Is ESG risk properly understood in solar and storage supply chains?

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28 July 2025
PV magazine Webinar

Context for Today: Our Work in Solar & Storage Supply chains

Understanding Of Manufacturing Processes

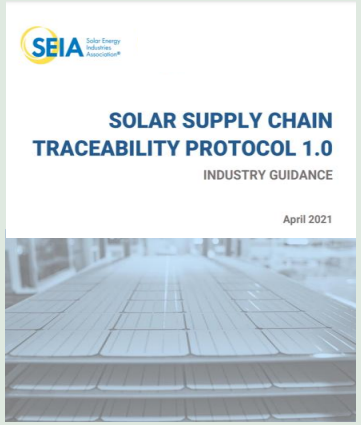
350+
Engagements in solar and storage factories worldwide

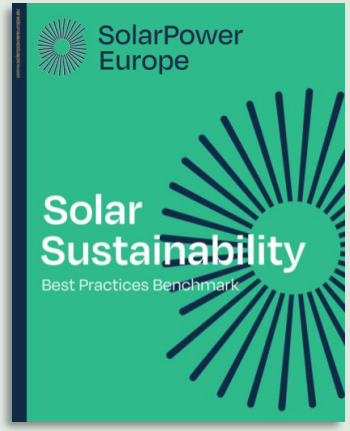
260+ GW
65+ GWh

2,000+
Project site safety and quality inspections

- CEA:
  - Has pioneered ESG and Traceability solutions for global buyers of renewable energy components.
  - Has partnered with **SEIA** to Develop Supply Chain Traceability Protocol and contributed to **SolarPower Europe**'s Sustainability Best Practices Benchmark.
  - Is an approved Assessment Body of the **Solar Stewardship Initiative** (SSI).

SOLAR STEWARDSHIP INITIATIVE
ASSESSMENT BODY





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Dreaded Scenario?

THE DAILY TIMES

TUESDAY APRIL 23, 2024 50p

SOLAR FARM PANELS MADE WITH ALLEGED FORCED LABOR

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Ethical Sourcing Movements Started in the Late 1700s With Sugar.

Food, apparel, timber are now joined by minerals, the new "sugar".

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ESG Risks in PV and BESS Procurement: the Basics

Supply Chain Traceability	Conflict Minerals	Greenhouse Gas Emissions	Hazardous Waste Management	Worker Safety and Labor Rights
• Ensuring visibility and transparency in the sourcing of PV and battery components to mitigate risks of human rights violations, child labor, and environmental degradation.	• Identifying and avoiding the use of minerals, such as quartz and lithium, that may be linked to human rights abuses.	• Evaluating the carbon footprint and energy efficiency of PV and battery manufacturing processes to reduce the overall environmental impact.	• Ensuring proper handling, recycling, and disposal of hazardous waste generated during the production and end-of-life stages of PV and battery components.	• Ensuring safe working conditions and respect for labor rights, including the prevention of forced labor, child labor, and unsafe working environments.

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Key ESG Challenges in PV and BESS

Regulatory Inconsistencies

Unimplemented regulations in Europe – and globally- create ESG pitfalls in PV and battery supply chains, resulting in inconsistent standards across regions.

Policy delays (CSRD, CSDDD, Battery DD) lighten reporting now—but raise uncertainty. Forced Labor Regulation (Dec 2027) & CBAM (2026) deadlines remain immovable.

The US approach is different to rest of the world (ULFPA) and requires a varied approach. Regulation and enforcement will tighten up.

Varied ESG Interpretations

Financial institutions interpret and enforce ESG standards differently, making due-diligence complex for stakeholders and investors. DFIs & EBRD already require full supply-chain mapping for financing.

Persistent Transactional Risks

Throughout a project's lifetime, transactional risks create ongoing uncertainty about compliance and sustainability for all involved. Waiting risks import bans, higher margins, and project delays.

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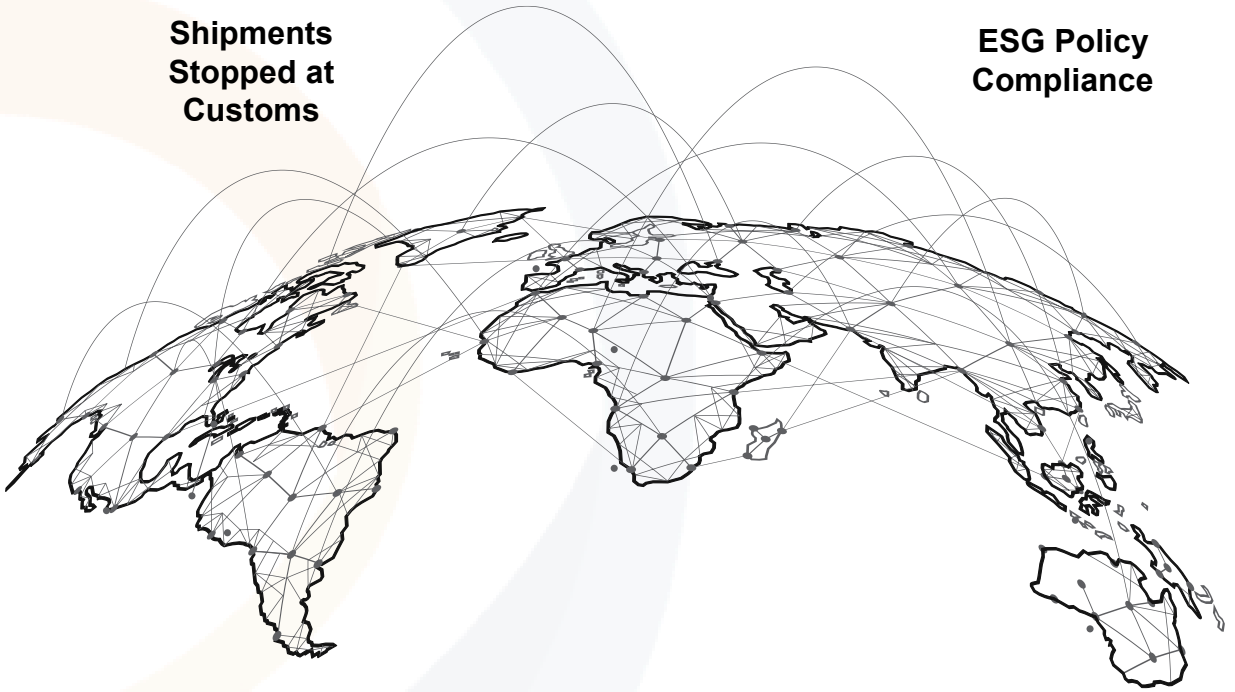
The Problems Stakeholders Face

Understanding the flow of raw materials is crucial due to the increased risk and uncertainty that are inherent in global supply chains.

Shipments Stopped at Customs

ESG Policy Compliance



USA UFLPA compliance

PR and Shareholder Concerns

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What Should I do to Ensure ESG Compliance?

How can I be sure I'm complying with my company's code of conduct, ESG goals, and relevant import laws?

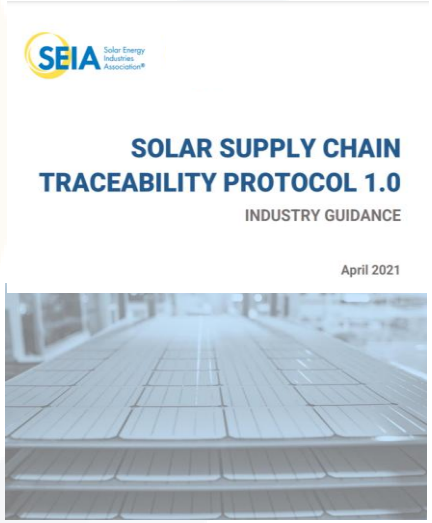
Full-component Supply Chain Traceability

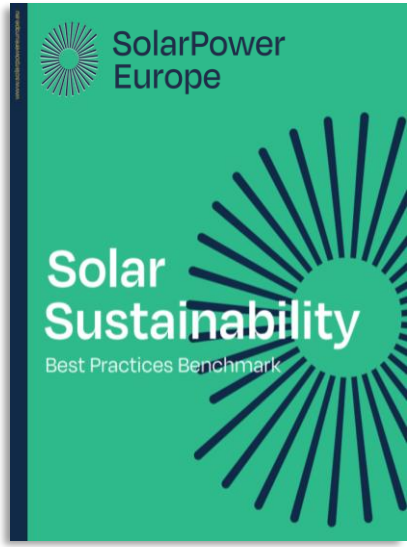
Mitigate risk and uncertainty in global PV and energy storage supply chains by offering:

- Supply chain transparency
- Compliance with import laws
- Third-party audits for developers, buyers, and investors

SOLAR STEWARDSHIP INITIATIVE

ASSESSMENT BODY





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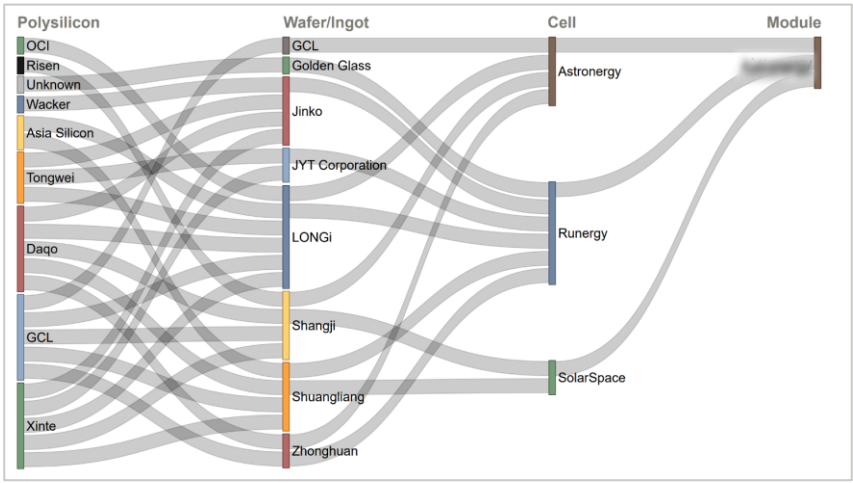
What Makes Full Component Traceability So Hard?

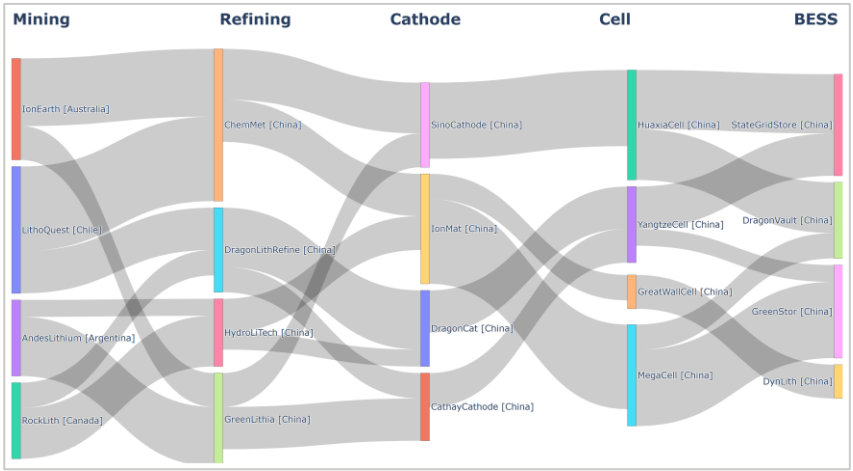
There is a lot of complexity in the PV and BESS supply chains:

- Numerous suppliers operating at each node.
- Differences in capacity must be explained by external purchases/sales.
- Inter-regional geographies with varying norms on transparency.
- Supply chains are dynamic and project specific.
- Risk is also dynamic (eg entity list updates).
- For BESS, the complexity is much higher, due to the higher number of materials that must be traced –lithium, graphite, copper and aluminum for BESS, versus only silicon for PV.

Example of project-specific PV module supply chain



Conceptual lithium supply chain



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What Capabilities Do You Need From Your Auditors?

Desktop and onsite audits of supply chain nodes must:

- Analyze suppliers based on region, size, and degree of vertical integration to indicate traceability maturity
- Specify audit sections adapted to each factory type
- Use customized audit checklists when needed
- Ensure that the factories and suppliers are ESG compliant
- Validate the integrity of the materials' supply chain
- Outline the supplier's manufacturing procedures
- Inspect segregation of key materials at warehouse and production phases
- Detect risks and assign corresponding risk severity ratings
- Offer detailed recommendations for corrective measures for risks identified
- Be followed up by inspections to verify and validate the resolution of corrective actions

The auditors must understand the explicit and implicit rules of engagement:

- Monitor local market trends that impact sourcing strategies, for example
  - Industrial policy in India
  - Anti-Foreign Sanctions Law & Data Privacy Law in China
  - Verify product origins to ensure compliance with UFLPA import controls and other regional regulations
- Manage on-site access challenges
  - Knowing what is possible to discuss/audit on-site, vs. topics to avoid
  - Building on existing relationships, on the ground, within the supply chain is key

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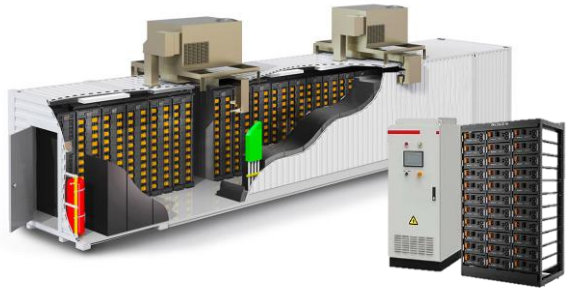
Do You Require Audits at the Entire Value Chain?

Photovoltaic (PV) Solar



Battery Energy Storage Systems (BESS)

Transformers

Inverters

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How To Audit: ESG & Sustainability Methodology

ESG Onsite Audit

- Onsite Audit to check Supplier's compliance to Environmental, Social and Governance principles
- Audit sections include environmental policies and practices, waste management, recycling practices, employee management, health and safety, business integrity, responsible sourcing

Responsible Sourcing Audit (RSA)

- Remote Audit to evaluate the supplier's values-driven procurement program, and how it is implemented to qualify sub-suppliers

Audit Sections include:

- Corporate Social Responsibility, Code of Conduct
- Supplier Qualification Management, Traceability requirements

Carbon Footprint Audit (CFP Audit)

- System boundary and methodology review
- Review of independent verifications and state mandated benchmarks and limitations
- Scope 1, 2 and 3 (optional) GHG emissions evaluation
- Assessment and recommendations

PV, BESS

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How to Audit: Traceability Methodology

Pre-production

During and after production

ESG & Traceability Contract Exhibit Review	Supply Chain Mapping (SCM)	Traceability Systems Audit - Onsite (TSA)	Production Traceability Audit – Onsite/Remote (PTA)	Post-Production Traceability Audit – Remote (P-PTA)

• Review and gap analysis of ESG and Traceability Contract Exhibits
• Negotiation support and improvements on audit conditions and requirements, chain of custody documentation, sampling verification method
• Final Exhibits delivered
	• Remote Evaluation to screen supplier risks in terms of:
	  • Geography,
	  • Reputation
	  • Trade Compliance
	• Direct and indirect supplier relationships of sub-suppliers along the various levels and nodes upstream
		• Onsite Audit to check the supplier's traceability system through checks of SOPs, systems, and records
		• Audit Sections include:
		  • Purchasing
		  • Warehousing
		  • Production
		  • Packaging for Shipment
		• A sample is drawn and traced to fullest extent possible
			• During production, samples are selected to check traceability of the specific project to the approved supply chain
			• Aligned with Quality Assurance sampling (PSI or FAT)
			• Suppliers submit the agreed document package to CEA to verify that production meets supply chain requirements
				• For products or components that have already been produced, serial numbers are selected to check traceability of the specific project to the approved supply chain
				• Follows custom client requirements on sampling and level of verification
				• Remote audit of document package submitted by supplier for verification

PV, BESS	PV, BESS	PV, BESS	PV, BESS	PV

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Is My Supply Chain Free of ESG Risk?

Supply Chain Mapping is the first step to identify supplier relationships and assess risk exposure

Supply Chain Mapping assesses the relationships within the supply chain.

- **Method:** Examine client-supplied and publicly accessible purchase contracts, along with industry connections, *to demonstrate the transformation of silicon-based raw materials throughout the solar supply chain (polysilicon – wafer/ingot – cell – module).*

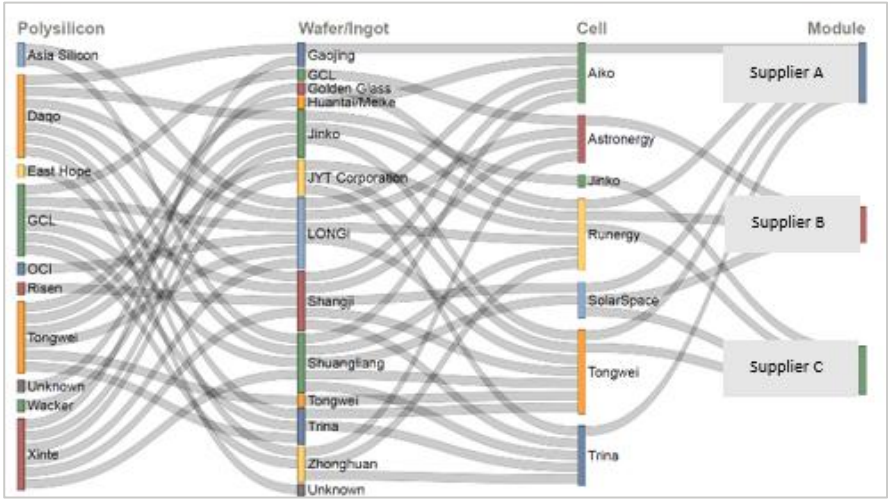
- **Purpose:** Deliver an assessment of selected suppliers, their Supply Chain Relationships across various stages, and the extent of risk exposure linked to sensitive regions.

- **Constraints:** *Due to the absence of publicly available purchase contracts for MGS and quartz, the evaluation will depend on information provided by suppliers or the client regarding their own supply chain.*

Example of Polysilicon Risk Exposure Evaluation

	Non-Chinese suppliers without operations in sensitive regions			Chinese suppliers without operations in sensitive regions		Chinese suppliers with some operations in sensitive regions[1]			
Supplier[2]	Wacker	OCI	Hemlock	Asia Silicon	Tongwei	Xinte	Daqo	GCL	East Hope[3]
Supplier A					✓			✓	
Supplier B					✓		✓	✓	

Supply Chain Relationships



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Are Suppliers in my Supply Chain ESG compliant?

Perform ESG audits at factories to ensure that key suppliers across the supply chain meet basic ESG requirements

- **ESG On-Site Audits verify the factory's environmental, social, and governance practices against internationally recognized benchmarks.**
- **Method:** On-site inspection and systematic review of SOPs, logs, and records, benchmarked to ISO 9001/14001/45001, Solar Stewardship Initiative ESG Standard, ILO conventions, and SA 8000. Findings are classified as Critical, Major, or Minor, each linked to recommended corrective actions.
- **Purpose:** Provide an objective assessment of Environmental stewardship (resource efficiency, carbon management, waste & chemical control), Social safeguards (occupational health & safety, fair labor practices, grievance mechanisms), and Governance structure (certifications, anti-corruption measures, ESG reporting, responsible sourcing) to highlight compliance gaps and risks.
- **Constraints:** Limited site access or incomplete documentation may restrict verification; such limitations are reflected in the final risk rating.

Table 1: Summary of Key Environmental and Social Findings

Thematic Area	No. of Findings	Risk Levels	Key Issues Identified
Environmental Planning	1	1 Minor	[illegible]
Energy Consumption	0	-	N.A.
Environmental Aspects	2	1 Minor/ 1 [illegible]	[illegible]
Recycling and Waste Management	2	2 Minor	[illegible]
Social Planning	1	1 Minor	[illegible]
Employment Practices	2	2 Major	[illegible]
Supplier Management	1	1 Minor	[illegible]

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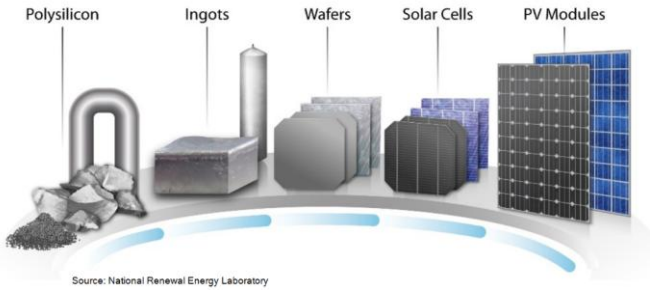
Does the Chain of Custody in the Supply Chain Have Gaps?

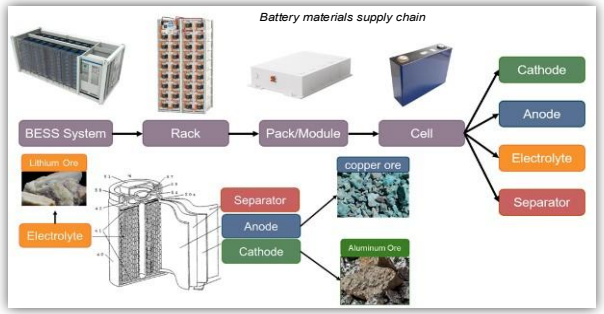
Perform Responsible Sourcing and Traceability Systems Audits to find gaps in the supply chain

- **Chain-of-Custody Audits evaluate suppliers' commitments and operational abilities to trace raw materials.**
- **Approach**: Multiple process-based audit questions
- **Objective:** based on a project-specific supply chain map, review suppliers' documented commitments to transparency and analyze their operational abilities to trace raw materials from purchasing through to packaging and shipping.
- **Normative background**:
  - ISO 9001:2015 for Quality Management
  - ISO 22095:2020 for Chain of Custody
  - ISO 17065:2012 for Process Accreditation Standards
  - ISO 31010:2019 for Risk Management
  - SEIA Traceability Protocol / Solar Stewardship Initiative
  - IFC/WBC PS, EP4, ADB ESS, RBA/RMI
- **The risk analysis is typically used to evaluate suppliers and prepare for the production level traceability during manufacturing of client's order**

PV Nodes



BESS Nodes



Key Areas

Audit	Audit Type	Audit Areas
Responsible Sourcing Audit	Remote	Corporate Social Responsibility (CSR)
		Supplier Qualifications Management (SQM)
Traceability Systems Audit	On-site	Raw Materials Planning and Purchasing
		Receiving Warehouse, Unique Traceability Identifiers
		Production Workshop
		Packaging and Shipping

Risk Assessment Criteria

Color Code			Overall Assessment	Compliance Score	
Risk Color	Finding Severity	Recommendation	The compliance score reflects the weighted average of all audit question results. The color code still reflects the most severe risk finding in the system.	Compliance	Assessment
	= All Low-Risk Findings	Follow up in 1 year, regular		81-100%	Good
	> 1 Medium Risk Finding	Follow up in 6 months		61-80%	Adequate
	> 1 High-Risk Finding	Follow up in 3-4 months		51-60%	Average
	> 1 Critical Risk Finding	Follow up in 1-2 months		0-50%	Risky

- Audit questions have three (3) possible results: Full compliance, Partial compliance, and None.
- Weighting is assigned to each question to indicate importance: Low, Medium, High, and Critical.
- The weighted average of all audit question results becomes the Compliance Score. The Color Code reflects the most severe risk finding present.

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Will My Project Have ESG Compliant Components?

Perform Production Traceability Audits to verify the components I buy follow the agreed, ESG compliant supply chain

- **A Production Traceability Audit is a sampling verification audit of the silicon-based materials according to agreed supply chain between Buyer and Supplier. It can be conducted onsite or remotely.**
- **Approach**: ERP/MES/WMS review of traceability information that evidences the material movement, processing and manufacturing by each node. Sample size will vary according to client needs.
  - Evidence includes Purchasing, Logistics, Warehousing, Production, Packaging
- **Objective:** Verify project-specific silicon-based materials at module, cell, wafer, ingot to polysilicon supplier. Depending on supplier capabilities and agreements it is possible to trace back to MGS and Quartz.
- **Normative background**:
  - ISO 9001:2015 for Quality Management, Section 7.1.5.2
  - ISO 22095:2020 for Chain of Custody
  - SSI Traceability Standard
  - SEIA Traceability Protocol
- **A certificate can be issued that evidences that the sampled component batches are linked to the agreed polysilicon supplier for PV or the agreed lithium mine for BESS.**

Approved Vendor List
Polysilicon/MGS/Quartz Supplier 1
Polysilicon/MGS/Quartz Supplier 2
Polysilicon/MGS/Quartz Supplier 3
Polysilicon/MGS/Quartz Supplier 4

Risk Assessment Criteria

Approved Vendor List	Match?
Polysilicon/MGS/Quartz Supplier 1	✓
Polysilicon/MGS/Quartz Supplier 2	✓
Polysilicon/MGS/Quartz Supplier 3	✓
Polysilicon/MGS/Quartz Supplier 4	✓

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Case Study: PV Supply Chain Mapping – 1

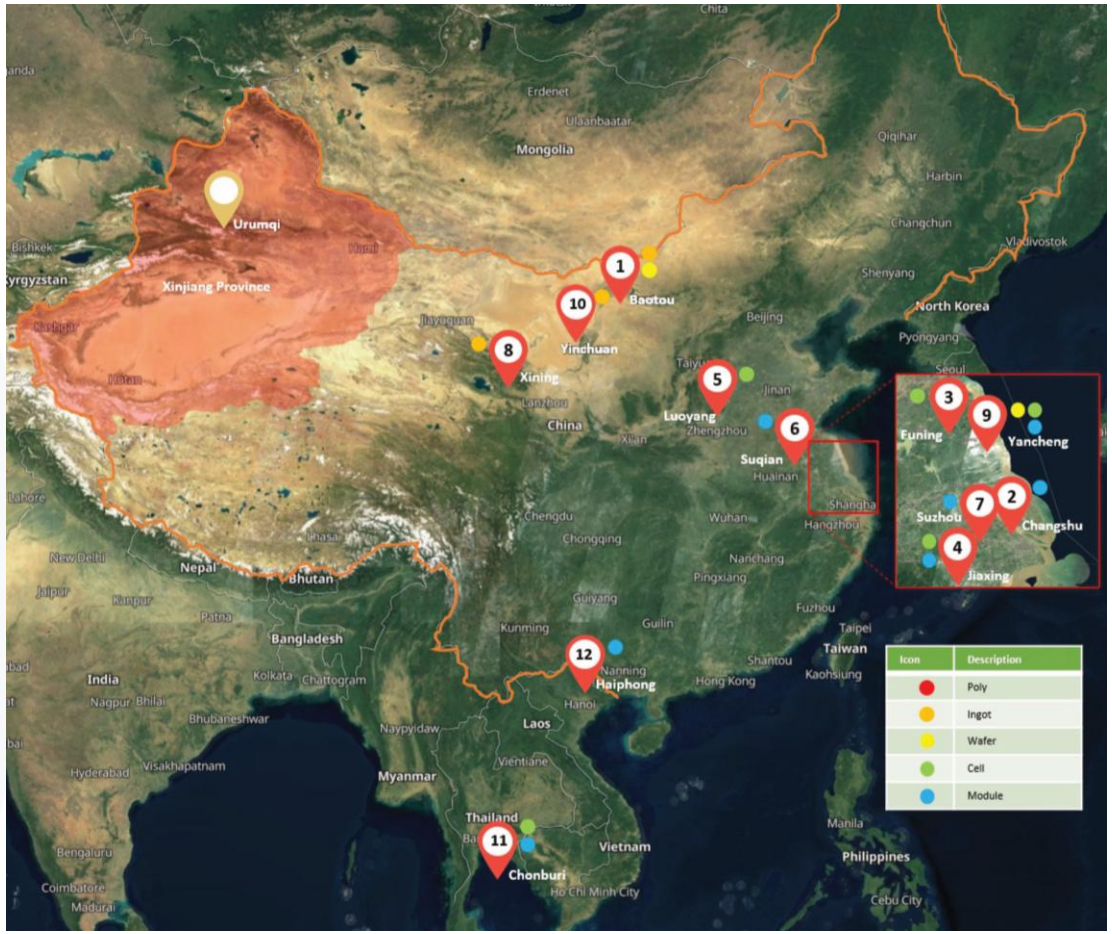
Ensuring Transparency and Minimizing Risk in the Solar Industry

Service: PV Supply Chain Mapping Study - Chain of Custody Audit Services

Technology: PV modules

Customer: A solar developer operating under strict national trade regulations and internal ESG policies

Scope: The study included an in-depth analysis of the client's designated suppliers for photovoltaic wafers, evaluating factors like factory location, nameplate capacity, purchase contract transparency, geographic diversification, supply chain risks, and compliance with trade regulations and ESG policies.



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Case Study: Virtual PV Supply Chain Mapping – 2

Ensuring Transparency and Minimizing Risk in the Solar Industry

Results:

- The client received a comprehensive supply chain map outlining the sources of materials and the risks linked to each supplier.
- This enabled the client to make well-informed choices regarding their suppliers, promoting compliance and reducing potential risks.
- The analysis highlighted the significance of adhering to industry standards, ongoing monitoring, evaluation, and ranking suppliers based on their compliance with US trade policies for supply chain transparency.

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Case Study: ESG Risk from Updated Regulation – 1

Policy Navigation and Derisking for Various Global Clients

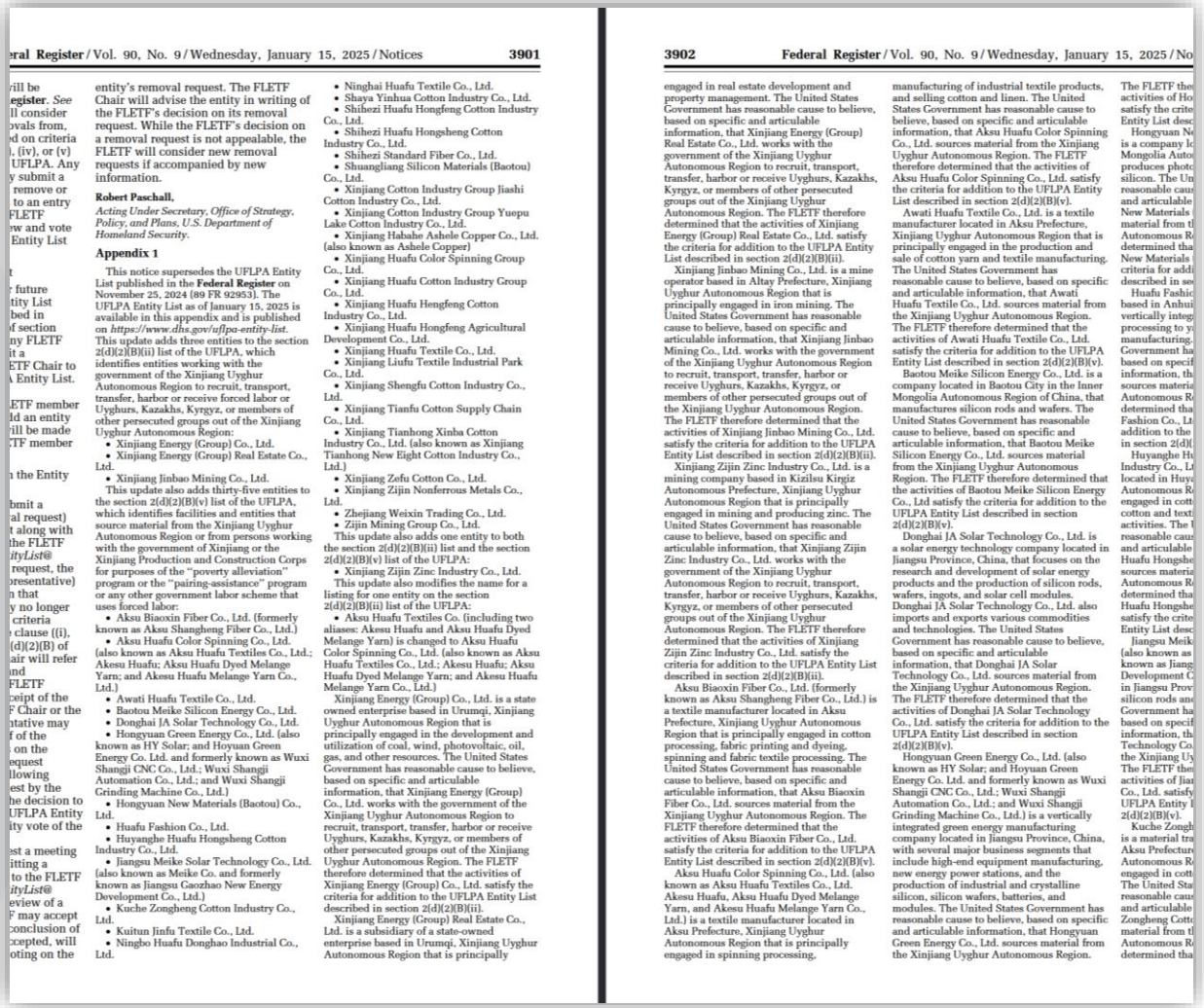
Service: Policy consulting focused on Supply Chain Mapping and Chain of Custody Document Review

Technology: PV modules

Clients: Multiple European developers and investors

Background: In January 2025, 37 additional entities were added to the UFLPA entity list. CEA received numerous inquiries from clients regarding projects affected or potentially affected by this update.

Scope: Deliver policy update consulting to clients, covering regulation briefings and their ESG implications, the possible impact on the broader industry, and the potential effects on specific projects. CEA also offers primary sources from sector participants—subject to consent for information sharing—to support clients in making informed investment decisions.



entity's removal request. The FLETF Chair will advise the entity in writing of the FLETF's decision on its removal request. While the FLETF's decision on a removal request is not appealable, the FLETF will consider new removal requests if accompanied by new information.

Robert Paschall,

Acting Under Secretary, Office of Strategy, Policy, and Plans, U.S. Department of Homeland Security.

Appendix 1

This notice supersedes the UFLPA Entity List published in the **Federal Register** on November 25, 2024 (89 FR 92953). The UFLPA Entity List as of January 15, 2025 is available in this appendix and is published on *https://www.dhs.gov/uflpa-entity-list*. This update adds three entities to the section 2(d)(2)(B)(ii) list of the UFLPA, which identifies entities working with the government of the Xinjiang Uyghur Autonomous Region to recruit, transport, transfer, harbor or receive forced labor or Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of the Xinjiang Uyghur Autonomous Region:

- Xinjiang Energy (Group) Co., Ltd.
- Xinjiang Energy (Group) Real Estate Co., Ltd.
- Xinjiang Jinbao Mining Co., Ltd.

This update also adds thirty-five entities to the section 2(d)(2)(B)(v) list of the UFLPA, which identifies facilities and entities that source material from the Xinjiang Uyghur Autonomous Region or from persons working with the government of Xinjiang or the Xinjiang Production and Construction Corps for purposes of the "poverty alleviation" program or the "pairing-assistance" program or any other government labor scheme that uses forced labor:

- Aksu Biaoxin Fiber Co., Ltd. (formerly known as Aksu Shangheng Fiber Co., Ltd.)
- Aksu Huafu Color Spinning Co., Ltd. (also known as Aksu Huafu Textiles Co., Ltd.; Aksu Huafu; Aksu Huafu Dyed Melange Yarn; and Aksu Huafu Melange Yarn Co., Ltd.)
- Awati Huafu Textile Co., Ltd.
- Baotou Meike Silicon Energy Co., Ltd.
- Donghai JA Solar Technology Co., Ltd.
- Hongyuan Green Energy Co., Ltd. (also known as HY Solar; and Hoyuan Green Energy Co. Ltd. and formerly known as Wuxi Shangji CNC Co., Ltd.; Wuxi Shangji Automation Co., Ltd.; and Wuxi Shangji Grinding Machine Co., Ltd.)
- Hongyuan New Materials (Baotou) Co., Ltd.
- Huafu Fashion Co., Ltd.
- Huyanghe Huafu Hongsheng Cotton Industry Co., Ltd.
- Jiangsu Meike Solar Technology Co., Ltd. (also known as Meike Co. and formerly known as Jiangsu Gaozhao New Energy Development Co., Ltd.)
- Kuche Zongheng Cotton Industry Co., Ltd.
- Kuitun Jinfu Textile Co., Ltd.
- Ningbo Huafu Donghao Industrial Co., Ltd.
- Ninghai Huafu Textile Co., Ltd.
- Shaya Yinhua Cotton Industry Co., Ltd.
- Shihezi Huafu Hongfeng Cotton Industry Co., Ltd.
- Shihezi Huafu Hongsheng Cotton Industry Co., Ltd.
- Shihezi Standard Fiber Co., Ltd.
- Shuangliang Silicon Materials (Baotou) Co., Ltd.
- Xinjiang Cotton Industry Group Jiashi Cotton Industry Co., Ltd.
- Xinjiang Cotton Industry Group Yuepu Lake Cotton Industry Co., Ltd.
- Xinjiang Habahe Ashele Copper Co., Ltd. (also known as Ashele Copper)
- Xinjiang Huafu Color Spinning Group Co., Ltd.
- Xinjiang Huafu Cotton Industry Group Co., Ltd.
- Xinjiang Huafu Hengfeng Cotton Industry Co., Ltd.
- Xinjiang Huafu Hongfeng Agricultural Development Co., Ltd.
- Xinjiang Huafu Textile Co., Ltd.
- Xinjiang Liufu Textile Industrial Park Co., Ltd.
- Xinjiang Shengfu Cotton Industry Co., Ltd.
- Xinjiang Tianfu Cotton Supply Chain Co., Ltd.
- Xinjiang Tianhong Xinba Cotton Industry Co., Ltd. (also known as Xinjiang Tianhong New Eight Cotton Industry Co., Ltd.)
- Xinjiang Zofu Cotton Co., Ltd.
- Xinjiang Zijin Nonferrous Metals Co., Ltd.
- Zhejiang Weixin Trading Co., Ltd.
- Zijin Mining Group Co., Ltd.

This update also adds one entity to both the section 2(d)(2)(B)(ii) list and the section 2(d)(2)(B)(v) list of the UFLPA:

- Xinjiang Zijin Zinc Industry Co., Ltd.

This update also modifies the name for a listing for one entity on the section 2(d)(2)(B)(ii) list of the UFLPA:

- Aksu Huafu Textiles Co. (including two aliases: Aksu Huafu and Aksu Huafu Dyed Melange Yarn) is changed to Aksu Huafu Color Spinning Co., Ltd. (also known as Aksu Huafu Textiles Co., Ltd.; Aksu Huafu; Aksu Huafu Dyed Melange Yarn; and Aksu Huafu Melange Yarn Co., Ltd.)

Xinjiang Energy (Group) Co., Ltd. is a state owned enterprise based in Urumqi, Xinjiang Uyghur Autonomous Region that is principally engaged in the development and utilization of coal, wind, photovoltaic, oil, gas, and other resources. The United States Government has reasonable cause to believe, based on specific and articulable information, that Xinjiang Energy (Group) Co., Ltd. works with the government of the Xinjiang Uyghur Autonomous Region to recruit, transport, transfer, harbor or receive Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Xinjiang Energy (Group) Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(ii).

Xinjiang Energy (Group) Real Estate Co., Ltd. is a subsidiary of a state-owned enterprise based in Urumqi, Xinjiang Uyghur Autonomous Region that is principally

engaged in real estate development and property management. The United States Government has reasonable cause to believe, based on specific and articulable information, that Xinjiang Energy (Group) Real Estate Co., Ltd. works with the government of the Xinjiang Uyghur Autonomous Region to recruit, transport, transfer, harbor or receive Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Xinjiang Energy (Group) Real Estate Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(ii).

Xinjiang Jinbao Mining Co., Ltd. is a mine operator based in Altay Prefecture, Xinjiang Uyghur Autonomous Region that is principally engaged in iron mining. The United States Government has reasonable cause to believe, based on specific and articulable information, that Xinjiang Jinbao Mining Co., Ltd. works with the government of the Xinjiang Uyghur Autonomous Region to recruit, transport, transfer, harbor or receive Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Xinjiang Jinbao Mining Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(ii).

Xinjiang Zijin Zinc Industry Co., Ltd. is a mining company based in Kizilsu Kirgiz Autonomous Prefecture, Xinjiang Uyghur Autonomous Region that is principally engaged in mining and producing zinc. The United States Government has reasonable cause to believe, based on specific and articulable information, that Xinjiang Zijin Zinc Industry Co., Ltd. works with the government of the Xinjiang Uyghur Autonomous Region to recruit, transport, transfer, harbor or receive Uyghurs, Kazakhs, Kyrgyz, or members of other persecuted groups out of the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Xinjiang Zijin Zinc Industry Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(ii).

Aksu Biaoxin Fiber Co., Ltd. (formerly known as Aksu Shangheng Fiber Co., Ltd.) is a textile manufacturer located in Aksu Prefecture, Xinjiang Uyghur Autonomous Region that is principally engaged in cotton processing, fabric printing and dyeing, spinning and fabric textile processing. The United States Government has reasonable cause to believe, based on specific and articulable information, that Aksu Biaoxin Fiber Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Aksu Biaoxin Fiber Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(v).

Aksu Huafu Color Spinning Co., Ltd. (also known as Aksu Huafu Textiles Co., Ltd. Aksu Huafu, Aksu Huafu Dyed Melange Yarn, and Aksu Huafu Melange Yarn Co., Ltd.) is a textile manufacturer located in Aksu Prefecture, Xinjiang Uyghur Autonomous Region that is principally engaged in spinning processing,

manufacturing of industrial textile products, and selling cotton and linen. The United States Government has reasonable cause to believe, based on specific and articulable information, that Aksu Huafu Color Spinning Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Aksu Huafu Color Spinning Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(v).

Awati Huafu Textile Co., Ltd. is a textile manufacturer located in Aksu Prefecture, Xinjiang Uyghur Autonomous Region that is principally engaged in the production and sale of cotton yarn and textile manufacturing. The United States Government has reasonable cause to believe, based on specific and articulable information, that Awati Huafu Textile Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Awati Huafu Textile Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(v).

Baotou Meike Silicon Energy Co., Ltd. is a company located in Baotou City in the Inner Mongolia Autonomous Region of China, that manufactures silicon rods and wafers. The United States Government has reasonable cause to believe, based on specific and articulable information, that Baotou Meike Silicon Energy Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Baotou Meike Silicon Energy Co., Ltd satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(v).

Donghai JA Solar Technology Co., Ltd. is a solar energy technology company located in Jiangsu Province, China, that focuses on the research and development of solar energy products and the production of silicon rods, wafers, ingots, and solar cell modules. Donghai JA Solar Technology Co., Ltd. also imports and exports various commodities and technologies. The United States Government has reasonable cause to believe, based on specific and articulable information, that Donghai JA Solar Technology Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region. The FLETF therefore determined that the activities of Donghai JA Solar Technology Co., Ltd. satisfy the criteria for addition to the UFLPA Entity List described in section 2(d)(2)(B)(v).

Hongyuan Green Energy Co., Ltd. (also known as HY Solar; and Hoyuan Green Energy Co. Ltd. and formerly known as Wuxi Shangji CNC Co., Ltd.; Wuxi Shangji Automation Co., Ltd.; and Wuxi Shangji Grinding Machine Co., Ltd.) is a vertically integrated green energy manufacturing company located in Jiangsu Province, China, with several major business segments that include high-end equipment manufacturing, new energy power stations, and the production of industrial and crystalline silicon, silicon wafers, batteries, and modules. The United States Government has reasonable cause to believe, based on specific and articulable information, that Hongyuan Green Energy Co., Ltd. sources material from the Xinjiang Uyghur Autonomous Region.

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Case Study: ESG Risk from Updated Regulation – 2

Policy Navigation and Derisking for Global Clients

Results:

1. By swiftly responding to client concerns, CEA provided timely briefings on the developments and their implications, in collaboration with CEA's Market Intelligence team
2. CEA offered direct insights, updates, and customized project guidance to support clients in managing policy uncertainties from an ESG standpoint, thereby helping to mitigate risks and safeguard their project investments

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Case Study: BESS Production-Linked Traceability - 1

Pioneering a methodology for tracing key minerals in Cathode, Anode, and Electrolyte

Service: BESS Contract Review & BESS Production-Linked Traceability Audits - Chain of Custody Audit Services

Technology: BESS

Customer: A European developer with a global portfolio facing stringent ESG requirements imposed by its lenders

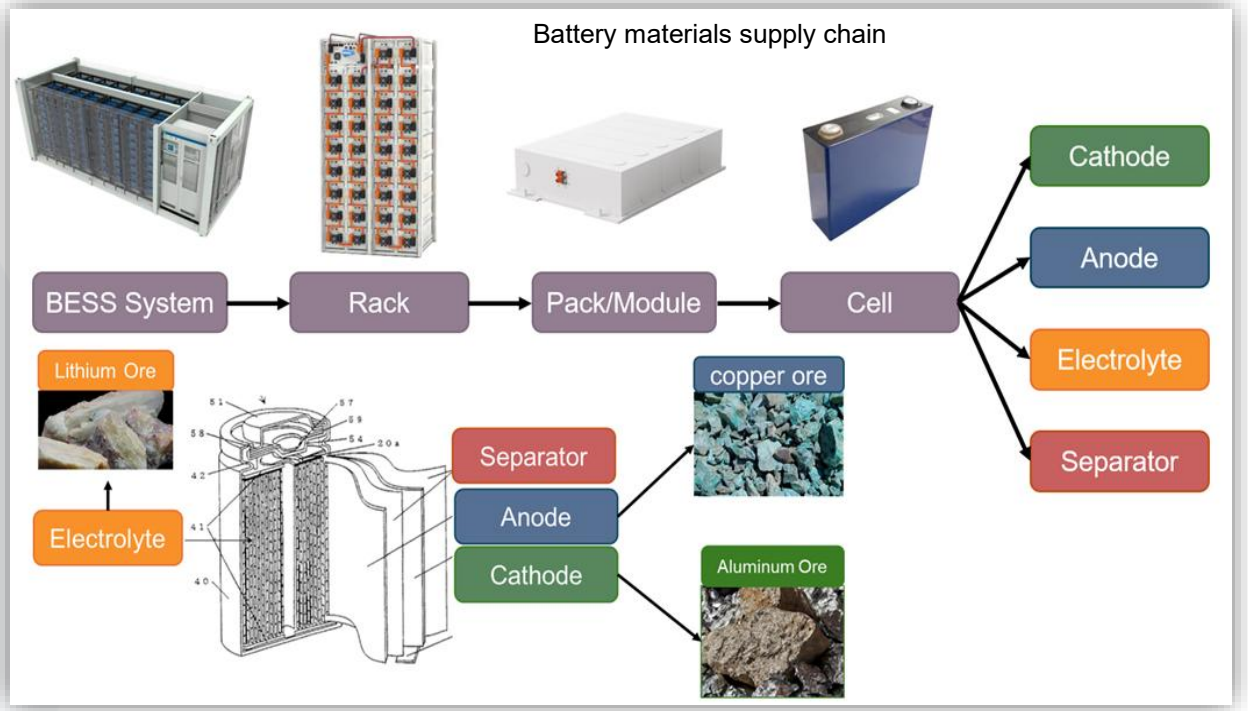
Problem: The client requires the supplier's agreement to a traceability audit program to comply with funding requirements, but is uncertain about:

1.Which key materials should be traced?

2.How to demonstrate connections between material levels?

3.How to ensure in the contract that there are rights to access information, the documentation and the audit scope are clearly defined?

Scope: The BESS contract review involved detailed negotiations with both the BESS manufacturer and the BESS cell supplier to establish an approach regarding audit scope, sampling, access, and information sharing at each supply chain level. This enabled CEA to carry out the BESS Production-Linked Traceability Audits as specified in the framework contract.



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Case Study: BESS Production-Linked Traceability - 2

Pioneering a methodology for tracing key minerals in Cathode, Anode, and Electrolyte

Results:

1. CEA developed a comprehensive methodology for BESS traceability, accepted by both client and supplier
2. Leveraging CEA's expertise and strong relationships, a contract for a 1 GWh order was signed, enabling the client to comply with financing requirements on the audit scope and outcomes
3. Agreed sampling method on battery cell level, with random sampling of 1 cell to link to 1 batch of each upstream sub-component
4. Agreed audit focus on 4 key materials: Aluminum, Copper, Graphite, and Lithium
5. Agreed on tracing 3 streams: Anode, Cathode, and Electrolyte material chains as the best way to comprehensively prove linkages for these 4 key materials.
    1. It is understood that the supply chain length and complexity varies between Anode, Cathode, Electrolyte streams.
6. Agreed on detailed documentary evidence required to prove linkages successively upstream, to avoid any conflicts during the audits
7. Digitization of records were also evaluated to provide insight into integration or record availability

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Case Study: Project Transaction Risk - 1

Traceability of already produced PV modules

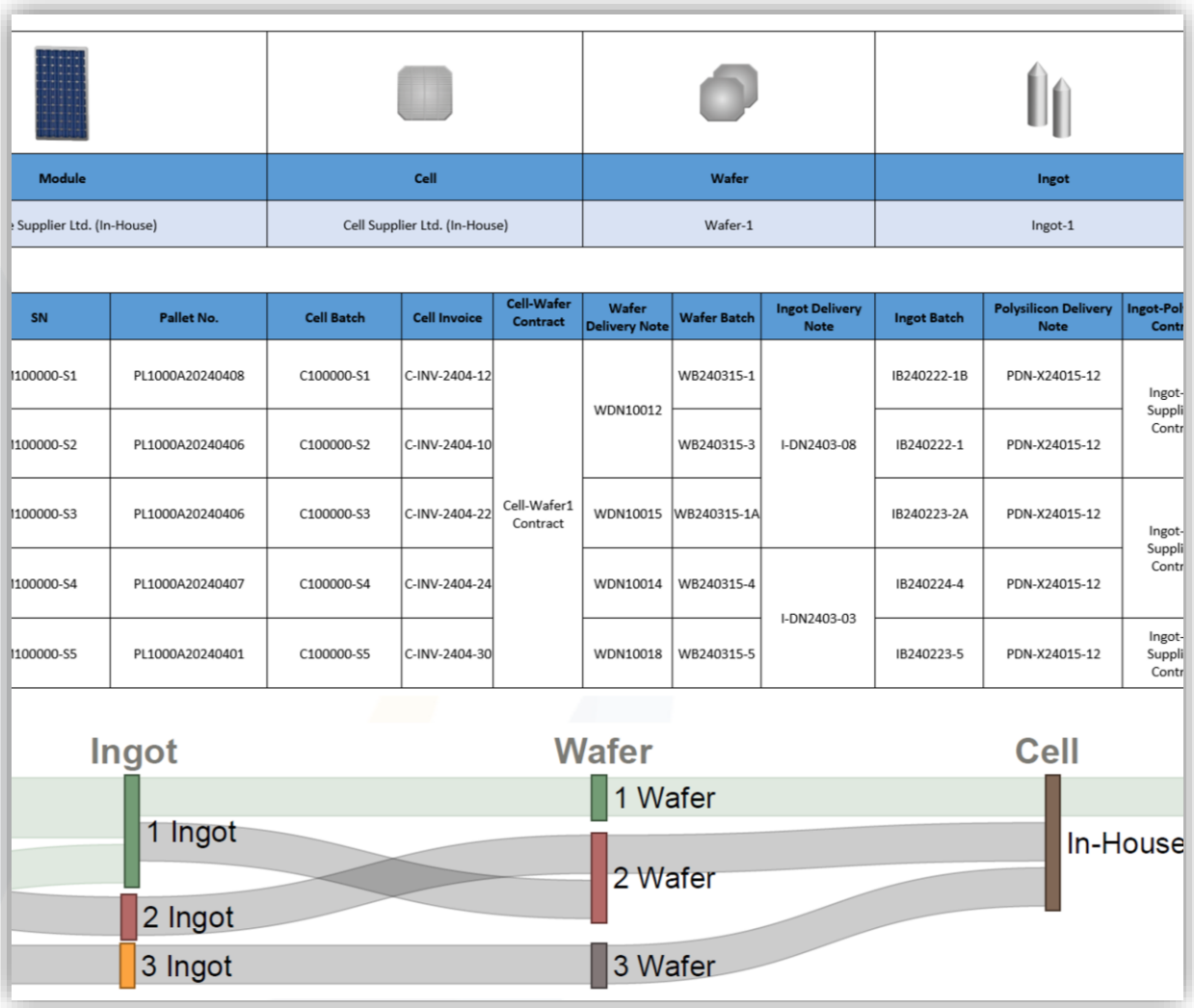
Service: Post-Production Traceability Audit

Technology: PV modules

Client: European asset owners and IPPs

Background: Clients were considering the acquisition of a large portfolio of PV projects in Europe. The current owners had not performed traceability audits at the time of production, as it was either not feasible or had been overlooked, and the financing parties would not authorize the funds unless the projects had independent verification of the provenance of the silicon supply chain of the PV modules used in the projects.

Scope: CEA was contracted to define a workable methodology, negotiate the details with the suppliers and conduct the traceability audit using sampling methods.



Module	Cell	Wafer	Ingot
Supplier Ltd. (In-House)	Cell Supplier Ltd. (In-House)	Wafer-1	Ingot-1

SN	Pallet No.	Cell Batch	Cell Invoice	Cell-Wafer Contract	Wafer Delivery Note	Wafer Batch	Ingot Delivery Note	Ingot Batch	Polysilicon Delivery Note	Ingot-Poly Contr
100000-S1	PL1000A20240408	C100000-S1	C-INV-2404-12	Cell-Wafer1 Contract	WDN10012	WB240315-1	I-DN2403-08	IB240222-1B	PDN-X24015-12	Ingot-Suppli Contr
100000-S2	PL1000A20240406	C100000-S2	C-INV-2404-10			WB240315-3		IB240222-1	PDN-X24015-12	
100000-S3	PL1000A20240406	C100000-S3	C-INV-2404-22		WDN10015	WB240315-1A		IB240223-2A	PDN-X24015-12	Ingot-Suppli Contr
100000-S4	PL1000A20240407	C100000-S4	C-INV-2404-24		WDN10014	WB240315-4	I-DN2403-03	IB240224-4	PDN-X24015-12	
100000-S5	PL1000A20240401	C100000-S5	C-INV-2404-30		WDN10018	WB240315-5		IB240223-5	PDN-X24015-12	Ingot-Suppli Contr

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Case Study: Project Transaction Risk – 2

Traceability of already produced PV modules

Client Value Add:

1. CEA was able to define workable traceability methodologies and get these accepted by the suppliers
2. The reports gave the clients the highest possible confidence about the provenance of the silicon-based materials, given the lack of traceability during the production of the PV modules
3. The importance and criticality of conducting traceability audits during production was a real-life lesson to the project buyer and project seller teams, who subsequently installed more robust traceability requirements during procurement

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Thank You

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