

# FORCED LABOR IN THE BUILDING MATERIAL SUPPLY CHAIN

## *Developing a Mitigation Framework*

*May contain sensitive content*

*Version 1.0 | June 2024*

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*\*Adapted from Modern Slavery Response & Remedy Framework.<sup>10</sup>*

# Introduction

Despite the common belief that slavery belongs to the past, it persists in contemporary society, manifesting in diverse forms. The COVID-19 pandemic, economic shockwaves, widespread job loss, and an upsurge in poverty have left millions of workers worldwide in situations of heightened vulnerability and their fundamental principles and rights at work at greater risk. Modern slavery is a global phenomenon occurring in every country and industry, with the 2021 Global Estimates revealing that 50 million people are in situations of modern slavery on any given day, either forced to work against their will or in a marriage that they were forced into.<sup>6</sup>

The current understanding of forced labor within the built environment industry predominately concentrates on materials and their source countries deemed to be high-risk. High-risk materials are more likely to include forced labor in their making, growing, or extraction. High-risk countries are more likely to use forced labor practices to manufacture a product or perform construction activities.

A pressing need to expand knowledge on this topic prompted this research which aims to raise awareness of the issue, proposing a framework and offering resources as an advocacy tool to empower design professionals in recognizing and mitigating the risk of forced labor within the supply chains of specified building materials.

## KEY TERMS

### International Labour Organization:

The International Labour Organization (ILO) is a United Nations agency whose mandate is to advance social and economic justice by setting international labor standards.

### Design for Freedom:

Founded by Grace Farms Foundation in 2020, Design for Freedom reimagines architecture by raising awareness and inspiring responses to disrupt forced labor in the building materials supply chain.<sup>2</sup>

### Modern Slavery:

Modern slavery covers a set of specific legal concepts including forced labor, concepts linked to forced labor (e.g. debt bondage, slavery, slavery-like practices, and human trafficking), and forced marriage. Although modern slavery is not defined in law, it is used as an umbrella term that focuses attention on commonalities across these legal concepts. Essentially, it refers to situations of exploitation that a person cannot refuse or leave because of threats, violence, coercion, deception, and/or abuse of power.<sup>6</sup>

### Forced Labor:

Forced labor, as described in the ILO Forced Labour Convention, 1930 (No.29), refers to “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.” Forced labor does not depend on the type or sector of work, but only on whether the work was imposed on a person against their will through the use of coercion.<sup>6</sup>

# *Forms of Forced Labor*

Forced Labor is a form of Modern Slavery and is divided into two primary forms: Privately-Imposed Forced Labor and State-Imposed Forced Labor.

## **Privately-Imposed Forced Labor:**

Forced labor in the private economy imposed by private individuals, groups, or companies in any branch of economic activity.

### **Forced Labor Exploitation:**

Forced labor in the private economy imposed by private individuals, groups, or companies in any branch of economic activity with the exception of commercial sexual exploitation.

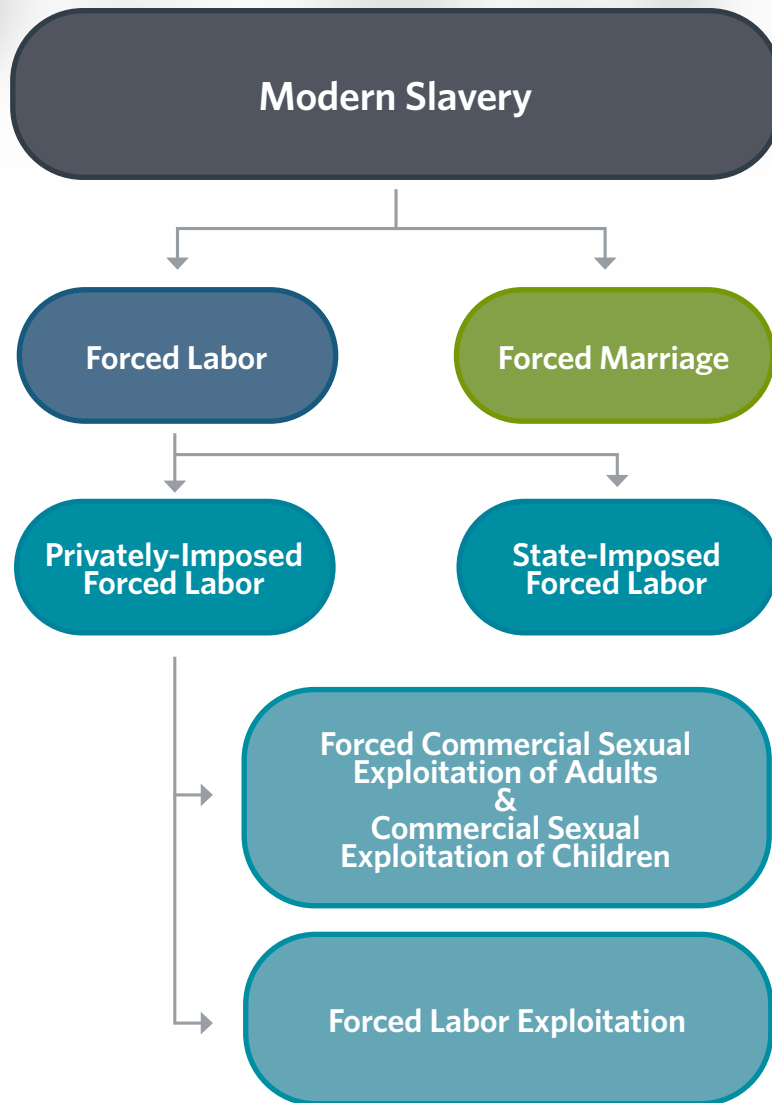
### **Forced Commercial Sexual Exploitation of Adults & Commercial Sexual Exploitation of Children:**

Forced labor imposed by private agents for commercial sexual exploitation and all forms of commercial sexual exploitation of children, including the use, procuring, or offering of children for the production of child sexual abuse materials.<sup>6</sup>

## **State-Imposed Forced Labor:**

Forced labor imposed by State authorities, regardless of the branch of economic activity in which it takes place.





*\*Graphic Adapted from Global Estimates of Modern Slavery.<sup>6</sup>*

### State-Imposed Forced Labor

- Abuse of conscription
- Obligation to perform work beyond normal civic obligations
- Abuse of the obligation to participate in minor communal services
- Compulsory prison labor exacted from prisoners in remand, prisoners in administrative detention, or persons under certain circumstances
- Forced recruitment of children by governments or militia groups
- Compulsory labor for the purpose of economic development
- Development work
- Prison labor

### Privately-Imposed Forced Labor | Forced Labor Exploitation

- Physical violence
- Sexual violence
- Threats of violence
- Threats against family
- Locked in work or living quarters
- Kept drunk/drugged
- Punished through deprivation of food, sleep, etc.
- Punished through fine/financial penalty
- Threats of legal action
- Withheld passport or other documents
- Had to repay debt
- Withheld wages
- Too far from home and nowhere to go
- Other penalty
- Labor inappropriate for age

## EXCEPTIONS

ILO Forced Labour Convention, 1930 (No. 29) describes several **limited exceptions to the “forced labor” definition**. According to this provision of the Convention, the following five situations do not constitute forced labor:

- 1 **Work exacted under compulsory military service** for the necessity of national defense provided that the work imposed on conscripts is of purely military character.
- 2 **Normal civic obligations** of a fully self-governing country, such as compulsory jury service, or the duty to assist a person in danger.
- 3 **Prison labor** as a consequence of a conviction in a court of law, provided it is carried out under the supervision and control of a public authority and the convicted person is not hired to or placed at the disposal of private individuals, companies, or associations.
- 4 **Work exacted in cases of emergency**, such as war, calamity, or threatened calamity (*e.g. fire, flood, famine, earthquake*) or any circumstance that would endanger the lives or well-being of the whole or part of the population.
- 5 **Minor communal services** performed by the members of a community in the direct interest of that community, provided that the community or its direct representatives are consulted regarding the need for such services.<sup>4</sup>

# ***Forced Labor in the Building Materials Supply Chain***

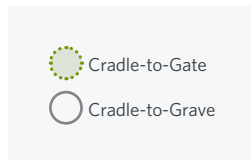
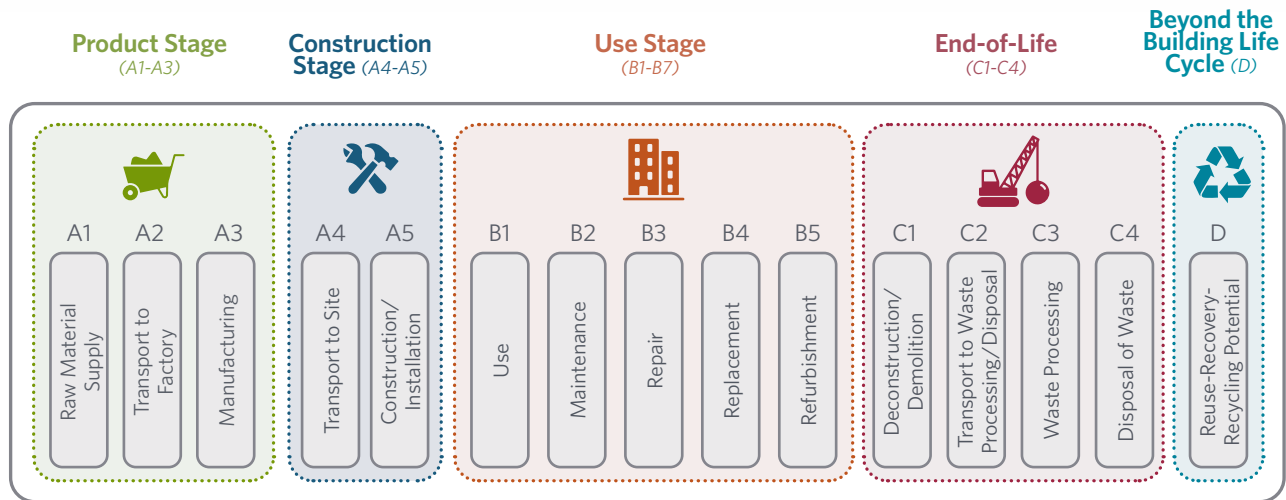
Forced labor can happen in any of a building material's life cycle, however, the high-risk activities often happen during the product stage (A1-A3) where the supply chain structure can be complex with global suppliers. The manufacturing sector accounts for nearly one-fifth of all forced labor exploitation of adults, impacting about 3 million people. Manufacturing involves the transformation of raw materials from agriculture, forestry, fishing, and mining or quarrying, as well as the transformation of other manufacturing products into new products. Most forced labor cases occur in production in the lower tiers of domestic or global supply chains.<sup>6</sup> According to Design for Freedom, high-risk materials include:

- Bricks
- Copper
- Glass
- Minerals (*Mica, Gypsum, Silica*)
- Polysilicon | Solar Panels
- Precursors
- Rubber
- Steel and Iron
- Stone
- Textiles
- Timber

Often these high-risk materials are further linked to high-risk countries, raw materials, applications, and end product.<sup>3</sup>

# Understanding Material Supply Chain

## LIFE CYCLE STAGES FOR BUILDING PRODUCTS



B6\* Operational Energy Use

B7\* Operational Water use

\*Operational carbon stages that are typically excluded from life cycle assessments focused on embodied carbon

Diagram adapted from ISO 21930:2017 <sup>7</sup>

# Case Studies

For this framework development, two rubber flooring manufacturers were the subject of a case study. Manufacturer 01 is located in the U.S. and Manufacturer 02 is located in Germany. Manufacturer 01 opted not to reveal the origin of their natural rubber, whereas Manufacturer 02 openly communicated that their natural rubber is sourced from Vietnam, a country considered high-risk for rubber production. However, it is worth noting that despite this risk, Manufacturer 02 was able to provide a Programme for the Endorsement of Forest Certification (PEFC), emphasizing their commitment to sustainable forest management. Neither of the manufacturers disclosed the details of their supplier lists.

In general, both manufacturers exhibit similar supply chain structures and policies across the entire supply chain. This includes having a Code of Conduct or Code of Ethics for their respective operations, a Code of Conduct Agreement with Tier 1 suppliers that involves audits with a specified notice period, an Ethics Hotline for both manufacturers and Tier 1 suppliers, and risk mapping for the entire supply chain conducted either by an external entity like EcoVadis or by an internal procurement team.

## Tier 1 Suppliers:

These are direct suppliers of the final product.

## Tier 2 Suppliers:

These are suppliers or subcontractors for tier 1 suppliers.

A notable observation is that there exists a common gap in both supply chains, wherein Tier 2 and higher suppliers operate without being directly influenced by the policies and statements of the manufacturers.

Further constraints within the materials supply chain are imposed by additional legislative limitations which include:

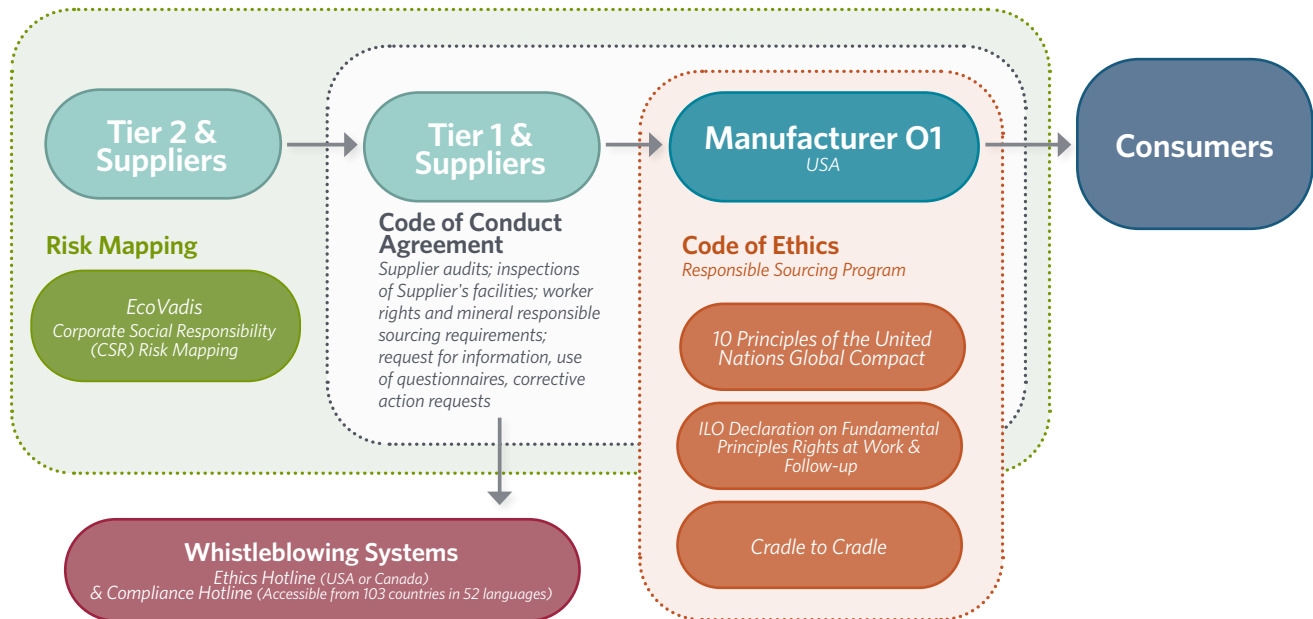
- Flawed audit methods:  
Audits focus on reviewing documents rather than investigating processes and interviewing workers; audits are announced in advance so interviews can be staged.<sup>18</sup>
- Suppliers often possess just enough power to resist top-down approaches to corporate social responsibility: Further “outsourcing” their workforce in favor of temporary, contract labor who receive fewer legal protections.<sup>18</sup>
- Statutes enacted in California, the United Kingdom, and Australia allow companies discretion in how they choose to comply with requirements; disclosure has no legal consequences, and no serious enforcement mechanism for nondisclosure.<sup>1</sup>
- Existing international disclosure and due diligence do not establish liability for human rights abuses even when a business enterprise causes or contributes to those abuses; liability attaches only for failure to follow certain processes established under national law.<sup>1</sup>



# Case Studies *Continued*

## MANUFACTURER 01 | *Located in the U.S.*

Natural Rubber Source Not Disclosed



Suppliers

Manufacturer

Consumers

Whistleblowing Systems

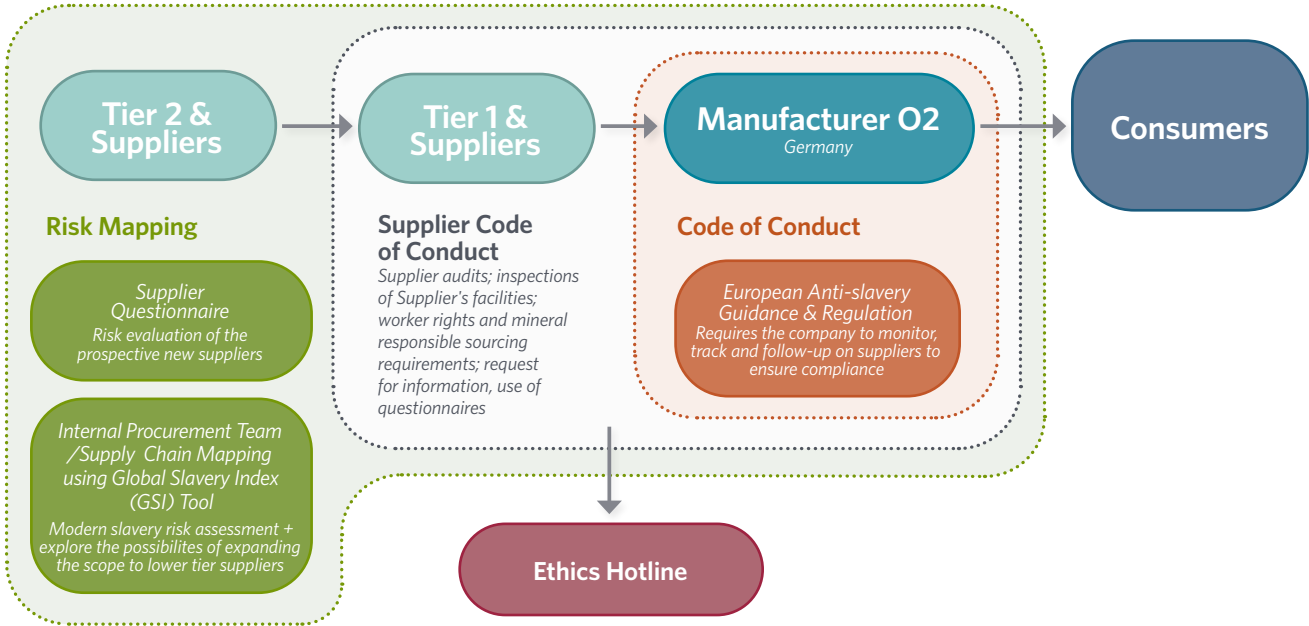
Risk Mapping

Supplier Code of Conduct

What Influenced  
Code of Conduct



**MANUFACTURER 02** | *Located in Germany*  
Natural Rubber Source from Vietnam



# *Unintended Consequences*

While forced labor was not found in the two case studies, our research revealed that manufacturers face a choice when forced labor is found within their supply chains. The clearest path might seem to stop working with the supplier using forced labor, but this can lead to unintended consequences. It can leave the employees, i.e. the victims of force labor, vulnerable to greater harm. They could face loss of wages, retaliatory action, or other risks. A better approach is for manufacturers to collaborate with the supplier, seek remediation for the workers, and explore corrective action within the suppliers' practices. If it ultimately proves necessary to stop working with the supplier, the victims of forced labor need to be safeguarded. Engaging local human rights groups or law enforcement are alternative ways to seek support.







# ***Forced Labor Mitigation Framework***

01

Step One  
**Identify  
High-Risk  
Materials**

02

Step Two  
**Gather  
Public  
Information**

03

Step Three  
**Request  
Non-Transparent  
Information**

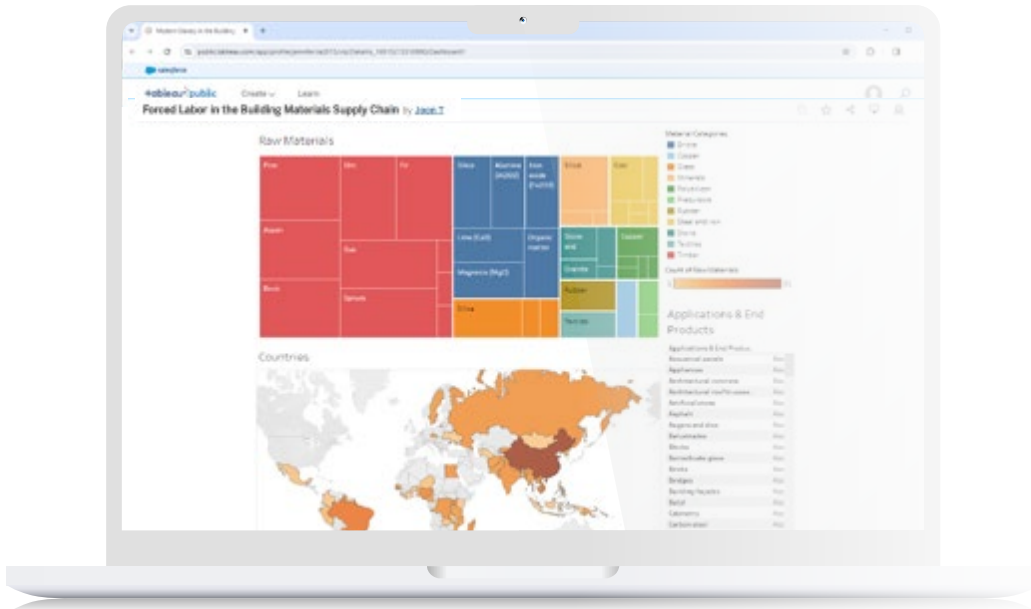
04

Step Four  
**Further  
Education**

## Step One 01

## IDENTIFY HIGH-RISK MATERIALS

The data from Design for Freedom Toolkit was visualized using Tableau Public to create an [interactive map tool](#) that helps identify high-risk materials, countries, applications, and end products.<sup>9</sup>



## Step Two 02

### GATHER PUBLIC INFORMATION

Refer to the following table as a guide to find or request documentation from manufacturers that could contain information related to forced labor.

Name of Documentation	Forced Labor Information to Look for in the Documentation
Corporate Social Responsibility (CSR) Report or Sustainability Report	Statements on suppliers' social responsibility, labor, human rights, and societal issues.
Code of Ethics	Suppliers-related information, human rights statement, health and safety statement, whistleblowing system.
Responsible Sourcing or Code of Conduct for Suppliers	Information on modern slavery, forced labor, child labor, human trafficking, health, and safety.
Human Rights Statement	Information on modern slavery, forced labor, child labor, human trafficking, health, and safety.
Whistleblowing Procedure	Is it available in different languages? Is it open to all suppliers or only Tier 1 suppliers?

Name of Documentation	Forced Labor Information to Look for in the Documentation
<b>Health Product Declaration (HPD)</b>	Are there chemicals of concern? (e.g. PVCs vinyl chloride monomer building block is a known human carcinogen, which is hazardous for workers.)
<b>Environmental Product Declaration (EPD)</b>	Some EPDs include locations of material suppliers. Check if they are one of the high-risk countries by using the <a href="#">Forced Labor Map</a> .
<a href="#"><u>Living Product Challenge Certification</u></a>	Did the product meet the requirements for Ethical Supply Chain and Just Organizations?
<a href="#"><u>Cradle to Cradle Certification</u></a>	Which level of Social Fairness did the product achieve? Refer to the "Certifications & Organizations Addressing Forced Labor" table for details on what each level covers.
<a href="#"><u>Just Label</u></a>	Supply chain transparency.
<a href="#"><u>Declare Label</u></a>	Red-List Free materials.
<b>Responsible Sourcing Certification</b>	Responsible Steel, Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC).

## Step Three 03

### REQUEST NON-TRANSPARENT INFORMATION

Below is an email template with questions to request additional information if necessary.

**Dear [Manufacturer],**

Our organization has committed to working toward more equitable building material supply chains. We seek material transparency in the products we specify on our projects. Forced labor is a global phenomenon occurring in virtually every country and industry, with the 2021 Global Estimates revealing that 28 million individuals endure such conditions daily. We strive to prioritize products and manufacturers that support human rights and equitable practices. We invite you to be a collaborator in this important work. We appreciate your commitment to this effort.

1. Do you have any policies, code of conduct, code of ethics, or statements that address forced labor in the supply chain?
  - What grievance and whistle-blowing mechanisms do you have in place for employees? Please describe.
2. Please list the country(ies) where your organization manufactures this product.
3. Do you have Corporate Social Responsibility (CSR) risk mapping? Please describe.
  - Do you have an audit program and/or other due diligence program for your suppliers? If yes, do they only apply to Tier 1 suppliers or all suppliers involved in the supply chain?
  - Do you monitor suppliers' compliance?

*\*Adapted from Design for Freedom toolkit and are meant to start the conversation and collect the most necessary information. For more in-depth questions, refer to Design for Freedom's supplier questionnaire.*



## Step Four 04

### FURTHER EDUCATION

Refer to the following tables for in-depth information on Certifications and Organizations that address forced labor.

**Below are additional resources for further education.**

#### **ILO Global Estimates of Modern Slavery**

<https://www.ilo.org/global/topics/forced-labour/lang--en/index.htm>

#### **50 for Freedom**

<https://50forfreedom.org/>

#### **Design for Freedom Toolkit**

<https://www.designforfreedom.org/home/design-for-freedom-toolkit/>

#### **U.S. Living Wage**

<https://livingwage.mit.edu/>

#### **U.K. Living Wage**

<https://www.livingwage.org.uk/>

#### **Global Living Wage**

<https://globallivingwage.org/>

## Cradle to Cradle // Social Fairness<sup>11</sup>

Bronze	Silver	Gold	Platinum	Source
Human rights risks are assessed for the applicant company, final manufacturing stage, and direct suppliers to the final manufacturing stage ( <i>tier 1</i> ). Progress is made on <b>assessing risks beyond tier 1</b> (i.e., <i>tier 2 and beyond</i> ).	Social <b>audit performance data are requested from tier 1 suppliers in high-risk locations</b> . At recertification, progress is made on supply chain data collection and corrective actions, if needed. Corrective actions for select issues (e.g., <i>child labor, forced labor</i> ) are complete.	<b>Human rights risks are assessed for the product's components and raw materials</b> ( <i>regardless of tier</i> ).	The company is collaborating to <b>develop and scale solutions to an intractable social issue within the value chain of the product</b> .	<a href="#">C2C 4.0</a>
A <b>human rights policy based on international human rights standards</b> and an understanding of the company's risk areas is in place.	Management systems support the <b>implementation and oversight of the human rights policy</b> within company operations.	<b>Materials associated with high risk of child or forced labor or support of conflict are certified to a C2CPH-recognized certification program</b> or an equivalent alternative is in place. If a certification program is not available, a <b>traceability exercise</b> is conducted upon recertification.	The company fosters a <b>diverse, inclusive, and engaged work environment</b> in which social fairness operates as a core part of recruitment, training, remuneration, performance evaluation, and incentive structures.	
A strategy for implementing the human rights policy is developed. At recertification, progress toward achieving the strategy is measured.	A <b>grievance mechanism</b> permits company employees and other stakeholders to obtain redress for negative human rights impacts.	<b>Responsible sourcing management</b> systems support the implementation and oversight of the policy within the product's supply chain.		
For the applicant company and final manufacturing stage facilities, <b>performance against the human rights policy is measured and corrective actions for select issues</b> (e.g., <i>child labor, forced labor</i> ) <b>are complete</b> . Corrective actions are planned for any other poor performance issues and, at recertification, progress is demonstrated.	The company has <b>implemented a positive social impact project</b> that measurably improves the lives of employees, the local community, or a social aspect of the value chain.	A <b>grievance mechanism</b> permits contract manufacturer employees and other stakeholders to obtain redress for negative human rights impacts.		
Company executives demonstrate commitment and support for establishing, promoting, maintaining, and improving a culture of social fairness.	The company uses open and transparent governance and reporting, making <b>information on how human rights risks are managed and adverse impacts are addressed publicly available</b> .	An assessment has been conducted to <b>determine the impact of the positive impact project using quantitative metric(s)</b> . Measurable progress is demonstrated at recertification.		
		The company incorporates <b>stakeholder engagement and feedback into human rights risk management</b> . Stakeholder feedback informs strategy and operations.		

## Living Product Challenge // Equity Petal<sup>12</sup>

Ethical Supply Chain	Equitable Investment	Just Organizations	Social Co-Benefits	Source
Perform <b>human rights due diligence for their top 10 priority suppliers</b> , based on spending, through the <a href="#">Social Hotspots Database</a> risk portal.	Living Products contribute to the financial well-being of their local communities. Manufacturers must give back through product and monetary donations to ensure the economic success from product sales contributes more broadly to the well-being of the whole community.	Manufacturers must obtain a JUST label and send JUST program information to at least five of their major suppliers as part of an ongoing advocacy effort.	Providing a narrative describing how their environmental Handprinting strategies are designed to also generate social co-benefits.	<a href="#">LPC 2.0</a>
<b>Identify the most critical social risks associated with each priority supplier and the leading certification systems that address those risks</b> by using the <a href="#">Standards Map</a> website.	For every dollar of gross revenue generated annually by the sale of the product, manufacturers must donate one-quarter of one cent, or the equivalent value in product donation, to a charity that promotes human health and well-being.		Creating a plan to measure and assess the social co-benefits over the next three years and creating a process to re-evaluate their results.	
Give preference to priority suppliers that either <b>obtain the relevant certification or conduct a social audit</b> to otherwise address the identified social risks.			Gathering brief narratives from any organizations the manufacturer partners with to bring about social co-benefits.	

## LEED Pilot Credit // Social Equity within the Supply Chain<sup>13</sup>

OPTION 1 Meet 8 ILO Conventions using verified products or companies	OPTION 2 Meet 8 ILO Conventions using alternative strategies	8 ILO Fundamental Conventions, Rights of Human Beings at Work	Verified Standards	Source
<p>Select <b>products that are certified by, or are from a company that complies with, any of the verified standards</b>. “Verified Standards” lists standards that are pre-approved by USGBC to meet all 8 Fundamental Conventions of the International Labour Organization (ILO).</p>	<p>USGBC welcomes the idea of alternative strategies to those discussed in the credit language for this pilot credit as a means to learn more about other possibilities towards meeting the intent.</p> <p>Provide <b>supporting documentation demonstrating equivalence to the 8 ILO Fundamental Conventions</b>, including all specified human rights issues.</p>	<p><b>Freedom of Association</b></p> <ul style="list-style-type: none"> <li>Freedom of Association and Protection of Right to Organize (C087)</li> <li>Right to Organize and Collective Bargaining (C098)</li> </ul>	<p><b>Company Standards</b> Verifications, certifications, policies, commitments, and standards specific to companies, including manufacturers, vendors, and suppliers.</p> <ul style="list-style-type: none"> <li>Aluminum Stewardship Initiative Performance Standard (v2)</li> <li>Concrete Sustainability Council Certification (v2.0)</li> <li>Ethical Trading Initiative (ETI)</li> <li>Fair Labor Association® (FLA)</li> <li>Fair Stone Standard (4th ed)</li> <li>Global Impact Sourcing Coalition's (GISC) Impact Sourcing Standard</li> <li>Initiative for Responsible Mining Assurance Certification (IRMA-STD-001) (2018)</li> <li>Rainforest Alliance™ Sustainable Agriculture Certification - Supply Chain Requirements (2020)</li> <li>ResponsibleSteel Certification (v3.0)</li> <li>SA8000® Standard (2014)</li> <li>SGE 21 Ethical and Socially Responsible Management System (2017)</li> <li>World Fair Trade Organization's (WFTO) Fair Trade Standard (v4.2)</li> <li>XertifiX Standard Certification (v2)</li> <li>Copper Mark Certification</li> </ul>	<p><a href="#">Social Equity within the Supply Chain</a></p>

## LEED Pilot Credit // Social Equity within the Supply Chain<sup>13</sup>

<b>OPTION 1</b> <b>Meet 8 ILO Conventions using</b> <b>verified products or companies</b>	<b>OPTION 2</b> <b>Meet 8 ILO Conventions using</b> <b>alternative strategies</b>	<b>8 ILO Fundamental</b> <b>Conventions, Rights of Human</b> <b>Beings at Work</b>	<b>Verified Standards</b>	<b>Source</b>
<p>Projects must submit documentation showing <b>proof of compliance with verified standards for at least 3 permanently installed products from at least 2 different companies.</b></p> <p>*This credit is consistent with definitions in the Materials and Resources (MR) credit category. For the purposes of this pilot credit, “permanently installed products” are defined as products and materials that create the building or are attached to it. If furniture is included in MR credit calculations, it may be included in this credit.</p>	<p>For an alternate strategy to be considered, the following information must be included in the submission:</p> <ul style="list-style-type: none"> <li>• Intent and goals of the proposed strategy and how it aligns with the pilot credit intent</li> <li>• How the strategy addresses the 8 ILO Fundamental Conventions</li> <li>• What <b>metric(s) are used to measure success</b></li> </ul>	<p><b>Abolition of Forced Labor</b></p> <ul style="list-style-type: none"> <li>▪ Forced Labour (C029)</li> <li>▪ Abolition of Forced Labour (C105)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Product Standards</b> Verification, certifications, and standards specific to permanently installed products. For the purposes of this pilot credit, “permanently installed products” are defined as products and materials that create the building or are attached to it.</li> <li>Aluminum Stewardship Initiative Chain of Custody Standard (v1)</li> <li>▪ BRE: BES 6001 Responsible Sourcing of Construction Products Standard (v3.1)</li> <li>▪ BRE: BES 6002 Ethical Labour Sourcing Standard (v1) – Level One</li> <li>▪ Concrete Sustainability Council Certification (v2.0)</li> <li>▪ Cradle to Cradle Certification - Silver (v4.0) or Gold (v3.1) Level in Social Fairness</li> <li>▪ Fair Trade USA® Trade Standard (v2.0)</li> <li>▪ Forest Stewardship Certification CoC - <a href="https://us.fsc.org/en-us/certification/chain-of-custody-certification">https://us.fsc.org/en-us/certification/chain-of-custody-certification</a></li> <li>▪ Global GreenTag Certification (v4.1) – Bronze Level</li> <li>▪ Global Recycle Standard (v4.0)</li> <li>▪ ResponsibleSteel Certification (v3.0)</li> </ul>	<p><a href="#">Social Equity within the Supply Chain</a></p>

## LEED Pilot Credit // Social Equity within the Supply Chain<sup>13</sup>

OPTION 1 Meet 8 ILO Conventions using verified products or companies	OPTION 2 Meet 8 ILO Conventions using alternative strategies	8 ILO Fundamental Conventions, Rights of Human Beings at Work	Verified Standards	Source
Some verified standards are for products and some are for companies; both are acceptable and a combination may be used to achieve this credit. Standards for products are listed under "Product Standards". Standards for manufacturers, vendors, and suppliers are listed under "Company Standards". Companies can be at any stage of the supply chain; from point of extraction to the final manufacture or assembly.		<b>Elimination of Child Labor</b> <ul style="list-style-type: none"> <li>Minimum Age (C138)</li> <li>Worst Forms of Child Labour (C182)</li> </ul>		<a href="#">Social Equity within the Supply Chain</a>
		<b>Equality</b> <ul style="list-style-type: none"> <li>Equal Remuneration (C100)</li> <li>Discrimination - Employment and Occupation (C111)</li> </ul>		

## AIA Architecture & Design Materials Pledge<sup>14</sup>

### PARTICIPATING FIRMS PLEDGE TO:

Support human health by preferring products that support and foster life throughout their life cycles and seek to eliminate the use of hazardous substances.

Support social health & equity **by preferring products from manufacturers that secure human rights in their own operations and in their supply chains**, positively impacting their workers and the communities where they operate.

Support ecosystem health by preferring products that support and regenerate the natural air, water, and biological cycles of life through thoughtful supply chain management and restorative company practices.

Support climate health by preferring products that reduce carbon emissions and ultimately sequester more carbon than emitted.

Support a circular economy by reusing and improving buildings and by designing for resiliency, adaptability, disassembly, and reuse, aspiring to a zero-waste goal for global construction activities.

*Cradle to Cradle<sup>11</sup>*

*Living Product Challenge<sup>12</sup>*

*LEED Pilot Credit<sup>13</sup>*

*AIA Architecture & Design Materials Pledge<sup>14</sup>*

# References

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