WWF AUSTRALIA

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WWF Submission to the Electricity and Energy Sector Plan

The World Wide Fund for Nature-Australia (WWF-Australia) welcomes the opportunity to make a submission to the Electricity and Energy Sector Plan Discussion Paper.

WWF-Australia is part of the WWF International Network, the world's largest independent conservation organisation. WWF's global mission is to 'stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature'. WWF-Australia has approximately two million financial and non-financial supporters.

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We understand that the Electricity and Energy Sector Plan ('the Plan') is one of 6 sectoral decarbonisation plans being developed to support the Net Zero 2050 Plan to help reduce emissions across the economy. The Plan will detail how the energy sector will contribute to Australia's emissions reduction targets while ensuring reliable, secure and affordable energy supply. Our submission seeks to inform the development of the Electricity and Energy Sector Plan, focussing on the opportunities to ensure that the sector's transition is high ambition in both scale and speed.

We understand that the sectoral plans will also help to establish Australia's 2035 greenhouse gas emissions reduction target. Recently, the UN Secretary General, António Guterres called on nation states to 'massively fast-track climate efforts by every country and every sector and on every timeframe'. All of the sector plans should recognise the critical importance of achieving rapid emissions reduction in the next decade, and that 2050 is too late to achieve net zero. On this basis we focus our submission on what a high ambition decarbonisation pathway looks like for the Electricity and Energy sector.

Our submission emphasises the following key points:

1. The sectoral plans need to be ambitious and focussed on rapid and achievable emissions reductions this decade, not stretched out to 2050.
2. The electricity and energy sector has enormous opportunities to do the heavy lifting for decarbonisation goals. This sectoral plan should consider what high ambition opportunities exist to unlock a fast, best, just transition. This means a strong focus on supporting electrification across other sectors and meeting and beating the 82% by 2030 target for renewable electricity.
3. Australia has a narrow window of opportunity to become a green exports superpower. This sectoral plan should help put us on the path to capturing the economic opportunities from green export industries, and critically a pathway to rapidly phase out fossil fuel exports this decade.
4. Australia needs to undertake a transition that is good for people and nature. A fast, best, just transition is critical and requires careful planning, strong community engagement and aligning other goals such as biodiversity protection and positive outcomes for First Nations communities.
5. There is strong support from Australians, from cities, towns and rural areas for a renewable energy future.

6. A circular economy is critical for the energy transition. We need strong investment in recycling, use of recycled materials, and design for second life and disassembly in order to conserve critical minerals and avoid ongoing resource exploitation and associated emissions.

Aligning the energy sectoral plan with 1.5 degrees

A 1.5°C consistent pathway for Australia requires at least a 67% greenhouse gas reduction relative to 2005 levels by 2030 and net zero by 2038. Such a pathway is consistent with limiting warming to 1.5°C with a 50% chance. Assuming Australia's share of the global emissions budget is a generous 0.97%, a net zero date before 2038 would be in line with a greater than 50% chance of staying below 1.5°C[1].

Strong reductions are required this decade. Cost-efficient pathways indicate that a 43% reduction in *global* greenhouse gas emissions by 2030 (relative to 2019) is in line with limiting warming to 1.5°C with no or limited overshoot. For 2035, global reductions in line with a 1.5°C limit are 60%. Developed countries, with higher capacity and higher historical emissions, and Australia in particular, with the highest per-capita emissions in the developed world, need to make much stronger reductions by 2030 than the global 43% benchmark. Australia's current target of 43% below 2005 levels is only a 31% reduction below 2019 levels.

Article 4.3 of the 2015 Paris Agreement states that "each Party's successive Nationally Determined Contribution will represent a progression beyond the Party's then current Nationally Determined Contribution and reflect its **highest possible ambition**". The Federal Government is supported by strong ambition at the State and Territory level and also by the increasing number of local governments setting strong net zero targets within the next decade (see Figure 1):

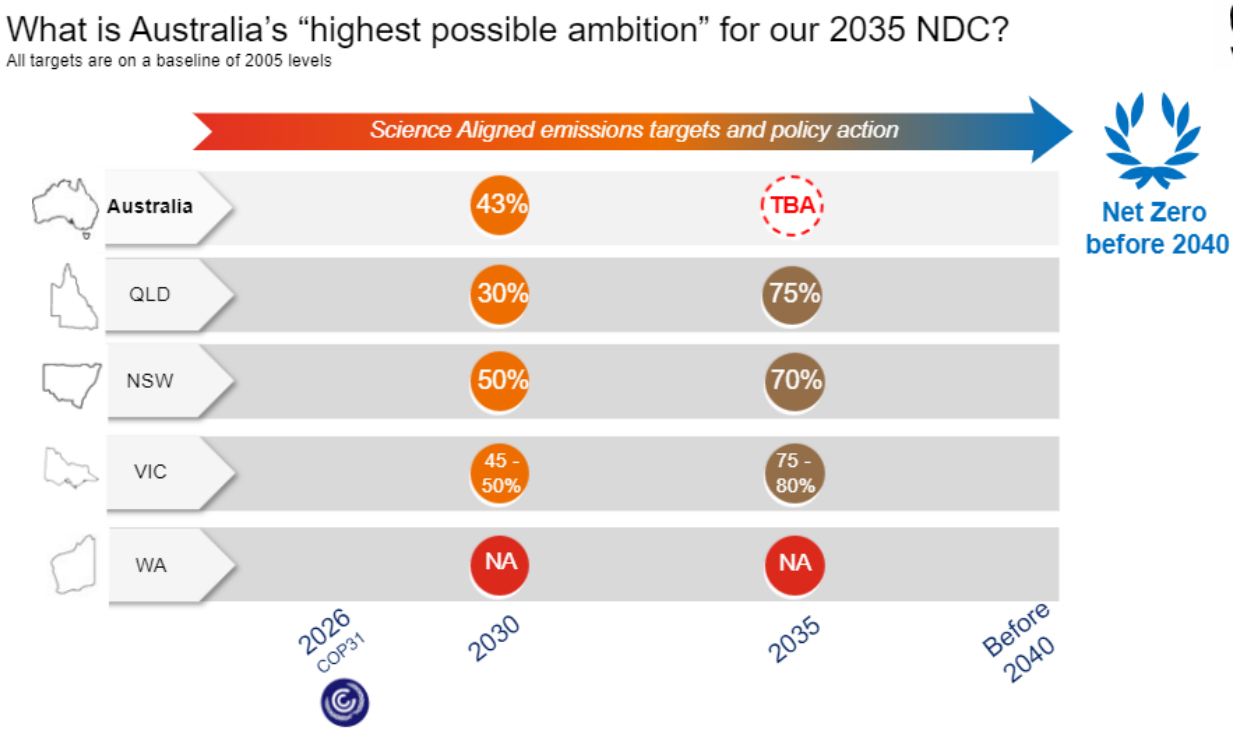

Figure 1: Current announced state government targets for 2035 emissions reductions

[1] https://assets.wwf.org.au/image/upload/f_pdf/Climate-Resource-Updated_assessment_of_Australia_s_emission_reduction_targets_and_1.5C_pathways

An ambition for 700% renewables

Through our Renewables Nation campaign, WWF-Australia has been calling for our government to set an ambitious goal of reaching 700% renewables by 2050 to become a renewable export superpower and replace fossil fuel exports. 700% means that Australia has the potential to not only meet its own needs with 100% renewable energy but also export 600% of that value to the world, cementing Australia as a Renewable Energy Export Superpower. We can calculate it as follows:

- 100% is what we'll have when all Australian electricity is from renewable sources.
- We get to 200% when we convert our transport, industry and buildings to renewable electricity
- We get the last 200-700% by doing new things like making clean exports like green steel/iron and hydrogen fuels.

To achieve this level of ambition Australia needs to accelerate investment in renewable energy in the next decade and aim for targets in the order of 95% by 2030 and 250% by 2035. This ambitious leap recognises the need for the sector to decarbonise other sectors, but also the significant economic opportunity from becoming a green exports superpower.

The discussion paper recognises the substantial role that this sector can play in decarbonisation. It states that "energy accounted for around 85% of Australia's net emissions in 2022-23, with electricity alone accounting for around a third of emissions" and the remaining two thirds being liquid fuels and gas.

Australia can and should aim for meeting and beating its 82% target by 2030 for renewable electricity generation. The Australian Energy Market Operator (AEMO) recognises that the shift is well underway, with Australia already reaching almost 40% of the total energy delivered through the National Electricity Market (NEM) in the first half of 2023. In addition, on 24 October 2023, 72.1% of total NEM generation came from renewable sources, a new record for a 30-minute period.

We can and must build on this momentum to achieve the levels of decarbonisation we need in the sector. For 2030, the following ranges have been shown as possible:

- 82-90% by 2030 according to ClimateWorks modelling, not considering the additional benefits of demand management and other opportunities[2]. This requires 137–151 GW of new generation by 2030 including 10-15GW of energy storage by 2030
- According to AEMO, under a green exports scenario Australia's National Electricity Market (NEM) could reach ~95% renewable electricity generation by 2030[3]. Under the draft Integrated System Plan 2024, only the green exports scenario is aligned with Australia's contribution to limit global temperature rise to 1.5°C.
- 94% renewable electricity is possible by 2030 if we seize the opportunities according to the Climate Council[4].

Economic benefits of a net zero energy sector

WWF-Australia through its Renewables Nation program has advocated for Australia to capture the jobs and growth opportunities presented by becoming a renewable energy superpower. The window of opportunity to realise these opportunities is small and narrowing. WWF-Australia has been calling for greater investment in Australia's renewable exports opportunity as part of the Sunshot alliance with the Australian Council of Trade Unions, Business Council of Australia and the Australian Conservation

[2] https://www.climateworkscentre.org/resource/climateworks-centre-decarbonisation-scenarios-2023-australia-can-still-meet-the-paris-agreement/
[3] https://aemo.com.au/consultations/current-and-closed-consultations/draft-2024-isp-consultation
[4] https://www.climatecouncil.org.au/resources/seize-the-decade/

Foundation. In 2023 the alliance released an updated report *Sunshot: Achieving global leadership in clean exports*[5]. The report found that:

- **The global pace of the energy transition has rapidly increased, driving growth in 5 priority clean export opportunities in Australia to $314b p.a. in revenue by 2040.** The clean exports identified in the original SunShot 2021 report already had the potential to create more value and add more jobs to the Australian economy than the fossil fuel industry. In a high ambition scenario, assuming policy support, the combined opportunity from 5 prioritised exports has now more than doubled.
- **Capturing this opportunity would see Australia become a global leader in clean exports.** The opportunity is by no means assured, it will require focused public and private effort to transform our economy across three key imperatives; value-add more of our raw materials onshore, accelerate the development of our manufacturing capabilities and produce materials with lower embodied carbon at relatively lower costs as inputs to the globe's energy transition.
- **The window to capture this opportunity is closing fast as other countries invest heavily in their own sovereign capabilities.** The U.S has committed over $1.2t1 over 10 years through the IRA, Canada has invested $94b over 10 years and other countries and regions are mobilising investments from a mixture of funding sources
- **International investment is creating the policy settings and signals to unleash historically high levels of private investment – Australia is at risk of losing out on the global race for this capital.** Over $400b of private investments have been announced in the U.S alone since passage of the IRA3, and China's catalysed private investment was world-leading at $815b3 in 2022. Private investment is essential to building the capabilities required for the $314b export revenue in a manner that is fiscally sustainable long-term
- **Whilst these investments pose a risk that Australia could miss out on the race for capital and capabilities, they also provide an opportunity through new selective markets.** Whilst countries are seeking to develop some sovereign capability, no one will be able to succeed in the energy transition alone. Many partner countries who are investing in clean energy are increasingly looking to 'friend-shore'. This includes giving select partners access to parts of their investment and increasing levels of trade with a select few for their clean energy goods. Australia has access to parts of the U.S IRA and can step up to fill the supply-gap from partners who are limiting imports from China.
- **Considering the international landscape, Australia needs its own globally ambitious, proportionate and targeted clean energy policy that will encourage and leverage private investment across 4 pillars (see figure 2).** These pillars include; renewable energy buildout that's good for workers, nature & communities, clean industry & exports policy, widespread electrification and climate & transition readiness.

[5] https://assets.nationbuilder.com/auscon/pages/21744/attachments/original/1678743723/Sunshot_2023_-_Final_Report.pdf

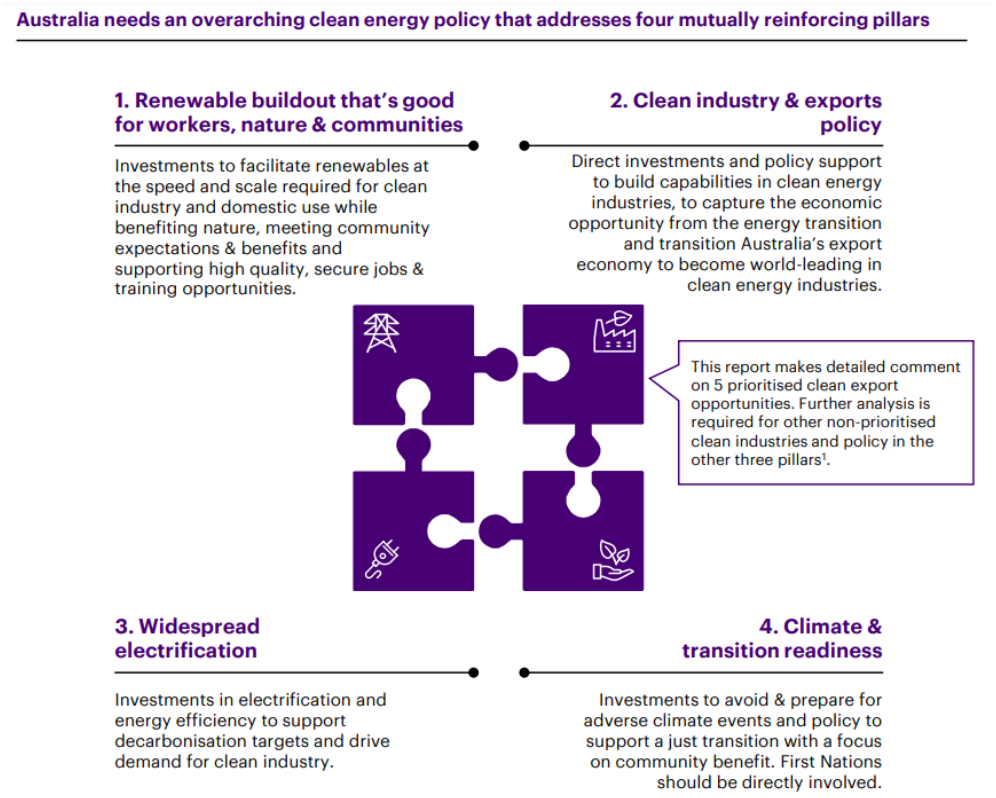

Figure 2: the 4 clean energy policy pillars (Sunshot 2023)

Green exports need to replace fossil fuels

The science is clear that fossil fuels are at the root of climate change. To meaningfully address climate change, Australia must rapidly phase out our economy's reliance on coal, oil and gas, and transition out of fossil fuel production. Critically, the growth of green exports needs to replace - rather than complement - fossil fuel exports.

In addition, the energy and electricity sector needs to rapidly phase out gas and the ongoing role for gas is limited and declining. Climate works modelling suggests that less than 1% of the electricity system will need to be gas powered by 2050. We can achieve this through rapid roll out of large and small scale energy with storage, strong electrification, demand management and energy efficiency and building the capacity of our electricity grids.

WWF-Australia supports global calls for a treaty to phase out fossil fuels[6] and urges the Australian Government to stand with leaders from across the Pacific who are clear that Australia must ramp up its climate ambitions, with strong commitments to end fossil fuel subsidies and stop funding and approving new coal, oil and gas activities. In bidding to host the 2026 United Nations Climate Change Conference (COP31) with the Pacific, the Australian Government has both an opportunity and a strategic imperative to demonstrate global leadership in phasing out fossil fuels.

Building the grid

New transmission infrastructure is a critical climate action on which the speed of the transition is dependent. AEMO estimates that we need to build around 10,000km of new transmission lines to connect

[6] https://wwf.org.au/news/2023/wwf-supports-port-vila-call-for-a-just-transition-to-a-fossil-fuel-free/

renewable energy projects, primarily located in regional areas. This is at least a 25% increase in the size of the current grid. This amount is only for the AEMO Integrated System Plan “Step Change” scenario, and does not account for the more ambitious build out of renewable energy required to become a green exports superpower. This may be Australia's biggest infrastructure project in decades. By building this infrastructure, we can deliver clean, reliable, low-cost energy to communities across the country, no matter where they are located, as well as optimise small scale local energy supplies and large-scale renewables.

Australia is not on track to build out the level of clean energy infrastructure needed and replace our ageing coal fired power plants. This not only puts our emissions targets at risk but also our reliability and impact on consumer bills. Although there is a great deal of positive investor sentiment about new renewable generation and storage, even expedited approaches to new transmission and firmed renewable generation are experiencing delays and cost increases. Every year that the build out of transmission infrastructure is delayed changes the requirements for fossil fuels in our energy mix and limits the speed and roll out of solar and wind. Work undertaken by Nexa Advisory also shows that delayed transmission infrastructure impacts of even one-year results in higher bills for consumers, with business customers impacted the most[7].

WWF welcomes the Federal Government’s $20 billion ‘Rewiring the Nation’ policy package to ensure the build out of transmission happens in a timely manner. However, it is critical that Federal and State Governments work together to ensure that the roll out of transmission infrastructure is not only expedited but done in a way that benefits local communities and minimises the impacts on nature, and where possible leads to nature positive outcomes. We recommend designating transmission build as “nation-building” and expediting delivery of priority transmission, supported by appropriate compensation schemes for regional communities and effective mitigation of environmental impacts.

[7] https://nexaadvisory.com.au/delays-in-building-new-transmission-infrastructure-will-increase-consumers-bills/

Australians want a fast, best, just transition

The speed and scale of the energy transition needs to ensure that Australians understand and support the transition. This requires the roll out of renewable energy to be done in a way that benefits local communities and minimises environmental impacts.

The latest CSIRO survey on public attitudes on the energy transition has some enlightening results[8]. The survey showed that only 13% preferred a slower energy transition (equivalent to the Integrated System Plan progressive change scenario). By contrast 47% preferred a moderate paced scenario (in line with the ISP 'step change' scenario), and 40% preferred an ambitious scenario (in line with the ISP 'green exports' scenario). The CSIRO survey also notes that there is always an inherent conservatism in people's answers, and that people often choose middle road scenarios due to not wanting to choose 'extreme options'. This demonstrates that there is broad support for a moderate to fast transition.

Moreover, despite counter-narratives that dominate headlines, the levels of support for the energy transition cross a broad range of demographics and geographies. Very similar results for regional towns compared to cities (only 17-18% opposed), and even rural landholders' opposition to the energy transition is low (33%). In addition, 72% voters agreed that Australia should support green exports rather than continue fossil fuel exports.

As stated above, only the green exports scenario is in line with stabilising global warming at 1.5 degrees and it is worth noting the high levels of public support for this scenario.

A 'nature positive' energy transition

The speed and scale necessary to become a renewable energy export economy will place pressure on ecosystems, and the location and connectivity of clean energy infrastructure must be beneficial to communities. The clean energy revolution needs to be fast, best, and just if we are to rapidly reduce the effects of a changing climate.

For Australia to realise its renewable energy superpower potential, it will need to ensure that the intersection between the speed and scale of the rollout, and its impact on nature and local communities and particularly for First Nations communities, is managed effectively. These issues are not unique to Australia. Internationally, WWF has been working with major renewables developers and other conservation and Indigenous organisations to bring these issues to attention and seek urgent resolution[9].

Over the past two years there has been a significant increase in environmental concerns underlying community opposition to clean energy infrastructure. This opposition has been predominantly focussed on wind projects, both on and offshore, but generally spread across the country and across most clean energy infrastructure projects. Renewable energy development opponents from across the political spectrum have amplified these concerns and used disinformation to slow and delay the transition. While much of this opposition is fuelled by misunderstanding and deliberate disinformation, renewable energy projects can and do negatively impact nature, so separating fact from fiction in the transition is critical.

An energy transformation that is well-planned and executed can holistically address both climate and nature risks and produce nature-positive outcomes. The recent WWF *Building a Nature Positive Energy Transformation* report demonstrates that, while it will place some demands on natural resources and local communities, energy systems powered by renewables will be far better across a range of metrics (2-16 times better) for nature and people than a business-as-usual, fossil fuel-dominated energy system[10].

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[8] https://www.csiro.au/en/news/All/News/2024/April/CSIRO-survey-reveals-Australians-attitudes-toward-the-renewable-energy-transition

[9] https://wwf.panda.org/discover/our_focus/climate_and_energy_practice/what_we_do/changing_energy_use/cleanaction/

[10] wwf-bcg-building-a-nature-positive-energy-transformation.pdf (panda.org)

The extent to which the energy transformation is better, and can produce nature-positive outcomes, depends on how well we implement it.

Achieving the urgent scale-up of renewable energy should not be seen at odds with the similarly urgent need to protect Australia's biodiversity. These priorities can be balanced by Government investment in ensuring timely and robust assessment of proposed projects against strong environmental standards. For example, WWF-Australia has advocated for the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to be resourced to set up a "Renewables and Transmission Projects Regulatory Review Prioritisation Service" (RTPRRP Service) so that the timelines for reviewing priority decarbonisation projects to help Australia reach net zero sooner are prioritised and supported through the Federal environmental regulatory review process. A RTPRRP Service could ensure that all renewable energy and transmission projects are still subjected to the same criteria and level of review as any other project but prioritised and supported to align with the currently proposed 60 days for projects that need full assessment, and 20 days for projects that do not require assessment.

A recent report by the Institute for Sustainable Futures commissioned by WWF-Australia recommended the following in order to deliver the energy transition in a way that helps restore nature:

- **Implementing Strategic Planning to Minimise Habitat Loss**: Avoiding sites with a high-risk of habitat and biodiversity loss is the most powerful way of reducing the environmental impacts of renewable energy development.
- **Improving site selection to minimise land-use impacts and designing projects for 'nature-positive' outcomes**: There are opportunities through site selection and design for individual projects to minimise land-use changes and biodiversity impacts – and to even improve biodiversity ('nature-positive' outcomes). Some of the approaches used include locating projects on degraded land, siting infrastructure to avoid sensitive habitat and maintain wildlife corridors, and revegetating and restoring habitats.
- **Increasing the uptake of circular economy practices to minimise materials, water use and waste**: Circular economy practices reduce site impacts on wildlife, habitat and water through resource minimisation, waste management and recovery of resources. A circular economy framework could be established for the Renewable Energy Zones (REZs) where most of the large-scale development will occur in Australia, to drive better practices across the renewable energy sector.
- **Using smart operating technologies and practices to minimise biodiversity impacts during construction and operation**: Impacts on fauna and flora can be reduced with smarter technology and practices. For example, radar technology is now emerging and being used at wind farms to stop turbines upon the detection of birds and bats. There is also significant scope for habitat and vegetation protection and restoration and sensitive operation procedures to minimise impacts. Smarter technologies and practices need to be diffused through innovation, knowledge sharing and regulation.
- **Minimising waste and land impacts at end-of-life and decommissioning of renewable energy technologies**: Materials that end up in landfill can pollute and represent a missed opportunity to reuse and recycle to reduce the mining of new materials which have high impacts on the environment. Product stewardship and end-of-life management can avoid materials ending up in landfill, lengthen their life and recycle them. Innovation is required to extend recycling processes to problem waste streams (e.g. turbine blades) and regulation and policy to increase re-use and create end-markets for recycled product. Trials such as the New South Wales Circular Solar Trial (developing a novel solar panel recycling process and activating end-markets for recovered solar panel glass) need to be expanded.
- **Avoiding impacts from mining and manufacturing in renewable energy supply chains**: Scaling up renewable energy will lead to an expansion in manufacturing and mining of critical minerals with the potential for large impacts on societies and the environment where mining occurs. The major renewable energy technologies (i.e. solar, wind, battery) require mining and processing of critical minerals which are water and energy-intensive and use toxic chemicals which, if not managed, can pollute soils, water and ecosystems. The extraction, processing and manufacturing of battery minerals currently has widespread impacts on water, soil, habitats and wildlife, largely because the mining governance regimes of countries with abundant reserves of critical minerals often fail to meet international sustainability standards. New regulatory approaches (e.g. the European Union Battery Regulation) and certification systems (the Initiative for Responsible Mining Assurance) offer models for driving improvements.

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