had no idea where any of this stuff was coming from, and we somehow thought that was okay’.

Stephen Lezak, RMI’s Climate Intelligence Programme and the University of Oxford Smith School on Enterprise and the Environment

There have recently been some encouraging examples of such certification developing in parts of the renewables industry. SolarPower Europe and Solar Energy UK’s Solar Stewardship Initiative, for instance, launched in September 2022, aims to develop a code of conduct and assurance systems to drive more responsible and transparent supply chains. Similarly, 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. Some balsa wood suppliers are now able to provide Forest Stewardship Council certifications, which verifies responsible forest management, community consultation, and fair wages and work environments.

In the US, the US International Development Finance Corporation is working with its local government agencies to create a certification system to improve traceability and conduct audits. In addition, the Solar Supply Chain Traceability Protocol, launched in April 2021 by the US-based Solar Energy Industries Association, offers guidelines intended to help solar companies trace the sources of their supply chain and provide customers with assurances that their solar products are free of unethical labour practices.

“When these labelling systems work, it is not just as a policing function, excluding certain regions from being able to participate in the market; they actually create value by certifying products in such a way that they suddenly, irrespective of their origin, have more value as a certified good in the market than a non-certified good,” says Stephen Lezak, a fellow with RMI’s Climate Intelligence Programme and a researcher at the University of Oxford Smith School on Enterprise and the Environment.

Lezak points to the subset of the diamond market, governed under initiatives such as the SCS-007 certificate, which tracks and traces diamonds as they go through the supply chain. Admittedly, diamonds themselves are not fungible; it is not possible to melt them down and make more diamonds in the way that the minerals in the renewables supply chain can be. “But here you have an example of an industry that has taken certificate of origin labelling to its farthest iteration,” he says. “We have to believe these labels drive value rather than just shut people out.”

Indeed, a 2022 report on Xinjiang sanctions found that, where sanctions are in place, governments can help create industry policy to encourage the emergence of alternative supply, as well as create a win-win narrative that encourages, as a form of sustainable development, sanctions targets to move away from using forced labour. A certificate of origin would tick both boxes.

Companies also have a key role to play, insists Natali. They need to start demanding goods be purchased through a solid chain of custody system that considers the five models encoded in the International Organization for Standardization standard on chain of custody.

“Where there’s a will, there’s a way,” says Natali, when asked whether effective certification could be implemented across the renewables supply chain. If enough demand can be generated by buyer companies up the supply chain, that will set the standard and create the demand signal for the rest of the market; the technical part of the tracking and tracing will then take care of itself, he adds.

“Currently, no one really knows where the inputs to their products come from; it doesn’t matter if you are a major automaker, technology firm or consumer – the status quo is uncertainty,” says Lezak. “It is my personal hope that a generation from now we will look back at this time in disbelief and think: ‘Wow, we really had no idea where any of this stuff was coming from, and we somehow thought that was okay’.”