

Supply Chain Toolkit

Table of contents

List of Acronyms	4
Introduction	5
How to Use this Toolkit	5
1. Overview of Supply Chain Due Diligence	7
2. Components to the Supply Chain Toolkit	11
3. Step-by-Step Guide to Supply Chain Due Diligence	20
4. Key concepts associated with Supply Chain Due Diligence	28
5 Sector Specific Risks in Renewable Energy Supply Chains	32
Useful links	37



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Supply chains associated with renewable energy project development are complex and are not transparent about their operations. This toolkit hopes to provide considerations that project developers can incorporate into their procurement strategy to reduce their exposure to include potential human rights risks.

Citation

Camco and REPP 2 TAF, 2025. Supply Chain Toolkit

List of Acronyms

BESS	Battery Energy Storage System
CAP	Corrective Action Plan
CO2	Carbon Dioxide
CSRD	Corporate Sustainability Reporting Directive (EU)
CSDDD	Corporate Sustainability Due Diligence Directive (EU)
DFIs	Development Finance Institutions
DRC	Democratic Republic of Congo
ESG	Environmental, Social and Governance
E&S	Environmental and Social
EPC	Engineering, Procurement and Construction
ESMS	Environmental and Social Management System
EU	European Union
FPIC	Free Prior and Informed Consent
FSC	Forest Stewardship Council
GHG	Green House Gas
GM	Grievance Mechanisms
GRI	Global Reporting Initiative
HR	Human Resources
ILO	International Labour Organisation
IRMA	Initiative for Responsible Mining Assurance
IPs	Indigenous Peoples
KYS	Know Your Supplier
KPIs	Key Performance Indicators
NGOs	Non-Governmental Organizations
OECD	Organization for Economic Cooperation and Development
OHS	Occupational Health and Safety
PS	Performance Standards
PV	Photovoltaic
PVC	Poly Vinyl Chloride
UN	United Nations
UNGPs	United Nations Guiding Principles on Business and Human Rights
STEM	Science, Technology, Engineering and Mathematics
TCFD	Task Force on Climate-related Financial Disclosures
WTG	Wind Turbine

Introduction

Camco engages in responsible investment that incorporates environmental, social and governance (ESG) factors into investment decisions to better manage risk and generate sustainable, long-term returns for all investors.

Over the past few years, major human rights violations have come to light in the renewable energy supply chains, particularly in the production of solar PV components, lithium-ion batteries and the manufacturing of related end products.

The supply chains involved in renewable energy project development are complex and structurally not transparent, hampering the efforts of project developers to manage their exposure to environmental and social (E&S) or human rights risks.

Recognising the complexity of these issues and addressing the underlying structural challenges, this Supply Chain Toolkit (the “Toolkit”) outlines a step-by-step process for renewable energy project developers to enforce supply chain protocols on their suppliers to integrate supply chain due diligence particularly with a focus on prohibiting forced and child labour practices.

In line with Camco’s commitment to upholding international human rights standards, all investees supported by a Camco-managed fund are expected to design and implement projects and programmes on supply chain due diligence. E&S risk management is a shared responsibility across the investment value chain. By providing practical guidance and tools, the Toolkit aims to support renewable energy project developers with the knowledge and frameworks needed to align with these expectations.

How to Use this Toolkit

This Toolkit has been designed to guide renewable energy project developers, especially those in the solar panels, battery energy storage (BESS) and wind turbine (WTG) supply chains, to conduct effective supply chain due diligence with a special focus to normalise the prohibition of forced and child labour practices. This Toolkit provides a structured approach in identifying, assessing and addressing environmental and social risks in alignment with international standards. It also includes practical tools and methodologies to strengthen your efforts.

This Toolkit includes four core tools: (1) Procurement Policy, (2) Traceability Mapping, (3) Supply Chain Due Diligence Questionnaire, and (4) Environmental, Social and Human Rights Requirements in Procurement and Contracts. These tools are templates that need adaptation and transposition into each company’s management system. They provide a basis for supply chain due diligence, but need to be understood, endorsed and tailored for each company’s needs.

The below icons have been inserted throughout the Toolkit to guide the reader. Users are encouraged to adapt the toolkit to their own operations, risk exposure and responsible sourcing maturity level. It is important to note that this is not a one-size fits-all solution but a starting point for meaningful engagement, recognising that effective due diligence is an ongoing process rooted in continuous improvement.

A guide to symbols used in this toolkit

Icon

Description



Good practice considerations



Further Information



Relevant for project developers installing Solar Panels



Relevant for project developers installing Battery Energy Storage Systems



Relevant for project developers installing Wind Turbine Generators

1. Overview of Supply Chain Due Diligence

Global supply chains are increasingly complex, exposing companies to environmental, social, and governance (ESG) risks that extend beyond their direct operations. In sectors like renewable energy, risks ranging from labour violations to environmental impacts, can be difficult to detect and manage.

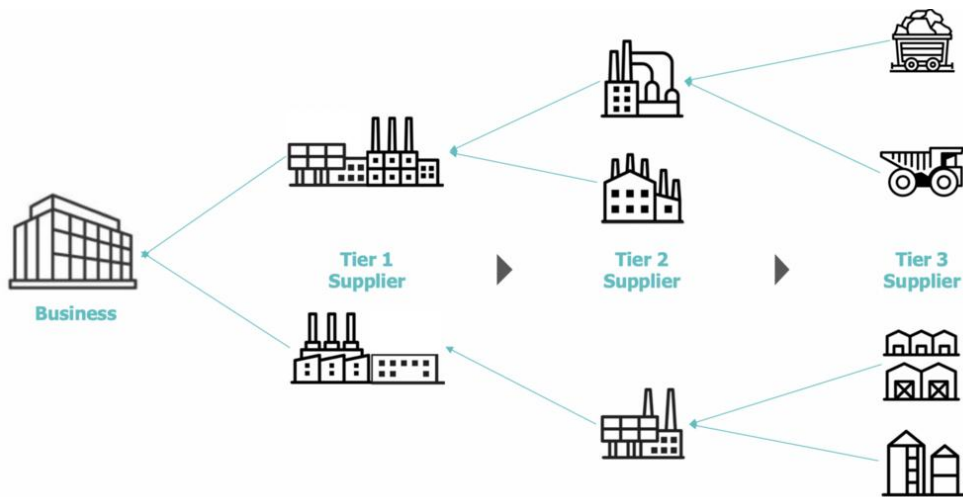
Supply chain due diligence offers a structured way for companies to identify and address such risks. It supports responsible sourcing, reduces exposure to reputational and regulatory challenges, and helps align operations with growing stakeholder expectations for ethical business conduct.

1.1 What is Supply Chain Due Diligence?

The OECD Due Diligence Guidance for Responsible Business Conduct defines supply chain due diligence as an ongoing, proactive and reactive process through which companies can ensure that they respect human rights and observe environmental and social standards in their operations and throughout their supply chains.

Supply chains are all tiers of business relationships that a company engages with in its operations, products or services, including entities it has direct and indirect business relationships with, to deliver its own product or service. In global and interconnected supply chains, those relations often span multiple countries and sectors, include direct suppliers (Tier 1) and indirect suppliers (Tier 2, 3, etc.).

Figure 1: Schematic representation of a supply chain by Tier



Supply chain due diligence is a process that is rooted on a principle of continuous improvement which means it is an ongoing effort that businesses must take to identify, assess and address risks throughout the supply chain over time.

A due diligence management system is a structured and formalised process to identify, assess and manage risks across the supply chain. It consists of a set of integrated measures as outlined in [Section 3](#), including adopting and committing to a policy, identifying and managing risks, and reporting on due diligence efforts.

The establishment of an internal structure that supports these efforts and securing buy-in from senior management are critical to ensure that supply chain decisions consistently reflect the risks. The alignment of

environmental and social (E&S) objectives with commercial priorities can be challenging, and without strong leadership support, due diligence efforts may be undermined or deprioritised.

1.2 Understanding the Business Case

While there are significant reasons for businesses to conduct due diligence, the following are some of the key drivers that highlight its importance:

- **Public awareness:** there has been increased awareness and advocacy for human rights in the renewable energy sector. Instances of alleged human rights violations have drawn increased attention from NGOs, civil society organisations calling for greater respect for human rights and accountability.
- **International voluntary standards:** Companies have increasingly made commitments to standards requiring the respect human rights and have raised the bar for accountability and transparency.
- **Corporate public commitments:** many companies have adopted policies and practices to demonstrate company values, meet ESG targets, enhance company reputation and public relations with consumers and society.
- **Investor pressure:** investors are increasingly looking at the social and environmental impact of the companies they invest in resulting in pressure to companies to align with international best practices in regard to human rights.
- **Regulation:** an increasing number of regulations have been adopted that specifically require companies to conduct human rights due diligence.
- **Reputational damage:** when a business or its suppliers are linked to human rights violations or negative environmental impacts, the association can inflict serious harm on the company.

1.3 International Standards and Regulation

Since 2012, at least 8 human rights due diligence laws were passed and in the last 5 years, the scope has clearly broadened from a specific focus on managing social risks (human rights and corruption) to ESG risks including environmental performance. The EU is now setting the bar for due diligence regulation globally as companies from across sectors are being impacted either directly or indirectly. These regulations are increasingly driving businesses to enhance transparency within their supply chains, directly affecting companies within scope and indirectly influencing those connected through the supply chain.

Title	Year	Scope	Description
Office of Foreign Assets Control (OFAC) Sanctions List	Various (Ongoing)	Global	Lists individuals, companies, and entities subject to U.S. economic and trade sanctions. Screening against OFAC helps companies avoid transactions with sanctioned parties.
Withhold Release Orders (WROs)	1930 (Trade Act Section 307); enforced actively since ~2016	Import to U.S.	Legally binding import restrictions issued under U.S. law (Tariff Act of 1930, Section 307). Goods listed under WROs are blocked from entering the U.S.

Title	Year	Scope	Description
French Duty of Vigilance Law	2017	ESG	The law places the onus on large companies in France to identify and prevent risks to human rights and the environment that could occur because of their business activities
Netherlands Child Labour Due Diligence Act	2022	Human Rights	The law obliges companies operating in the Dutch market to conduct due diligence related to child labour and to submit a statement to a public authority, declaring that they have investigated risks of child labour in their activities and supply chains
Norwegian Transparency Act	2021	ESG	The law implements parts of the OECD Guidelines for Multinational Enterprises and the United Nations Guiding Principles on Business and Human Rights (UNGPs). It requires to carry out due diligence, a duty to make an annual statement and an obligation to respond to inquiries from stakeholders

Guiding Frameworks	Year	Scope	Description
United Nations Guiding Principles on Business and Human Rights (UNGPs).	2011	Global	A set of 31 principles providing a global standard for preventing and addressing the risk of adverse human rights impacts linked to business activity. Based on the Protect, Respect, Remedy framework.
OECD Due Diligence Guidance for Responsible Business Conduct	2018	Global	Provides practical guidance for companies on implementing due diligence for responsible business conduct in alignment with the OECD Guidelines for Multinational Enterprises.
International Labour Organization (ILO) Core Conventions	Various (1919–1999)	Global (ratifying countries)	Eight legally binding international treaties covering fundamental principles and rights at work (e.g. forced labour, child labour, non-discrimination, freedom of association)
International Finance Corporation (IFC) Performance Standards	2012 (updated)	Global (mainly emerging markets)	Defines IFC's E&S requirements for private sector clients receiving investment. Widely used by DFIs. Includes PS1 to PS8 covering risk assessment, labour, community, biodiversity, etc.
United Nations Global Compact Principles	2000	Global	A voluntary initiative for businesses committed to aligning operations with 10 principles covering human rights, labour, environment, and anti-corruption.
ILO Declaration on Fundamental Principles and Rights at Work	1998	Global	Reaffirms member states' obligations to respect and promote fundamental principles and rights at work, even if they have not ratified the conventions.

Good Practice Guidance Resources	Year	Scope	Description
Solar Equipment Buyers' Guide for Supply Chain Traceability	2021	Solar sector (Global)	Offers guidance on improving traceability and addressing human rights risks in solar supply chains, particularly in relation to polysilicon sourcing.
British International Investment's (BII) Toolkit for managing human rights risk in supply chains	2023	Supply chains (Global, DFIs)	Practical toolkit developed by British International Investment to help investors and companies identify, assess and manage human rights risks in their supply chains.
EBRD's Sector supply-chain guidance on wind energy and batteries	2022	Wind and battery sectors (Europe, Central Asia)	Offers due diligence and mitigation strategies for human rights and environmental risks in wind and battery supply chains.
ILO, Combating forced labour: A handbook for employers and business	2015	Global	Practical guidance for employers and businesses on identifying and addressing forced labour in operations and supply chains.

Good Practice Guidance Resources	Year	Scope	Description
<u>ILO Indicators for Child Labour</u>	2018	Global	A set of indicators developed to help businesses and auditors identify signs of child labour in the workplace or supply chain.
<u>ILO Indicators for Forced Labour</u>	2012	Global	Practical indicators that help identify forced labour situations, used by businesses, auditors, and regulators.
<u>IDE for Supply Chain Traceability</u>	2021	Multi-sector	Provides a framework for improving traceability in global supply chains to help identify and mitigate social and environmental risks.
<u>Consolidated Screening List (CSL)</u>	Updated regularly	Global	Aggregates multiple U.S. government trade restriction lists to identify parties subject to export controls or sanctions. Used for compliance and due diligence screening.

2. Components to the Supply Chain Toolkit

The Camco Supply Chain Toolkit is composed of the below core tools:

1. E&S considerations for Procurement Policy;
2. Supply Chain Due Diligence Questionnaire and Traceability Mapping;
3. Environmental, Social and Human Rights Requirements in Procurement and Contracts.

These tools are designed to support renewable energy project developers in implementing robust supply chain due diligence. They serve as templates that must be adapted and integrated into each company's internal management systems. While they provide a strong foundation, they must be fully understood, endorsed, and tailored to reflect the company's structure, sector, and risk exposure.

2.1 E&S considerations for Procurement Policy

Purpose and overview

The Procurement Policy is essential for setting expectations and ensuring accountability. It provides a clear framework for identifying and mitigating risks such as forced labour, child labour, and environmental degradation (see [Section 5](#)). It is also a tool for cascading down ESG expectations. The policy requirements apply to all procurement activities, for both the client company and its suppliers globally.

By embedding this Policy into procurement operations, client companies ensure that their supply chain practices are not only legally compliant but also ethically sound and socially responsible. However, developing a Policy and receiving formal notice of abidance by suppliers is only one of the several steps of a robust supply chain due diligence process. The policy commitment needs to be accompanied by risk identification, mitigation and monitoring over time (see [Section 3](#)).

Key commitments:

- Commitment to human rights applies to the company's operations, workforce, and business relationships, including suppliers. The detailed commitments are presented in the Procurement Policy chapter.

Procurement process and E&S Integration

The procurement function must integrate E&S considerations at all stages of supplier selection:

- Identify needs: determine if the purchase involves a "key project component" (e.g. solar panels, battery, wind turbine, etc.).
- Supplier pre-screening: pre-screen suppliers using the Supply Chain Due Diligence Questionnaire:
 - Option 1: Completed by the client company using publicly available information. This allows for discreet, rapid screening and comparability across suppliers. However, some data may be unavailable, especially for smaller firms.
 - Option 2: Completed by the vendor company. This may yield more detailed documentation and set expectations for E&S management, but responses may be delayed, inconsistent or inaccurate.
- Contracting signing and execution: include standard E&S and human rights clauses in supplier contracts (refer to the EBRD standard contractual clauses for suppliers). These clauses typically address key risks such as:
 - Child and forced labour;

- Occupational health and safety;
- Environmental compliance (e.g. emissions, waste management);
- Freedom of association;
- Non-discrimination;
- Grievance mechanisms;
- Define monitoring, inspection, and audit requirements based on the supplier's risk profile.
- Address and remediate non-compliance using leverage (see [dedicated Section](#)).

Implementation mechanisms

- Embedding policy requirements into procurement procedures and supplier contracts;
- Conducting supplier risk assessments and due diligence using the Supply Chain Due Diligence Questionnaire and the Traceability Mapping;
- Requiring suppliers to cast similar standards to their own supply chain;
- Enabling audit rights and corrective action plans in case of non-compliance.

Continuous Improvement

Companies must commit to the continuous improvement of their procurement practices. This includes:

- Periodic review of supplier risk levels and reassessment based on updated data and sector developments, notably prior to purchasing equipment for a new project or to hire an EPC;
- Monitoring and evaluation of grievances, including volume, response effectiveness, and satisfaction;
- Review of procurement processes for efficiency, sustainability integration, and team collaboration.
- Review the budgetary implications of the policy's application and the relevance of the lessons learned for future project developments;
- Updating the Procurement Policy at least every two years or when significant changes occur.

2.2 Supply Chain Due Diligence Questionnaire and Traceability Mapping

2.2.1. Traceability Mapping

Purpose and overview

Traceability Mapping is a foundational tool for understanding the structure of a company's supply chain. It enables project developers to gain an understanding on how traceable their project's key components are – such as those composing solar panels, wind turbines, and BESS – across geographies and multiple tiers of suppliers, from direct suppliers (Tier 1) and indirect suppliers (Tier 2, 3, etc.).

Companies should demonstrate their best effort to establish traceability in their supply chain as far upstream as possible and reasonable. This threshold will vary depending on the products, supplier base, the purchasing company's leverage and related factors (size, financial power, market structuration). Iterations of supply chain mapping efforts over time also plays in favour of traceability.

Scope and functionality

The Traceability Mapping focuses on:

- Understanding the multiple tiers composing a product's supply chain. A tier is understood as a third party representing a distinct business, from the closest to a client company (Tier 1 or T1) to the furthest, with a count of the number of entities involved in the supply chain of the same product. Depending on the configurations, a similar product may involve a multi-layered or integrated supply chain, where only one or a few companies were involved in the manufacturing process;
- Mapping the geographic origin of raw materials and the geographies of manufacturing for product sub-components on a best effort basis;

- Identifying the region of origins for raw materials and for manufacturing of sub-components. Coupled with a contextual risk analysis (e.g., Conflict Affected and High-Risk Areas list, Human Rights Watch reports, Business and Human Rights Resource Centre, etc. See [Useful links](#)) as part of the company's supply chain due diligence process (see [Section 3](#)), this identification can provide valuable insights on the presence of high-risk regions and goods¹ in the company's supply chain.

Application in practice

- Used during supplier onboarding and contract negotiation.
- Designed to be completed by suppliers in a declarative mode, or alternatively by the client company, if there is enough available information publicly available.
- In addition to internal due diligence, information gathered through this process can also contribute to publicly available mapping and traceability initiatives, such as:

- Solar Stewardship Initiative – Code of Conduct
- Solar Stewardship Initiative – Solar Supply Chain Traceability Protocol
- Global Battery Alliance – Battery Passport

These initiatives promote transparency and shared accountability across global renewable energy supply chains. Where appropriate, companies are encouraged to align with or support these platforms to reinforce sector-wide ESG standards and improve data consistency.

- Updated periodically as part of ongoing due diligence and monitoring. The updates can be both in a push or pull modalities, i.e., the supplier may update the client company in case of major change in the supplier's own supplier base. The client company can also request updates on the supplier company's supplier base periodically or prior to a contract's renewal.
- Coupled with the Supply Chain Due Diligence Questionnaire and a risk assessment practice (see [Section 3, Step 2](#)), the elements disclosed in the Traceability mapping should offer insights of the level of risk implied by a business relationship with a supplier. For instance:
 - The Traceability mapping provides the information of how complex and transparent a given supply chain is, the geographic footprint of the supply chain, the type of material and sub-components used, etc.
 - The Questionnaire will provide elements on the supplier's E&S commitments and management systems vis a vis its supply chain structuration and risks.
- Identify so-called traceability "choke points" or "control points" in a supply chain, i.e., a stage in a supply chain where visibility into the origin or movement of materials, components, or labour becomes limited or difficult to track. It is likely that for a new supplier and on the first occurrence of the mapping exercise, no data further than a given choke point might be available. Engagements with Tier 2+ suppliers or research may inform the due diligence process at a later stage.

Why it matters



Traceability is critical in the renewable energy sector, where supply chains are often opaque, span multiple jurisdictions, and are allegedly linked to E&S and human rights risks globally. This tool helps identify where E&S risks may occur. It also supports compliance with supply chain due diligence regulations, which require companies

¹ The assessment of a high-risk country or goods must be dynamic and based on an iterative assessment (see [Section 3, Step 2](#)). Teams in charge of supply chain due diligence should frequently monitor market trends, including on E&S risks, to identify what high and low risks countries and goods apply to their operations.

to trace and disclose information on their supply chains including from a risk mitigation perspective. However, full supply chain traceability is at present hardly achievable in the renewable supply chains, even for major companies with large resources. The Traceability Mapping is designed for project developers to perform their best effort regarding traceability, starting from their direct suppliers and up.

Material description



Solar panel components

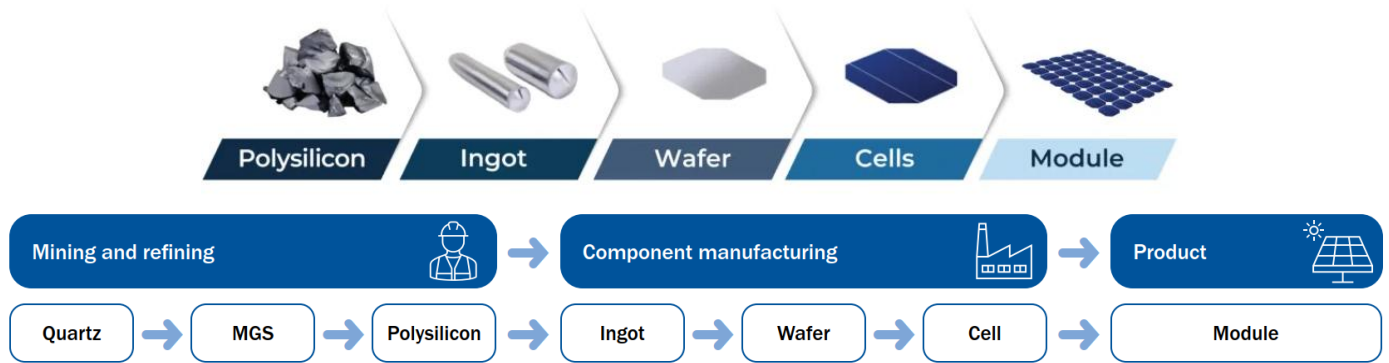


Figure 2: Solar Module Supply Chain

Subcomponent	Materials of Concern	E&S Risks
Module	Aluminium (Frames): from China, India, Russia Glass: from China, USA Plastics (encapsulants, backsheets): Global	High energy use in production, bauxite mining linked to deforestation and community displacement. Plastics derived from fossil fuels, potential for pollution and poor labour conditions in petrochemical sectors.
Cell	Silver: from Mexico, China, Peru Silicon: from China, Russia, Norway Lead (in solder): from China, Australia, Peru	Silver often mined in regions with poor labour rights and environmental degradation. Lead toxicity risks in manufacturing and disposal.
Wafer	Silicon: from China, Russia, Norway	Silicon production is energy-intensive and is linked to forced State-imposed forced labour in China
Ingot	Polysilicon: from China, Germany, Malaysia	High E&S risks due to energy-intensive processes and is linked to forced State-imposed forced labour in China.
Polysilicon	Quartz: from Brazil, USA, India Carbon electrodes	Quartz mining can involve hazardous working conditions and child labour. Carbon electrodes production involves high emissions and occupational health risks. Polysilicon processing and manufacturing principally happen in China, where allegations point out to forced labour schemes.



The main control points in the solar panels' supply chains are (i) polysilicon producers and (ii) main solar panels' manufacturers. While the solar panels' supply chain may bear many E&S and human rights risks, a company with limited resource for supply chain due diligence should focus on the reputability of the main manufacturer, i.e., the company under which the solar panels are branded. Especially, check whether the manufacturer and/or its suppliers (can be Tier 2 or more) are reportedly linked to or directly involved in forced labour schemes.



Wind Turbine components

Raw material extraction	Raw material processing	Component manufacturing	Project installation	Project installation
Raw materials, such as iron ore, copper, bauxite rare earths and balsa wood, are extracted	Metals are refined, other materials are created through processing (such as aluminium, carbon, plastics)	Raw materials and pre-components are used to manufacture wind turbine components	Components are installed at the project site	Once operating, regular maintenance is needed to ensure safety and functionality

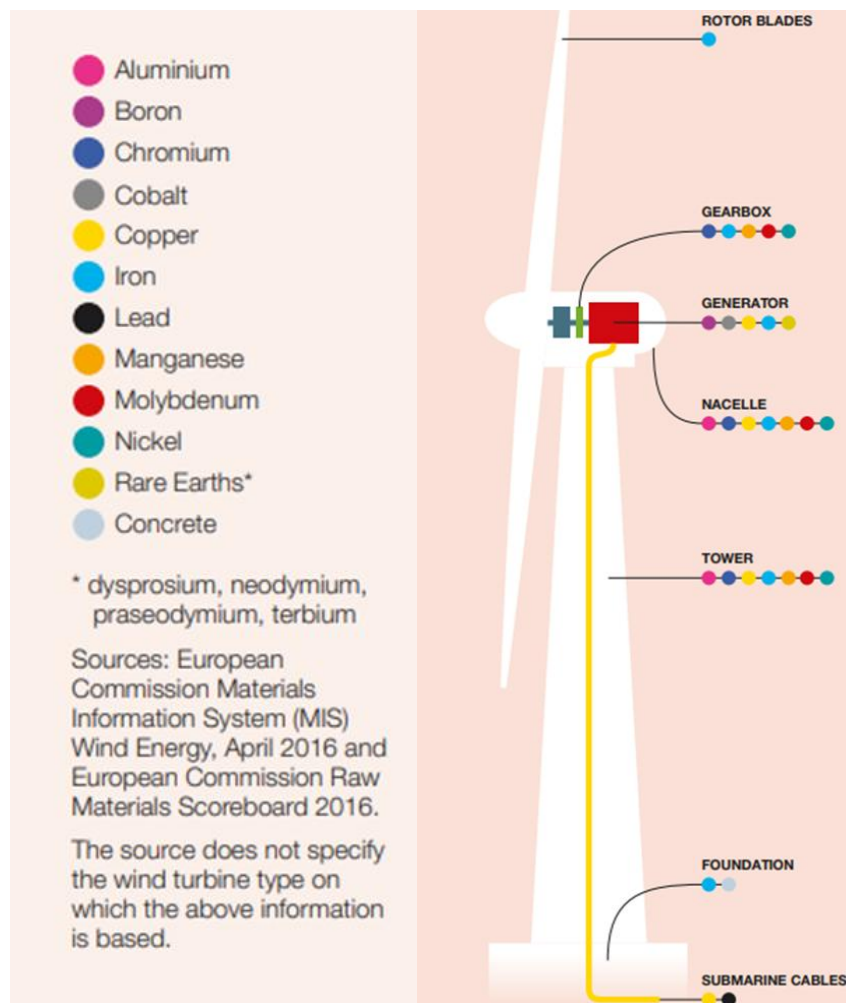


Figure 3: Wind Turbine Components

Subcomponent	Materials of Concern	E&S Risks
Wind Turbine Generator	Rare earth elements (neodymium, dysprosium): from Vietnam, China, Brazil Steel: from China, India, Japan	Rare earth elements: waste generation and dumping, air and soil contamination, land rights conflicts related to mining. Wastewater pollution, toxic chemical use and production of radioactive residue for smelting.

Subcomponent	Materials of Concern	E&S Risks
Control Cabinet Cables	Copper: from Chile, Peru, China Plastics: Global	Copper: land rights issues, water pollution, child labour in informal settings in countries like the DRC, workers' health and safety for mining. Water contamination and slag waste for smelting. PVC insulation: toxic chemical exposure.
Tower Anchor belt	Steel: from China, India, Japan Concrete: from China, India, Russia	Cement production is a major source of CO ₂ emissions. Steel supply chains may involve labour rights violations and environmental harm.
Nacelle castings bearings	Cast iron: from China, India, Russia Lubricants: Global	Foundry work can involve hazardous conditions. Lubricants may be petroleum-based, with associated environmental risks.
Rotor blades	Balsa wood: from Ecuador (main source), Peru	Risk of deforestation and infringement on Indigenous Peoples' rights.



The main control points in the WTG supply chains are (i) WTG manufacturers and (ii) raw materials refiners. It may be challenging to access any information on the raw materials refiners directly without the WTG manufacturer's support. A company with limited resource for supply chain due diligence should focus on the reputability of the WTG manufacturer and inquire on the manufacturer's own supply chain due diligence process cascaded to Tier 2 suppliers or more, especially suppliers of rare earth, copper, and balsa wood.



BEES components

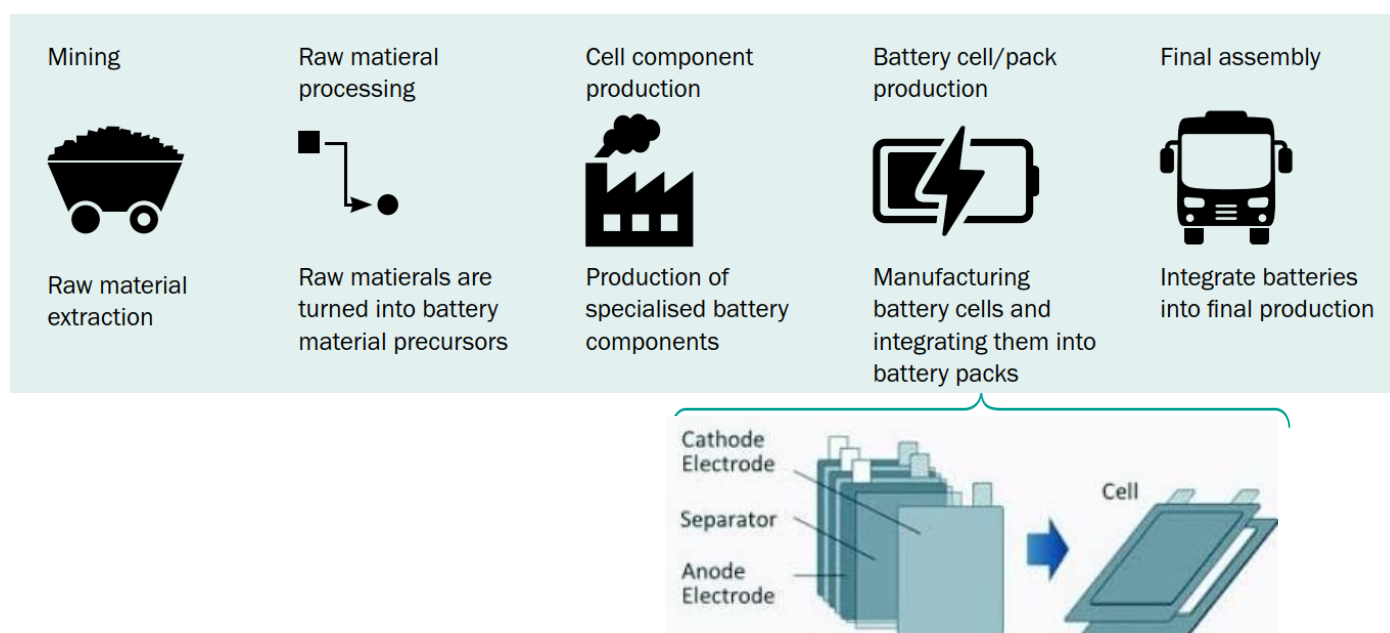


Figure 4: Battery Energy Storage System Components

Subcomponent	Materials of Concern	E&S Risks
Cathode²	Cobalt: from DRC, Russia, Australia Nickel: from Indonesia, Philippines, Russia Lithium: from Australia, Chile, China Manganese: South Africa, Australia, Gabon Phosphate: China, Morocco, USA	• Cobalt: High risk of child labour and unsafe working conditions in the DRC. • Nickel: Environmental degradation (deforestation, water pollution), community displacement for Indonesia and the Philippines. • Lithium: Water-intensive extraction impacting local communities in South America. • Manganese: Environmental degradation (deforestation, water pollution), risk of child labour and unsafe working conditions in artisanal mines, toxic exposure of workers during smelting for South Africa and Gabon. • Phosphate: Environmental degradation, community displacement, toxic exposure of workers during smelting for Morocco and China.
Anode	Graphite: from China, Mozambique, Madagascar	Natural graphite mining and synthetic graphite production can cause air and water pollution.
Separator	Polyethylene: Global Polypropylene: Global	Derived from fossil fuels; production may involve hazardous chemicals.
Battery Cell / Module	All of the above Aluminium: from China, India, Russia Copper: from Chile, Peru, China	Assembly may involve labour rights issues in low-cost manufacturing hubs.



The main control points in the BESS supply chains are (i) the battery manufacturers and (ii) raw materials' smelters and refiners. It may be challenging to access any information on the raw materials' refiners directly without the battery manufacturer's support, or even know which refiners have provided materials to the battery manufacturer. While the battery supply chain may bear multiple E&S and human rights risks, a company with limited resource for supply chain due diligence should focus on the reputability of the main manufacturer, i.e., the company under which the batteries are branded. Especially, check whether the manufacturer and/or its suppliers (can be Tier 2 or more) are reportedly linked to or directly involved in forced labour schemes or severe environmental impacts. Inquire on the manufacturer's own supply chain due diligence process cascaded to Tier 2 suppliers or more, especially cathode suppliers.

2.2.2. Supply Chain Due Diligence Questionnaire

Purpose and overview

The Supply Chain Due Diligence Questionnaire is a structured assessment tool used to evaluate supplier maturity in managing E&S risks. It supports a risk-based approach to supplier selection, monitoring, and engagement.

Scope and applicability

- To be completed by suppliers³ of major project components (e.g., solar panels, wind turbines, BESS)
- Intended for use by procurement, sustainability, and compliance teams.
- Applicable for both pre-contract (for supplier selection) and during contract execution (for ongoing monitoring).

Structure and content

- Covers key areas such as human rights, labour practices, environmental management, grievance mechanisms, and subcontracting.

² The materials of concern vary with the cathode's chemistry. Establish the correct battery type through research (see [Useful links](#), especially "EBRD Sector supply-chain guidance – batteries") or enquiry to your supplier to target your supply chain due diligence on the correct materials.

³ The Questionnaire may also be completed by the client company, providing there is enough available information publicly available.

- Includes both qualitative and quantitative questions, with space for supporting documentation.
- Designed to align with international standards and regulatory requirements (e.g., OECD, ILO, EU CSDDD).
- Split between mandatory and optional questions, depending on the level of available information, supplier openness and risk level identified.

When to use

- During supplier pre-qualification and selection.
- As part of periodic audits or reviews.
- When potential high risks are identified through the Traceability Mapping or external reports.

Why it matters



The Questionnaire is a practical tool for identifying red flags and prioritizing suppliers for further engagement or audit. It helps uncover risks related to forced labour ([Section 5.2](#)), discrimination ([Section 5.5](#)), and lack of grievance mechanisms ([Section 4.2](#)). It also supports continuous improvement by encouraging suppliers to strengthen their own E&S systems over time. The Questionnaire goes further than pure declarative statements, as it requires suppliers to provide documentary evidence in the form of management systems and proofs of implementation thereof.

2.3 Environmental, Social and Human Rights Requirements in Procurement and Contracts

Purpose and overview

The contractual clauses document outlines the minimum environmental, social, and human rights standards that all suppliers must meet when entering a business relationship with the client company. These clauses are legally binding and enforceable through supplier contracts.

The Contractual Clauses outlined in the contractual requirements (separate tool) are intended to be included in active supplier contracts. Those clauses set out the expectations for all direct suppliers and contractors of a client company. Companies using this Toolkit should review and transpose these clauses into their actual contractual agreements with suppliers. These clauses establish the legal basis for enforcing due diligence and including them in supplier contracts is critical to ensure alignment with the company's ESG commitments.

To ensure clarity and enforceability, users of this Toolkit are advised not to copy and paste isolated clauses without adapting them to their contractual frameworks. The language must be reviewed in the context of each company's legal and operational requirements.

Those clauses may also form part of an EPC contract and apply to this category of vendors in the way the clauses apply to suppliers of goods. EPC are then responsible for cascading the requirements to its own supply chain using leverage.

Scope and applicability

- All direct suppliers, contractors and service providers under active contracts
- Prospective suppliers during the procurement and pre-contractual phase
- Cascading of standards to sub-suppliers and subcontractors across the supply chain.

Key provisions

- Prohibition of forced and child labour, discrimination, and unsafe working conditions.

- Requirements for environmental protection, including pollution control and waste management and deforestation safeguards.
- Obligations to implement grievance mechanisms and cooperate with audits.
- Right of the client company to inspect, audit, and verify compliance – either directly or via third parties – with or without prior notice.

Enforcement and remediation

- Non-compliance may trigger corrective action plans, penalties, contract suspension, or termination.
- Suppliers are expected to cooperate fully and address identified risks in a timely and acceptable manner.

Why it matters



Contractual clauses are critical enforcement mechanisms of effective supply chain due diligence. They ensure that suppliers are not only aware of expectations but are also legally obligated to meet them. This tool directly supports mitigation of risks such as corruption (5.9), environmental pollution (5.8), and impediments to freedom of association (5.6). It also strengthens leverage in supplier relationships, a key principle under the UNGPs.

3. Step-by-Step Guide to Supply Chain Due Diligence

The following steps have been put together, in line with international standards and frameworks, to support renewable energy project developers take a risk-based approach to supply chain due diligence.

Renewable energy technologies often rely on critical minerals such as Nickel, Cobalt, Lithium, Copper, Aluminium, Rare Earths and others materials (e.g., balsa wood, polysilicon) that may be associated with negative social and environmental impacts. The following steps aim to help you identify, assess and mitigate risks associated with the sourcing of these minerals, in the context of your company's specific products, whether that be solar panels, BESS or WTG and support responsible supply chain practices aligned with international due diligence standards.

Companies will enter their due diligence process at different stages of their maturity level. Some may be mapping their supply chains and the afferent risks for the first time, while other may have already taken steps and now require guidance on a specific part of the process outlined in this Toolkit. This Section is designed to offer relevant support tailored to your needs.

The overarching objective of these steps is to help you establish a due diligence management system that integrates each component and enables you to conduct effective risk-based due diligence. The system needs to be proportionate to your company's size, risk exposure and operational context. However, as your company grows and evolves, so too should the individual steps and overall system to remain relevant and responsive with emerging risks.



Step 1: Policy Commitment

Goals of this Step

Ensure that your suppliers have developed a publicly facing policy committing to respecting human rights and protecting the environment, in alignment with the OECD Due Diligence Guide on Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas ("OECD Guidance") and the UNGPs. A public commitment is the baseline for accountability and transparency. It shows that a company acknowledges its responsibilities and is prepared to take the necessary steps to meet international due diligence standards relating to both social and environmental impacts.

Key Elements to Include in Your Company Policy or to verify when reviewing a supplier's policy

- ✓ Purpose & Scope
- ✓ A Roles, responsibilities and governance structure
- ✓ Reference international standards like the UNGPs and the OECD
- ✓ Prohibited Practices under the policy (those should be relevant to the contextual risks of the sector)
- ✓ Due Diligence Process Overview
- ✓ Supplier requirements
- ✓ Mechanisms for reporting concerns or violations such as a grievance mechanism
- ✓ Monitoring & Review Process

Approaches, Methods and Instruments

- Before checking with your suppliers, it will be important that your company has its own publicly accessible policy that clearly commits to respecting human rights and protecting the environment in line with international standards. This enables you to communicate your policy to key Tier 1 and Tier 2 suppliers and set your expectations in terms of social and environmental performance. This policy should also be published in your website, if applicable.
- Assess whether your suppliers have similar commitments by reviewing publicly available information, such as their websites, annual reports, sustainability disclosures or any information provided during the procurement and contracting process.
- Integrate your own policy into procurement and contracting processes. This ensures that your policy becomes binding upon your supplier relationships.
- If a supplier does not have a policy commitment, engage with them directly to make sure this is something they are willing to initiate. Explain your expectations and share your own policy as a reference to encourage them to adopt a similar approach. Lastly, offer to provide support and guidance to help them establish appropriate standards and practices.
- Companies may express their commitments in different ways. Some may have a standalone Human Rights Policy, while others may combine responsible sourcing, human rights and environmental commitments into a single integrated policy. The key is to assess whether the policy, regardless of the format, clearly outlines the company's commitments for ethical, social and environmental conduct across their operations and supply chain.



The United Nations Global Compact and Office of the United Nations High Commissioner for Human Rights have published a detailed guideline on [How to Develop a Human Rights Policy](#).

Step 2: Risk Identification & Assessment

Goals of this Step

The goal of the risk identification process is to help you understand where and how actual or potential E&S risks may exist in your supply chain for you to prioritise them accordingly before moving on to the mitigation step.

Risk identification is not just about looking back at past problems but adopting a forward-thinking mindset, while being cognizant of how supply chains are structured, to identify risks at an early stage and anticipate challenges in your supply chain before they arise.

Approaches, Methods and Instruments

There is no single right approach on how you should identify your supply chain-related risks. A combination of tools may be suitable depending on your company's goals, resources, and complexity of your supply chain.

Risk identification and assessment is intended to be broad enough and to serve as an initial exercise to enable prioritisation. Your company identifies general areas of significant risk across your own operations and its business relationships (including all Tiers of the supply chain) through the below themes:

- Your company's activities / type of operations;
- Your company's positioning in the supply chain (upstream and closer to the extraction and processing of raw materials, midstream and closer to the manufacturing of semi-finished or finished products, downstream and closer to the end use or to the resell to end-customers);
- Your company's direct counterparts. Your company must be aware of those by name, have their contracts, purchase orders, etc. and know the type of goods procured from this supplier;
- Your company's indirect counterparts (Tier 2+ suppliers). On a best effort basis, your company should attempt at gathering information from its own research and leverage on Tier 1 suppliers (see the [dedicated sections](#) for the tools Supplier questionnaire, Traceability mapping) on the composition of its supply chains, especially for project components that might be more at risk of environmental, social and human rights impacts;
- Review external sources (e.g., industry associations, academia, NGOs, governmental institutions, etc. A full list of recommended sources can be found in the [Section Useful Links](#)) to put those facts into context and understand whether there is publicity related to your company's industry's relationship to negative environmental, social and human rights impacts. As a complement to the useful links, you can also use search engines using a combination of key words (e.g., "supplier's name" + "human rights" OR "environmental risks") that will open the search wider;
- The centrality of a given supplier and/or good procured. The centrality can be assessed by several means, notably:
 - Quantitatively, such as by setting a threshold of overall project capital expenditure, above which a procurement stream is deemed as a main project's component, and/or above a certain contract's length or absolute value;
 - Qualitatively, such as by assessing the level of leverage or influence the client company can apply on a supplier given both companies' size, the financial amount and length of the contract, or the ease to find an alternative supplier.

The risk assessment should be an iterative process. It means that your company needs to monitor evolutions that may impact the operations' risk levels on a regular basis. For instance, if the main suppliers to the project are evolving, or if new external sources point out to the evolution of the risks, this needs to impact the risk identification and assessment (see [Step 4 - Monitoring](#)).

[Section 2 - Components to the Supply Chain Toolkit](#) refers to the set of tools that shall guide the risk assessment process. Additional actions support the risk identification and assessment, and feeds into other steps of the due diligence process, notably Step 3 on Risk mitigation and Step 4 on Monitoring:

- **Compiling a Supply Chain Due Diligence Questionnaire** (separate tool and [Section 2.3](#)) that consists of carefully crafted questions directed for your Tier 1 suppliers to identify potential risks and enhance supply chain transparency. The questionnaire enables you to evaluate supplier maturity and requests key documents such as supplier code of conduct to support this assessment. When used in combination with the traceability mapping, the tools provide valuable insights into Tier 1 suppliers while also helping to cascade your expectations further down the supply chain (i.e. by asking suppliers what steps they have taken to prevent and/or mitigate forced labour in their supply chain).
- **Supply chain mapping** to understand the different tiers of suppliers, the flow of materials and where activities may be taking place geographically. More information can be found in [Section 2.2 Traceability Mapping](#) of this toolkit, including the requirements and limitations inherent to supply chain mapping. The mapping should typically contain elements on:
 - (i) Your company's direct counterparts (direct supplier, contractor, workers, etc.), notably for suppliers, their type (e.g., product's manufacturer, sub-components' manufacturers) and production locations;
 - (ii) Your company's indirect counterparts (indirect supplier, sub-contractors). If those are not known to your company or only until a certain point in your supply chain, this is a valuable indication: the degree of supply chain's potential complexity and opaqueness are both positively correlated with a higher risk level for your company.
- **Audits** are a useful tool for conducting due diligence and a key step in the OECD Guidance ([Step 4 - Monitoring](#)). They are especially important when enhanced due diligence is needed, potentially based on a high level of contextual risk and/or an indication of potentially poor environmental and social safeguarding from your supplier, based on the Supplier questionnaire and/or public information. In such cases, an onsite audit, conducted in agreement with the supplier, can help assess alignment with international best practices. If gaps are identified, a corrective action plan can be implemented. However, audits can also be costly and may not be feasible for smaller companies. In such cases, you can consider alternative approaches such as direct supplier engagement or collaborating with industry peers to share existing audits. These options can still provide meaningful insights while remaining cost-effective. In other contexts, audits can be challenging to organize as they require the buy-in of large suppliers, implying a limited leverage from your company, in countries stringently controlling access to manufacturing facilities, such as the major solar panel suppliers in China.

Informed by the above, list the risks identified related to your own operations and to your supply chain, and assign the risks with a level of priority. The [Section 5 – Sector-Specific Risks in Renewable Energy Supply Chain](#) is a guide to help framing risk identification and prioritization.

Your company needs to prioritise the risks identified to allocate resources more effectively. This process requires particular attention on determining which risks require more attending depending on their potential impact and likelihood. In this exercise, you need to collect all the risks you have identified and apply certain risk criteria that determine the priority level. The table below provides a simple example of how this prioritization might be structured. The risk score and priority level must be refined or adapted, especially if your company already conducts a risk identification and assessment exercise to avoid duplication of the risk mapping between two business functions. This activity must be aligned across the procurement division, E&S and the management level to ensure a consensus in the budget set aside.

Risk Type	Likelihood	Impact	Risk Score	Priority Level
<i>Guiding Questions</i>	<i>How likely is this risk to occur (1-5)</i>	<i>How severe would the impact be (1-5)</i>	<i>Likelihood x Impact</i>	<i>Based on risk score</i>
Risk 1	5	5	25	Critical Risk
Risk 2	4	4	16	High Risk
Risk 3	3	4	12	Medium Risk

Step 3: Risk Mitigation

Goals of this Step

This step is about using your leverage and putting concrete measures in place to reduce the likelihood and severity of the identified risks that relate to your supply chain. While you may identify numerous risks at once, it is not possible to address all risks at once, this is particularly true for smaller companies, and therefore advisable to prioritise the risks you need to mitigate, see [Step 2 – Risk Identification & Assessment](#).

Approaches, Methods and Instruments

Design a platform that encompasses an overview of the various strategies to follow-through with, depending on the risk identified. This can be for example based on the level of risk. The following Table describes:

- The potential configurations your company may encounter related to risks in your supply chain;
- Associated due diligence actions;
- Responsibilities for risk mitigation starting from you until your supply chain.

While schematic, those configurations are the most encountered and provide guidance on supply chain due diligence that companies from all size and leverage can roll out.

Example: Due diligence action based on risk identification

	Risk identification	Direct supplier	Indirect supplier
Action from your company	1. Risk identified Exert leverage on direct supplier (query, questionnaire, documentation request, audit, contractual leverage, etc.)	1.a Identified risk on supply chain Enquire to its own supplier and feedback	1.a.1 Identified risk on own operations Answer query (questionnaire, documentation, audit, etc.)
			1.a.2 Identified risk on supply chain Enquire to its own supplier and feedback
		1.b Identified risk on own operations Answer query (questionnaire, documentation, audit, etc.)	1.b.1 No requirement
	2. No risk identified Routinely screen direct supplier	2.a Answer query (questionnaire, documentation, audit, etc.)	2.a.1 No requirement



Grievance mechanisms (GM) are an integral part of a company's commitment to risk mitigation and remedy provision. It is a structured channel that enables affected individuals, whether within the company's operations or its supply chain, to raise concerns about risks and impacts. Such a mechanism should be implemented within your own company and opened to supply chain actors. It should also be requested that your suppliers operate their own GM and request their own suppliers to do so as well as part of your contracts (see [Section 2.4](#)). It is opportunity for both risk identification and risk mitigation to hear directly from external stakeholders on an unsolicited manner.

Where critical, high, or medium risks are identified as part of step 2, develop a risk mitigation plan for each category, followed with a specific timeline, responsibilities and KPIs.

Where low risk is identified, a mitigation plan is not necessary, but you should continue to monitor the relationship with your supplier to ensure the due diligence information is up to date.

Example: Risk Mitigation Matrix

Risk Level	Critical Risk	High Risk	Medium Risk
Strategy	Immediate risk mitigation through direct intervention	Risk mitigation through supplier engagement and corrective actions	Preventive actions and awareness raising to avoid risk escalation
Internal Actions	Escalate to senior management	Assign risk owner within the company and enhance monitoring	Monitor actions through capacity building
External actions	Immediate supplier engagement or consider temporary suspension or disengagement if there is no improvement over time or no commitment	Develop Corrective Action Plan (CAP) with supplier and provide support or technical assistance	Share expectations with suppliers and offer training if needed
Timeline	Immediate to 1 month	1 – 3 months for CAP implementation	3 – 6 months

Step 4: Monitoring

Goals of this Step

The purpose of Step 4 (Monitoring) is to ensure your company has embedded the supply chain due diligence process in its operations. Step 4 focuses on the necessary oversight and control in place to support risk assessment and management. For example, are responsibilities regarding the conduct due diligence assigned? How are those responsibilities integrated with the sustainability, compliance and other relevant functions?

While Step 1-3 have primarily focused on external factors and the relationship of the company with external stakeholders, Step 4-5 shifts the emphasis inward, toward the internal structure of your company and robustness of your management systems. Your company should set frequency and timeline to undertake the selected monitoring actions. A fixed period (e.g., yearly, bi-annually), or prior to supplier contract renewal, are good practice.

Approaches, Methods and Instruments

Based on [Step 2 – Risk Identification & Assessment](#) and [Step 3 – Risk Mitigation](#), assess the level of residual risks based on the initial risk assessment and the applied management measures, as well as the risks that would require a monitoring over time. For instance, your company should consider the following actions as a priority:

- **Reputational risk review of the Project's main suppliers:** monitor the suppliers' reputability to avoid any linkage to E&S and human rights risks. This should enable your team to identify, track and respond to emerging risks across your supply chain in a timely manner.
- **Supplier audit and inspection:** see [Step 2 – Risk Identification & Assessment](#). The frequency and modality of the audits / inspection must be correlated to the level of risk posed by a business relationship, as well as to the feasibility of such audits and the financial and human means available to your company, i.e., is the supplier contractually required to accept such audits? Should the audit be on-site at the production facilities, or can it be remote with interviews and documentation review? Are the audits conducted by your company or by a 3rd party auditor? Ensure that a clear and time-bound Corrective Action Plan (CAP) is set in place to address any identified gaps or issues. Once this has been developed, maintain regular communication with the supplier to monitor progress and provide support where needed.
- **Grievance monitoring:** periodically review your own grievance mechanism especially if you have received supply chain-related grievances over the past monitoring period. For high-risk supplier, request periodic extract of their own grievance mechanisms (both workers and communities' mechanisms). Analyse whether there are indications of E&S and human rights risks related to your supply chain. Set management measures using leverage onto your suppliers for them to those risks mitigated.



Foster a collaborative approach to supplier engagement, even though audits, where risks management in the supply chain is seen as a shared responsibility. This encourages suppliers to be more open and willing to disclose challenges rather than conceal them.

Your company may consider the following actions to enhance its supply chain monitoring:

- **Trainings on supply chain due diligence:** provide regular trainings on supply chain due diligence for internal staff to ensure that potential risks can be identified by all staff members and not only the team responsible for conducting due diligence. Well-informed employees play a critical role in supporting due diligence across the organisation.
- **Engage with or joining relevant industry associations:** These associations provide an opportunity for you to gain valuable insights and shared resources to address complex issues more effectively as part of a wider group. It is also an opportunity to engage and bring your company's perspective to a wider audience. A non-exhaustive list of associations relevant to supply chains in renewable energy projects can be found in the Useful links Section.

Step 5: Reporting

Goals of this Step

The goal of the reporting step is to publicly communicate your efforts to external stakeholders on supply chain due diligence in a clear and transparent manner. This step is crucial in demonstrating accountability to external stakeholders such as customers, investors, regulators, civil society etc. and ensuring alignment with international standards and frameworks. By reporting your efforts effectively, it also helps build stakeholder trusts and promotes a culture within your company of reflecting on lessons learned and continuous improvement.

Approaches, Methods and Instruments

- Companies should regularly disclose their due diligence efforts, either through an annual or sustainability report or through a stand-alone report on supply chain due diligence as a core element of

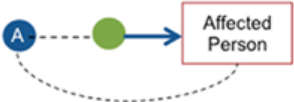
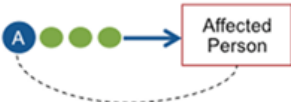
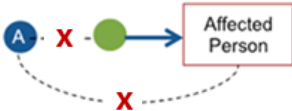
transparency and accountability. Those reports may or may not be disclosed in the public domain, depending on the legal or investors' requirements, the company's ambition for transparency, etc.

- Ensure that your reporting structure is aligned with international frameworks such as the OECD Guidance, Global Reporting Initiative (GRI) or the Corporate Sustainability Reporting Directive (CSRD). This can be achieved by:
 - Using standardised metrics provided by the GRI or the CSRD to report on ESG performance.
 - Structuring your report to reflect OECD's 5-step framework highlighting policies, risk management systems and actions taken;
 - Ensure internal teams are aligned in terms of sharing data across different functions (i.e. procurement, legal, sustainability, commercial etc.);
 - Review public reports from peers or leading companies to draw inspiration and improve your own reporting practices.
- Define clear indicators that support your reporting efforts using Key Performance Indicators (KPI) such as such as:
 - Number of suppliers who have signed your code of conduct;
 - Number of suppliers going through a CAP;
 - Number of suppliers with which the relationship has ended.

4. Key concepts associated with Supply Chain Due Diligence

4.1 The "Cause, Contribute, Linked" Framework

Business enterprises should analyse in detail the relationship between their project and the human rights impacts that may arise because of, or linked to, the project's activities. The degree to which business enterprises are responsible will differ in accordance with an involvement framework establishing whether a certain company 'causes, contributes to, or is linked' to the impact.

Relationship	Configuration	Responsibilities
Cause		1. Prevent or mitigate the impact 2. Remediate the harm of the impact
Contribute	 	1. Prevent/mitigate contribution to the impact 2. Use/increase its leverage with other responsible parties to prevent/mitigate the impact 3. Contribute to remediating the harm of the impact relative to the extent of its contribution
Is linked	 	1. Use or increase its leverage with other responsible parties to prevent or mitigate the impact 2. No responsibility to remediate, but may choose to do so
No link		1. No responsibility to use leverage or remediate, but may choose to do so

Depending on the specific project setting, the involvement of renewable project developers with regards to E&S risks and impacts may differ largely, spanning all the involvement framework from causing an impact to having no link to it.



There is a continuum between contribution and linkage. A variety of factors can determine where on that continuum a particular instance may sit, including the extent to which a business (in this case the Project developer) enabled, encouraged, or motivated E&S impacts by another business (an EPC). Intermediaries such as an EPC or a broker / trader of components are frequent and create another of complexity in terms of the attribution of responsibilities for their risks and impacts, and their management.

4.2 Leverage on Third Parties and responsible disengagement

Leverage refers to the ability of a private actor which is not directly causally linked to a certain adverse human rights impact to effect change to the practices of another party that is causing or contributing this impact. Project developers have multiple ways to build leverage on third parties they do not directly control such as on suppliers of goods and services, or contractors such as EPCs. Leverage can take various forms (non-exhaustive list):

- Contractual Leverage, e.g., resort to a contract rather than purchase order. Include binding E&S clauses in contracts with EPC contractors or equipment suppliers, such as the possibility for inspection and audit in contracts, the possibility of disengaging as a last resort in case of major breach;
- Commercial Leverage, e.g. use buying power to demand improvements in E&S practices;
- Collaborative Leverage, e.g., work with peers, industry associations, governments, etc. to improve traceability in supply chains, such as through sharing audits of in high-risk suppliers;
- Operational Leverage, e.g., Require the development and roll out of comprehensive E&S Management Systems (ESMS) of an EPC — track;
- Relationship Leverage, e.g., influence public agencies or partners (e.g., development banks, local governments) to uphold human rights standards related to procurement.

Where leverage is limited, project developers should take reasonable steps to build or increase it over time.



There are several ways to increase leverage on a Tier-1 supplier in addition to direct and individual engagement with the supplier:

- Engage with industry peers and buyer's consortium (see [Useful links Section](#)) on responsible sourcing and E&S risk mitigation strategies;
- Request support to industrial associations notably on E&S risk identification and mitigation, reputational risk analysis, material or product traceability, and supplier audit;
- Report to financial partners on the attempted leverage and its results to foster the emergence of a collective leverage, at portfolio-level for instance;
- Engage with suppliers of further tiers (Tier T2+), when known, to collectively exert leverage on T1 suppliers. T2+ suppliers may have interest to influence T1 suppliers into more disclosure and transparency. Moreover, T2+ suppliers may be of larger size than T1 suppliers, bringing gravitas to joint leverage efforts with project developers.

Disengagement from a supplier should occur as a last resort, when:

- The supplier repeatedly refuses or fails to address serious human rights or environmental violations which are either documented, or there is a high likelihood that the impact materialized or is about to materialize;
- The Project developer lacks sufficient leverage, and cannot build it despite best efforts;
- The harm, whether attested or suspected, is irremediable or severe (e.g., use of forced labour or child labour, environmental destruction with irreversible consequences, etc.).

4.3 Grievance Management and Remedy in Complex Supply Chains

Renewable project developers have different stakeholders who may be negatively affected by project activities, caused by the project developers themselves, by contractors such as EPCs, or by suppliers to the project. Impacted stakeholders may include direct and indirect workers, customers, suppliers and communities impacted directly or indirectly by the project's business activities.

The development and implementation of grievance mechanisms (GM) is a way through which businesses can receive and address grievances from the affected stakeholders. A GM is a documented and systematic way of gathering, assessing, recording and resolving grievances and concerns, or responding to requests and feedback (where necessary) from stakeholders affected by business activities and relationships.

These stakeholders may seek to bring grievances to businesses for resolution at various levels of the supply chains, not necessarily restricting to the level closer to them. Project developers must, therefore:

- Develop and implement effective mechanisms to gather and resolve grievances, including contributing to the resolution of the grievances of supply chain workers;
- Make the development and the operation of a GM a contractual requirement to suppliers with which the project developers have a direct contractual relationship. Hence, those requirements more often fall on Tier 1 suppliers to the project developers. The existence of GM at supplier-level must be monitored, through questionnaire or audit for instance;
- Communicate to 3rd parties, including to workers when feasible, the existence of their GM. Grievances may be received in an unsolicited “pull” modality, as opposed to the “push” modality such as questionnaire, audits, etc. that are pushed to suppliers. Both modalities are complementary in the supply chain due diligence exercise.

4.4 Traceability in Complex Supply Chains

In the context of due diligence, the terms traceability, transparency, and chain of custody are often used interchangeably. While each plays a distinct role in the due diligence process, they are frequently misunderstood by stakeholders.

Term	Definition	When is it applicable to me?
Transparency	Openness and public disclosure of activities	At all stages of your due diligence efforts, especially when engaging with stakeholders or reporting
Traceability	Ability to track the origin, geographical path, chain of custody and physical evolution of a product or material over time	When you aim to track the origin of materials or map your supply chain
Chain of Custody	A record of the sequence of entities which have custody of a good (e.g., mineral, part) as they move through a supply chain	When you need to prove that materials have not been mixed, especially for audits

Establishing an effective traceability system requires accurate supply chain data, suppliers willing to collaborate, an assurance process to verify the data in the traceability system, and the technology to track the information.

Your approach to traceability will depend on the maturity of your due diligence efforts as outlined in [Section 3](#). If you are in the early stages, the priority should be to:

- Gain a clear understanding of your supply chain: identify your Tier 1 suppliers and Tier 2+ as feasible and reasonable, their locations, the products they provide, and materials involved (See [Section 2](#));
- Cascade your expectations down the supply chain, encouraging your direct suppliers to do the same with their own suppliers.

If your due diligence is at a more advanced stage, and provided your company has leverage and the financial means, audits can also be a valuable tool to complement traceability efforts by incorporating chain of custody verification.

However, for most products and in most jurisdictions, full supply chain traceability is not a legal requirement. Due diligence requirements across the world may require various level of efforts, as per the selected examples below (from the less to the most stringent requirements):

- Encourage supply chain mapping “to the level needed” to identify modern slavery risks (UK Modern Slavery Act);

- Require supply chain traceability for Tier 1 supplier and a supply chain mapping based on best efforts for further Tiers (California Transparency in Supply Chains Act);
- Encourage tracing sufficiently far upstream to identify and engage with suppliers at points of high risk, which vary depending of the product considered and how the supply chain is structured (OECD Due Diligence Guidance);
- Perform “reasonable country-of-origin inquiry” and deeper due diligence for a selection of high risks commodities / geographies, such as tin, tantalum and tungsten (3T) from the DRC (U.S. Dodd-Frank Act);
- “Demonstrate due diligence and effective supply chain mapping” for polysilicon and downstream solar panels’ components to ensure they are not associated with forced labour in Xinjiang. Importers must furnish a full flowchart of every processing step, list all entities in the chain (even non-contractual ones), and prove non-mixing of Xinjiang-sourced polysilicon (U.S. Uyghur Forced Labor Prevention Act).



Companies should demonstrate their best effort to establish traceability in their supply chain as far upstream as possible and reasonable. The Traceability mapping tool (see Section 2) will support this endeavour. However, companies should stay clear from unrealistic expectations on traceability, provided that full supply chain traceability is no silver bullet for supply chain due diligence and not achievable in most cases.

5 Sector Specific Risks in Renewable Energy Supply Chains

5.1. Most salient risks

Complex and non-transparent supply chains

The renewable energy sector relies on global, multi-tiered supply chains for key components such as solar panels, inverters, wind turbines, and batteries. These supply chains often span regions with limited oversight of labour rights and environmental standards, creating significant risks of hidden human rights violations, unethical labour practices (including forced labour in polysilicon manufacturing), and environmental degradation linked to raw material extraction.

The complexity and opacity of these supply chains makes it difficult for project developers to trace the origin of materials or verify supplier compliance especially in upstream sourcing of raw materials and components, where the risk of labour rights abuses and environmental harm is often highest.



To address these risks, project developers should implement supply chain mapping on a best effort basis, conduct themselves or require from their suppliers (when targeting Tier 2+ suppliers) regular supplier assessments and audits, and integrate responsible sourcing policies across all tiers. Engaging with sector-specific initiatives such as the Solar Energy Industries Association (SEIA) Supply Chain Traceability Protocol, Global Wind Energy Council (GWEC) Sustainability Working Group, and the Global Battery Alliance (GBA) and adopting international due diligence standards such as those highlighted under Section 1.3, are critical steps toward enhancing transparency and accountability in renewable energy value chains.

Forced Labour

Forced labour is a significant human rights risk in the renewable energy sector, particularly in the production of solar components such as polysilicon used in photovoltaic (PV) panels. Reports⁴ have linked forced labour practices to polysilicon production in regions such as Xinjiang, China, which accounts for nearly half of global supply. Risks also exist in the wind sector, particularly during tower and turbine manufacturing, or in battery manufacturing relating to the extraction of certain mineral (e.g., cobalt). In those sectors, the use third-party intermediaries and weak oversight heightens the potential for forced labour, especially through excessive recruitment fees, contract substitution, underpayment, restrictions on movement, and passport confiscation.

Informal and migrant workers involved in the transportation of minerals, components, and equipment may face exploitative conditions that constitute forced or bonded labour. Project developers must strive to trace raw materials/supplies to their source where possible, enforce responsible sourcing practices, conduct or request independent audits, and embed international labour standards in their supplier contracts. Implementation of transparent grievance mechanisms and the elimination of exploitative recruitment practices are also critical to ensuring labour rights are upheld across the renewables value chain.



Apply this guidance when evaluating suppliers and labour conditions especially in upstream manufacturing. Use risk screening tools (e.g., [U.S. Department of Labor List of Goods Produced by Forced Labor](#)), verify recruitment practices, and ensure third-party audits include forced labour indicators.

In addition, screen suppliers against U.S. government enforcement lists, including the [Office of Foreign Assets Control \(OFAC\)](#) and [Consolidated Screening List \(CSL\)](#), companies subject to [Withhold Release Orders \(WROs\)](#) issued by U.S. Customs and Border Protection (CBP), and the [Uyghur Forced Labor Prevention \(UFLPA\) Entity List](#) by the Forced Labor Enforcement Task Force (FLETF). Ensure that third-party audits explicitly include forced labour risks and remediation mechanisms.

⁴ Wübbeke and Zenglein 2020; Murphy and Elimä 2021; IEA 2022a

Child Labour

Child labour is a risk in upstream supply chains, particularly in the extraction of raw materials such as rare earth elements, copper, and lithium, and among subcontractors in construction, transport, or waste handling. In high-risk contexts, child labour may occur in informal or home-based manufacturing, while formal settings may involve hazardous work performed by adolescents.



Project developers must conduct thorough supply chain due diligence and incorporate child labour risk assessments into raw material sourcing reviews, particularly for cobalt, copper, and lithium. They should enforce strict labour policies aligned with ILO conventions and require EPC contractors and suppliers to implement robust age verification systems, monitoring, and worker protection measures, along with child labour remediation policies, to effectively eliminate child labour risks.

Poor working conditions and terms of employment

Solar and wind energy projects, particularly during construction, often involve hazardous conditions, long hours, and poor living standards for temporary, migrant, or low-wage workers. Common issues include non-compliance with occupational health and safety (OHS) standards, low or irregular wages, excessive overtime, inadequate contracts, and lack of worker representation or grievance mechanisms. Vulnerable groups — such as migrant and subcontracted workers — face heightened risks of abuse, harassment, and wage exploitation, especially in contexts with weak labour governance. Project developers and owners must ensure that their contractors uphold fair labour practices by providing living wages, safe and healthy working conditions, adequate worker accommodations, and regular OHS training and inspections throughout the project lifecycle. Enforcing responsible employment standards is essential to safeguarding human rights across renewable energy value chains.



Use this guidance during contractor and subcontractor assessments, covering both pre-construction and construction phases. Ensure compliance with ILO core labour standards, conduct site-level occupational health and safety (OHS) audits, and perform regular worker welfare checks.

5.2. Other risks

Discrimination

Discrimination based on gender, ethnicity, disability, or other factors remains a challenge in the solar and wind energy sectors. Vulnerable workers — such as migrants, casual labourers, and workers forced into imposed labour schemes — are also at higher risk of unsafe working conditions and discriminatory practices. To address these disparities, project developers must implement robust anti-discrimination policies, promote inclusive hiring, and invest in training and mentorship programs targeting underrepresented groups, including women in Science, Technology, Engineering, and Mathematics (STEM) and local communities. Supporting equal access to opportunities and safe, fair working conditions is essential for a just transition in the renewable energy sector.



Apply during HR and workforce audits and stakeholder engagement planning. Assess gender and diversity representation, training opportunities, and wage gaps. Ensure anti-discrimination policies are in place and monitored across contractors and partners

Impediments on freedom of association and collective bargaining

Renewable energy supply chain workers may face obstacles to forming unions or engaging in collective bargaining. This risk is heightened in countries where freedom of association and collective bargaining rights are legally restricted or poorly enforced, exposing workers who attempt to organize to retaliation. Project developers must respect these fundamental labour rights, prohibit retaliation, and ensure that their contractors and suppliers uphold freedom of association and collective bargaining through binding contractual commitments. Protecting

these rights is essential to fostering fair labour practices and stable workforce relations in the renewable energy sector.



Project developers should consider including questions on worker representation, union access, and grievance mechanisms in supplier audits. Monitor for retaliation risks and ensure contractors uphold workers' rights to organize, even in jurisdictions with legal limitations.

Impediments on indigenous peoples' rights

Large-scale extractive industries, required to power the manufacturing process underpinning renewable energy projects, often require extensive land, which can overlap with territories traditionally occupied or used by Indigenous Peoples. This can lead to serious human rights impacts, including loss of land and livelihoods, cultural disruption, and violations of rights to self-determination and development. Key risks include inadequate consultation, land acquisition without Free, Prior, and Informed Consent (FPIC), involuntary resettlement, and damage to culturally significant sites. In jurisdictions with weak land tenure systems or poor consultation practices, such risks have sparked conflicts over land rights and compensation.



To prevent harm, project developers must be informed of the risks and potential impacts of their suppliers on IPs through a combination of (i) contextual risk assessment, (ii) traceability requirements to inform which contextual risks may apply and (iii) an assessment through a questionnaire of the safeguards put in place by the supplier to assess whether supply chain risks are identified and mitigated by the supplier.

Environmental Pollution

While renewable energy reduces carbon emissions, solar, wind and batteries projects still present environmental pollution risks in their supply chains. Manufacturing solar panels, wind turbines and batteries, as well as other project components such as inverters, involves hazardous materials like lead, cadmium, and silicon tetrachloride, which can harm ecosystems and human health if not properly handled or disposed of. Without proper waste management systems, the recycling or disposal of end-of-life equipment can lead to soil, water, and air contamination.

Project developers must ensure that suppliers implement strong environmental and safety protocols across the supply chain. While waste management during operations and decommissioning is covered extensively in Camco's Environmental and Social Management Framework (ESMF), it is important to recognize that pollution risks also exist downstream in the supply chain. These include improper handling of hazardous materials during manufacturing or transport. Therefore, supply chain due diligence should include evaluating supplier practices related to pollution prevention, waste handling, and environmental compliance.



To mitigate pollution and waste related risks, Companies must ensure their suppliers implement strong environmental and safety protocols. This includes enforcing pollution prevention measures, responsible waste management systems, applying circular economy practices like recycling, and comprehensive health and safety measures. Integrate this during technology selection, construction planning, and decommissioning. Evaluate supplier and contractor pollution control practices, enforce safe waste handling.



Environmental pollution linked to manufacturing and renewable energies is arguably not the most well-known and accounted for impact in relation to the development of such projects. However, cases of salient negative impacts related to environmental pollution have been reported, similarly to salient social and human rights impacts. Therefore, environmental impacts must be accounted for by project developers and their suppliers when conducting supply chain due diligence.

Deforestation and Ecosystem Impacts

Although renewable energy technologies are designed to mitigate climate change, their supply chains, especially for wind and solar can indirectly drive localized environmental harm, including deforestation and ecosystem degradation. Project developers often overlook these upstream impacts, which may occur far from the project site but carry significant reputational, regulatory, and ecological risks.

While deforestation is typically associated with agriculture and mining, a 2023 WWF report⁵ highlights that mining is the fourth-largest driver of deforestation globally after agriculture, infrastructure and urban expansion. Although wind and solar projects directly cause relatively minimal forest loss, indirect impacts from the mining of bauxite and iron ore (used in turbine and tower construction) and the intensive logging of balsa wood (used in wind turbine blades) have raised serious concerns, particularly in biodiverse areas like Ecuador's Amazon region and West Africa.

Key risk drivers include upstream deforestation due to unsustainable logging and mineral extraction, habitat fragmentation from road and transmission line development, lack of traceability/ certification for timber and other forest-linked inputs as well as cumulative biodiversity impacts in regions with ecosystem pressures. All these leads to loss of critical habitats and biodiversity, encroachment into indigenous territories and protected areas, increased carbon emissions from forest clearing and reputational damage and stakeholder opposition.



To address these risks, project developers should conduct or request upstream environmental and social screening during sourcing using tools such as the [Global Forest Watch](#); require responsible sourcing certifications from their suppliers such as from the [Forest Stewardship Council](#) (FSC) for timber products and the [Initiative for Responsible Mining Assurance \(IRMA\)](#) for mineral sourcing; engage their suppliers on biodiversity risk management; and embed deforestation and biodiversity safeguards such as into the procurement criteria and supplier audits.

Climate Risks

Physical climate risks such as increased temperatures, extreme weather events (e.g., droughts, floods, storms), and sea level rise can damage infrastructure, disrupt operations, and impact the long-term viability of solar and wind projects. For instance, rising temperatures can reduce photovoltaic efficiency, while storms can damage turbines or delay construction.



To address these risks, project developers should assess how climate change could affect their project locations and supply chains. This means checking if suppliers operate in areas prone to climate hazards, and making sure project designs can withstand changing climate conditions. Companies should also begin aligning their reporting with international climate disclosure standards, such as the TCFD, to improve transparency and preparedness.

Corruption

Corruption presents significant risks in renewable energy projects, particularly in relation to factory implementation and State-controlled E&S compliance monitoring. These risks often arise during permitting, land acquisition, procurement, and contracting processes that typically involve frequent interaction with government officials and reliance on third-party agents to navigate complex regulatory environments. Factors such as weak rule of law, political instability, institutional corruption, and multilayered financing structures can further

⁵ [Extracted Forests: Unearthing the role of mining-related deforestation as a driver of global deforestation | Climate-Diplomacy](#)

exacerbate the likelihood of unethical practices. Bribery during project development can undermine community rights by bypassing proper consultation or consent processes, while practices like local tax avoidance can deprive communities of critical public revenues, negatively affecting human rights and sustainable development outcomes.



To address these risks, project developers must implement and request from their supplier's strong anti-corruption and transparency measures, conduct thorough due diligence on partners and intermediaries, and ensure accountability across all levels of engagement. This includes anti-bribery training, whistleblower mechanisms, transparent procurement procedures, and third-party monitoring to uphold integrity and safeguard both community interests and project sustainability. Conduct or request integrity due diligence on local agents and partners, require anti-corruption declarations, and implement whistleblower mechanisms as part of governance oversight.

Useful links

The below resources can be used to identify and assess supply chain risks.

Name	Level of assessment	Category	Relevance	Link
EU CAHRA List	Country	Conflict and security, human rights, governance	This tool provides a list of countries that are classified as CAHRA according to the EU Regulations	https://www.cahaslist.net
Amnesty International 'The State of the World's Human Rights' 2024 Report	Country	Human rights	This report provides insights into human rights issues in a given country	https://www.amnesty.org/en/documents/po10/7200/2024/en/
Control Risks - Risk Map	Country	Conflict and security, governance, ethics, operational risks	This tool provides an overview of risks (political, security, operational, ESG) for a given country	https://www.controlrisks.com/riskmap/map
Responsible Minerals Initiative	Country	Conflict and security, governance, human rights	This tool contains a list of credible international sources to identify CAHRAs	https://www.responsiblemineralsinitiative.org/minerals-due-diligence/risk-management/conflict-affected-and-high-risk-areas/
Handbook on Environmental Due Diligence in Mineral Supply Chains	Issue-specific approaches to due diligence	Environment including climate change; biodiversity; air, water and soil pollution; waste management; noise and vibration; cultural heritage; water depletion	This handbook provides guidance on how OECD instruments on due diligence can be applied to address environmental risks and impacts in minerals supply chains	https://www.oecd.org/en/publications/handbook-on-environmental-due-diligence-in-mineral-supply-chains_cef843bf-en.html
Ecoinvent Database	Product	Environment	This database contains information on ESG sector-specific risks	https://support.ecoinvent.org/database
Human Rights Watch World Report	Country	Human rights	This report provides insights into human rights issues in each country	https://www.hrw.org/world-report/2024
Business & Human Rights Resource Centre	Company	Human rights	This database contains information on certain companies' environmental performance as well as allegations and judicial cases on ESG matters. If provided, it also contains affected companies' responses to allegations	https://www.business-humanrights.org/en/

Name	Level of assessment	Category	Relevance	Link
Global Atlas of Environmental Justice	Country; company	Environment	This database contains information on environment-related litigations against companies in specific countries or regions	https://ejatlas.org
Climate Case Chart	Company	Environment, climate change	This database contains information on climate change-related litigations against companies in specific countries or regions	https://climatecasechart.com/non-us-case-category/corporations/
Raw Material Outlook	Material risk	Human rights, labour, ethics, environment	This tool contains useful information on ESG issues per specific mineral commodities	https://www.rawmaterialoutlook.org
MSCI Industry Materiality Map	Industry risk	Environment, social, governance	This tool provides an overview of material ESG risks relevant for a given industry	https://www.msci.com/our-solutions/esg-investing/esg-industry-materiality-map
U.S. CBP's Withhold Release Orders and Findings Dashboard	Company; product	E&S, human rights	This page contains Withhold Release Orders, associated as sanctions by the U.S. Government, issued by the Commissioner and Findings published in the Federal Register.	https://www.cbp.gov/trade/forced-labor/withhold-release-orders-and-findings
World Bank Listing of Ineligible Firms and Individuals	Company; Individuals	E&S, human rights	List of firms and individuals debarred and thus ineligible to participate in World Bank-financed contracts for the periods indicated.	https://www.worldbank.org/en/projects-operations/procurement/debarred-firms
UFLPA Entity List	Company	human rights	A list of entities in Xinjiang that mine, produce, or manufacture wholly or in part any goods, wares, articles and merchandise with forced labour as per the U.S. Government.	https://www.dhs.gov/uflpa-entity-list
U.S. Department of Labor List of Goods Produced by Forced Labor	Products	human rights	The Bureau of International Labor Affairs maintains a list of goods and their source countries which it has reason to believe are produced by child labour or forced labour in violation of international standards	https://www.dol.gov/agencies/ilab/reports/child-labor/list-of-goods

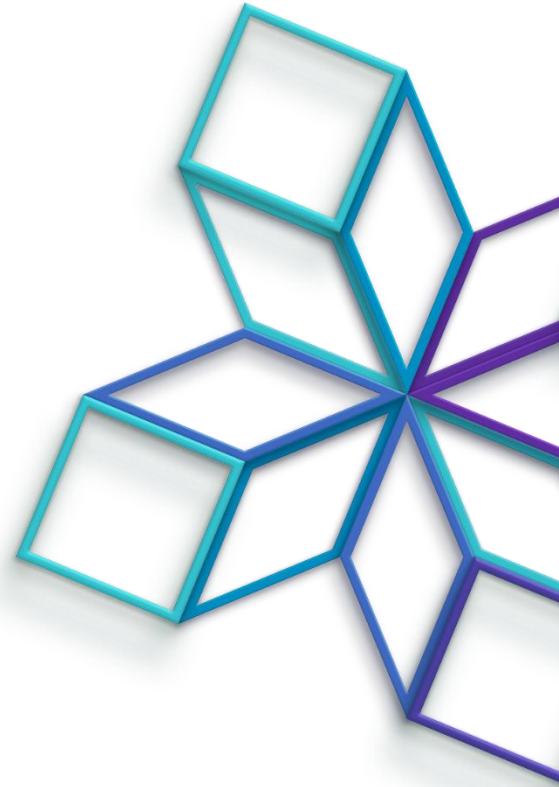
Name	Level of assessment	Category	Relevance	Link
How to address state-imposed forced labour in accordance with international responsible business standards	Industry risk	human rights	State-imposed forced labour, which takes place when governments force people to work, is often present in global supply chains. This factsheet summarises Anti-Slavery International's recommendations on how to effectively address state-imposed forced labour under responsible business standards.	www.antislavery.org/reports/how-to-address-state-imposed-forced-labour-in-accordance-with-international-responsible-business-standards/
Human Rights Toolkit for Financial Institutions	Industry risk; country risk	E&S, human rights	A step-by-step toolkit to help financial institutions align their practices with the UNGPs. Guidance on key human rights due diligence topics are supplemented by sector-specific analyses of risks, opportunities, and actions.	https://www.unepfi.org/humanrightstoolkit/human-rights-guidance-tool/
EBRD Sector supply-chain guidance – wind energy	Industry risk	E&S, human rights	Actions a developer of a wind power project can take to help manage the social and environmental risks associated with assembling key components of WTG.	https://www.ebrd.com/content/dam/eburd_xdp/assets/pdfs/financial-institution/sustainable-finance/environmental-and-social-risk-management/issues/Wind-sector-supply-chain-guidance.pdf
EBRD Sector supply-chain guidance – solar energy	Industry risk	E&S, human rights	Actions a developer of a wind power project can take to help manage the social and environmental risks associated with assembling key components of solar panels.	https://www.ebrd.com/content/dam/eburd_xdp/assets/pdfs/financial-institution/sustainable-finance/environmental-and-social-risk-management/issues/Solar-sector-supply-chain-guidance.pdf
EBRD Sector supply-chain guidance – batteries	Industry risk	E&S, human rights	Actions a developer of a wind power project can take to help manage the social and environmental risks associated with assembling key components of batteries.	https://www.ebrd.com/content/dam/eburd_xdp/assets/pdfs/financial-institution/sustainable-finance/environmental-and-social-risk-management/issues/Batteries-sector-supply-chain-guidance.pdf

Name	Level of assessment	Category	Relevance	Link
Uyghur Forced Labour and Global Solar Supply Chains - Sheffield Hallam University	Industry risk; country risk	Human rights	Academic research on the use of State-imposed forced labour in China, related to solar panels supply chain, covering all the main solar panels' manufacturers.	https://shura.shu.ac.uk/29640/8/CORPORATE%20RESPONSES%20Nov%2014%202023%20%282%29.pdf
Over-exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing	Industry risk; country risk	Human rights	Academic research on the use of State-imposed forced labour in China, related to solar panels supply chain, covering all the main solar panels' manufacturers.	https://shura.shu.ac.uk/34917/8/OVER-EXPOSED%20CORPORATE%20RESPONSES%20v%20Nov%20202023%20%283%29.pdf

The below table lists industry associations that project developers may engage with to enhance their leverage on their direct suppliers and their supply chain.

Name	Category	Relevance	Link
China Battery Industry Association (中国电池工业协会, CBIA)	Industry Association	Drafting policies/standards for the battery industry; Fostering technological collaborations among battery businesses	http://www.chinabattery.org/default0415.aspx
China Industrial Association of Power Sources (中国化学与物理电源行业协会 · CIAPS)	Industry Association	Various energy (mainly lead-acid and lithium battery, as well as solar energy) technological research; Drafting battery industry standards	https://www.ciaps.org.cn/index.php/zhanghangnews/sell/news/exhibit/news/list-htm-catid-314.html
China Energy Storage Alliance (中关村储能产业技术联盟 · CNESA)	Research alliance led by academia and businesses	Energy storage industry (including market and technology dynamics) research; Drafting standards of the energy storage industry	https://www.cnesa.org/index/service_detail?type=4
China Renewable Energy Society (中国可再生能源学会, CRES)	Research alliance led by academia and various research professionals	Technological research on renewable energy sources; Renewable-related policy research and consulting	www.cres.org.cn
National Institute of Clean-and-Low-Carbon Energy (北京低碳清洁能源研究院, NICE)	Business-owned research institute (Directly owned by the state-owned company CHN Energy)	Technological research on renewable energy sources	https://www.nicenergy.com/
Solar Energy Industries Association (SEIA)	Industry Association	SEIA is the national trade association for the solar and storage industry, building an abundant, reliable, homegrown energy system through research, education, and advocacy.	https://seia.org/

Name	Category	Relevance	Link
Aluminium Stewardship Initiative (ASI)	Industry Association	ASI is a multi-stakeholder organisation that works together with producers, users and stakeholders in the aluminium value chain to collaboratively foster responsible production, sourcing and stewardship of aluminium.	https://aluminium-stewardship.org/
Copper Mark	Industry Association	Copper Mark is an assurance framework established to promote responsible practices across the copper, molybdenum, nickel and zinc value chains	https://coppermark.org/
Fair Cobalt Alliance (FCA)	Industry Association	FCA is an organisation that bring together actors across the cobalt supply chain, mobilising to strengthen and professionalise the artisanal cobalt mining sector.	https://faircobaltalliance.org/
Global Battery Alliance (GBA)	Industry Association & Assurance program	The GBA is a public-private collaboration platform founded to help establish a sustainable battery value chain by 2030. The GBA brings together 140+ leading international organisations, NGOs, industry actors, academics and multiple governments to align collectively.	https://www.globalbattery.org/
Initiative for Responsible Mining Assurance (IRMA)	Assurance program	IRMA is an independent assurance program that provides third-party verification of mining operations against a comprehensive standard for responsible mining	https://responsiblemining.net/
International Renewable Energy Agency (IRENA)	Intergovernmental organisation	IRENA is an intergovernmental organisation mandated to facilitate cooperation, advance knowledge, and promote the adoption and sustainable use of renewable energy.	https://www.irena.org/
Responsible Minerals Initiative (RMI)	Industry Association & Assurance program	The RMI is an industry-wide effort to ensure that minerals used in products are sourced responsibly from regions of conflict and high risk. Members of RMI include companies throughout the mineral supply chain, including miners, smelters, refiners, manufacturers, and retailers.	https://www.responsiblemineralsinitiative.org/



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