



design for FREEDOM

by grace farms

A Call to Action for practicing professionals
within the ecosystem of the built environment

Design for Freedom

Co-edited by Sharon Prince, Luis C.deBaca, and Chelsea Thatcher



About Grace Farms Foundation: Grace Farms Foundation’s interdisciplinary humanitarian mission is to pursue peace through five initiatives – nature, arts, justice, community, and faith – and Grace Farms, a SANAA-designed site for convening people across sectors. Our stake in the ground is to end modern slavery and gender-based violence, and create more grace and peace in our local and global communities.

Cover Art: A symbol of freedom across time and cultures, the Design for Freedom hummingbird emblem embodies the spirit of survivors and our role in safeguarding them. The hummingbird’s vibrant colors, piercing gaze, and uplifted wings exude a relentless energy and optimism. But, a hummingbird loses its color in captivity, and only regains it when it’s free. A silhouette forms from the shape of the hummingbird and poignantly reminds us of the modern slavery that has been hidden in plain sight for too long.

Cover photo © An Pham

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BURO HAPPOLD

Sciame

**CARLTON
FIELDS**

sh p

Silman

EXTRAVEGA
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SLADE ARCHITECTURE



SO-IL

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MASS.

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WXY

Pentagram

Yale ARCHITECTURE

Pratt

VERITÉ

Adding velocity to the Design for Freedom movement every day with excellence is our extraordinary and committed team. This foundational report coalesced after two formative years and was actualized to coincide with the burgeoning momentum. Enormous gratitude is extended to Creative Director and CMO, and this report's Executive Editor, Chelsea Thatcher, written with former Ambassador-at-Large to Monitor and Combat Trafficking in Persons and Justice Initiative Sr. Advisor, Luis C.deBaca. Contributing transnational supply chain expertise is CAO and Justice Initiative Director, Rod Khattabi, with Alina Marquez Reynolds, General Counsel and Justice Initiative Sr. Advisor. Significant editing contributions were made by Elizabeth Rapuano and Kathleen Kiley, with Michelle DiMaria, Regan Hayes, Dave Pelland, George Boyan, and Myriam Ghorbel. The report's original design was crafted by Eavan Michele Cleary, with Claudia Ramirez, Yo-E Ryou, Matea Bronić, and Monica Thompson Pharr.

Global laws forbid
the use of slave labor
in the built environment,
yet our buildings, and the
materials that go into our
buildings, are heavily
reliant on slave labor.

Most industry professionals are familiar with the once legal transatlantic slave trade of the previous centuries.

Though slavery is now illegal in every country, it persists in various forms, from human trafficking to forced labor. This report defines aspects of modern slavery and the scope of the problem, and presents compelling reasons why we should care about the systemic use of forced labor in the building materials supply chain, including growing legal and reputational risks.

Design for Freedom
is a movement to create
a radical paradigm shift
and remove slavery from
the built environment.

Although human rights advocates have begun to raise awareness of the pervasiveness of forced labor in construction projects around the world, the use of raw and composite materials produced by forced labor in the built environment largely continues with impunity.

EXECUTIVE SUMMARY

This report, *Design for Freedom*, is meant to raise awareness about slave labor in the built environment and propose an industry-wide call to action.

Within a short time, the Design for Freedom Working Group, which was launched by Sharon Prince, CEO and Founder of Grace Farms Foundation, and the late Bill Menking, Editor-in-Chief of *The Architect's Newspaper*, has galvanized more than 60 industry leaders and experts who have committed their expertise and wherewithal in a joint effort to eliminate modern slavery in the built environment.

This report not only provides relevant data and analysis on slavery that is cemented into the very foundations of our buildings, it also documents the emergence of a movement – a radical paradigm shift driven by these global leaders. Members of the Design for Freedom Working Group who contributed to this report represent the full ecosystem of the global architectural, engineering, and construction (AEC) professions. While initial attention in these sectors concentrated on developing ethical labor practices on construction and job sites, we now seek to extend this ethos to the building materials supply chain, including subcontractors, manufacturers, and commodities-level providers in such areas as forestry, fiber, and mining.

Globally, almost 25 million people are held in servitude for forced labor and close to 152 million children from the ages of five to 17 are subjected to child labor.¹ As a society, we have a moral and ethical obligation to end exploitation that subsidizes the bottom line of all residential and commercial construction projects across the world.

“Doing the right thing” can make an impact. Less than 30 years ago, only a handful of advocates, architects, and designers pushed for a higher environmental and social consciousness between the building industry and the built environment. This awakening resulted in the green building and design for environmental justice movements. LEED-certified buildings, including Grace Farms in New Canaan, Connecticut, are now part of the industry’s mainstream design and construction expectation.

Similarly, by harnessing the collective will of industry leaders across the world, we can move the needle on this pressing humanitarian crisis. The *Design for Freedom* report presents achievable calls to action, including the development of slave-free specifications and rigorous auditing standards in the procurement of construction materials, as well as the use of big data and technology, to dismantle the illegal dependence on slave labor. The report also lays out an ethical business model to reduce reputational risks and increase long-term gains.

We are in a historic time when, around the world, human rights are being fought for, elevated, and protected. Now is the time to raise awareness about slavery in the built environment and move forward to eradicate it from the world’s largest global supply chain.

¹ [Global Estimates of Child Labour: Results and Trends, 2012-2016](#). International Labour Organization (ILO). Geneva, 2017.

Photo © Daniel von Appen

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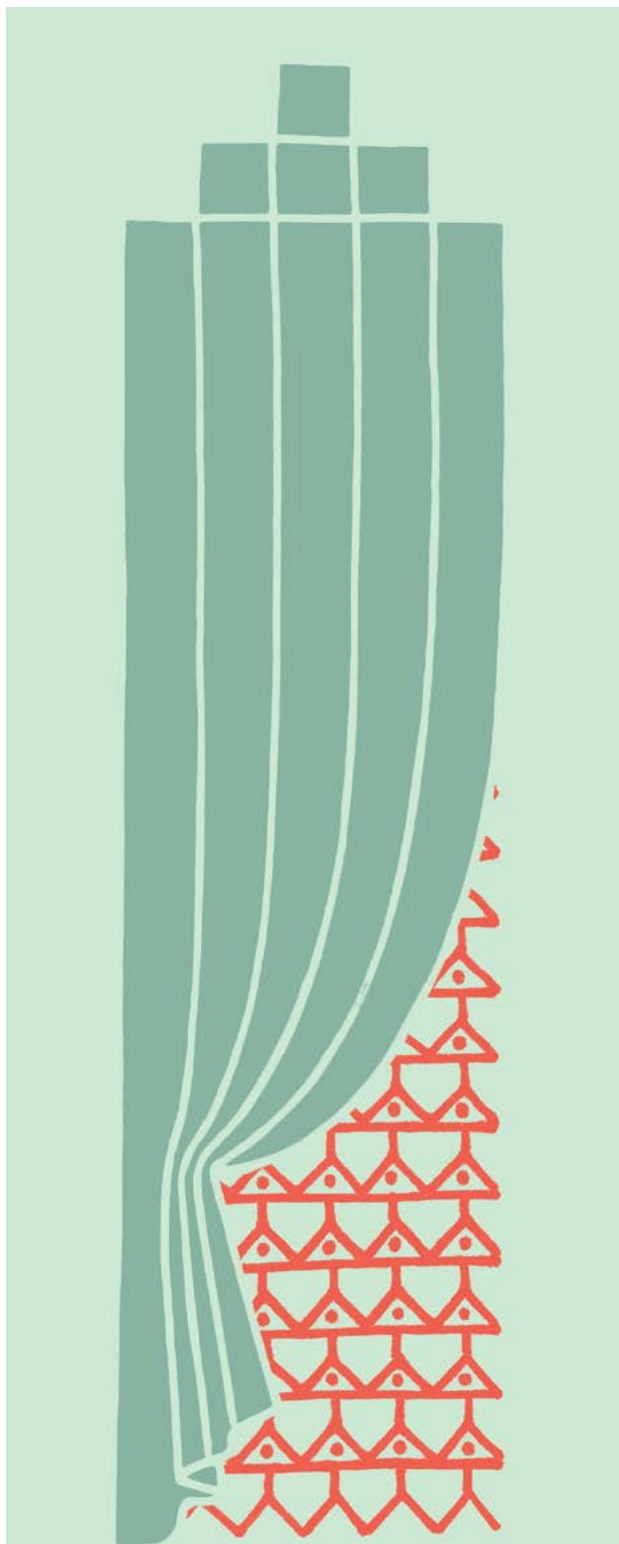
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This report features original contributions from Design for Freedom Working Group members for Grace Farms Foundation

“ ... as consumers become more concerned with where their pants are being made, who grows their coffee beans, and their electricity use, it’s reasonable to expect them to demand that the architecture they inhabit is realized without slave labor, too.”

– *The Architect’s Newspaper*

Sept. 4, 2019, “Forced Labor, Forced Out: A new group of experts wants to eradicate modern slavery in the built environment”

Illustration contributed by
The Architect’s Newspaper

SECTION 1

Initializing a Radical Paradigm Shift

While strides have been made to consciously build to protect and do less harm to our environment, the building industry has failed to protect the workers making the materials going into our buildings. The use of forced labor in the built environment is pervasive and largely not known. But as a growing number of leaders across the ecosystem have learned about this humanitarian crisis, it has become clear that only a radical paradigm shift can eliminate forced labor in the built environment.

Carrie Mae Weems
Visual Artist

Slave labor continues to build this country.
Some people don't care.
It's the game/the play/the luck of the draw/the gallop of unfettered capital

But for those who do care
For those with empathy,
Perhaps it's time to consider:
Consider your privilege, along with its impact
Consider who does what and why
Consider making less and gaining more

Consider the men, women and children who make your lives easier,
And theirs harder:
The farmer and the worker,
The butcher and the barber,
The baker and the builder,
The nanny and the nurse!

Consider the importance of change and why it matters
Then insist upon change across all the platforms of life
Consider what you want, what you need and
Achieving it without exploiting others

Consider the role of industrialized nations
Consider why empires collapse
As colonies rise
And know that mounting resistance to the imbalance
Is the order of the day

Untitled, 2020

Sharon Prince
CEO and Founder, Grace Farms Foundation

Is your building ethically sourced as well as sustainably designed?

The built environment is inextricably linked to nature and people. Over the past few decades, substantive strides have been compounding to sustainably design and construct with less harm to nature; yet there is a startling blind spot in terms of the entropic brutality forced upon the workers who are critical to the production of the very materials we source. Their suffering should not be built into our construction.

Since 2018, more than 60 industry leaders across a broad spectrum of the built environment have come together to collectively acknowledge that we must confront modern slavery's permanent imprint. We recognize that subsidizing construction projects with free, forced labor on job sites is only half of the slavery issue. Illuminating forced labor in the building materials supply chain, that design teams specify, then owners and construction teams procure, has not yet begun. Almost all modern construction projects around the world are subsidized with slavery, due to unchecked forced labor that permeates thousands of raw and composite materials sourced locally to globally. Once you know, you cannot unknow it.

Examining our building materials supply chain is a moral and legal imperative. We formed the Design for Freedom Working Group to mobilize the full ecosystem of the global architectural, engineering, and construction professions to eliminate modern slavery in the built environment. Inspired by efforts to confront forced labor on job sites around the world, we seek to extend this ethos to the entire materials supply chain, including subcontractors, manufacturers, and commodities-level actors in areas such as forestry, fiber, and mining. We recognize that new understandings of ethics and responsibility can take time to permeate the industry, but also that each day of the status quo is another day of servitude for people around the world. So we approach this effort with *urgency*.

We also approach this effort knowing that the business case has to be made. The Working Group therefore seeks to demonstrate an ethical business and policy model that

reduces risk and increases long-term results. Such an approach will include positive incentives rewarding efficiency gains, and negative incentives such as tariff actions and customs seizures.

In addition to the moral imperative, we recognize that cheap and exploitable labor stifles the modernization of the industry by reducing the need for innovation. However, the industry is poised for disruption given a recent significant increase in R&D spending and digitalization investment in a lagging sector, with one percent productivity growth over the last 20 years. We seek to leverage this opportunity, add ethical criterion, and intensify the use of data, digital modeling, industrialized construction, and alternative project delivery to move the industry forward, accelerating the potential for second- and third-order benefits. A new research agenda and curriculum in architecture, engineering, business, and law schools will seek to actualize a freedom ethos in the built environment. Ethical design is now technologically feasible, but requires labor tracking.

Rebuffing the notion that design teams are not culpable, Florian Idenburg and Jing Liu note in this report that "we fail to realize that every line a designer or architect draws sets into motion a string of actions that have environmental, social, and ethical repercussions." We don't have the 50 years it took to normalize green building materials requirements after a small group sounded the alarm; however, we can uphold human dignity by applying this green muscle memory, engaging a generation attuned to an ethical ethos, and expanding this group of leaders and innovators committed to Design for Freedom. A movement starts from within and with the rerouting pen in hand.

Grace Farms was created and envisioned as a catalytic place of grace and peace. With that, however, comes a responsibility to confront injustices and a commitment to fuel the movement. We have harnessed the knowledge and insight of our team to advance a non-negotiable challenge: that every building should be designed and built for freedom.

ONCE YOU KNOW, YOU CANNOT UNKNOW IT

The scope of the problem

Human trafficking and modern slavery are crimes that affect marginalized populations. While victims often contribute to the formal economy (in construction, retail, manufacturing, etc.), the coercion and threats that they work under are typically illicit, and these crimes are often classified as being part of the underground economy. Forced labor occurs so often in particular jobs that the International Labour Organization (ILO) has found it helpful to assess problem industries. Astonishingly, *Global Estimates of Modern Slavery*¹ has determined that the construction industry ranks as the second-highest sector after domestic service in terms of risk of forced labor.

The modern anti-trafficking framework combines many different concepts commonly used in legal and non-legal regimes to describe compelled service; concepts that are at times confusing and seemingly contradictory, that flow from different instruments and laws, and are accompanied by structures and constituencies that built up over the 20th century. The “Why you need to assess risk” section of this report sets forth many of the different laws and concepts. But no matter how the different laws are written, we are centering our activism on the situations in which someone’s labor or services are obtained or maintained through some coercive force, whether psychological, physical, or legal.

According to the ILO’s economic analysis, modern slavery is an estimated \$150 billion criminal industry worldwide.² In their jointly undertaken *Global Estimate of Modern Slavery*, the International Organization for Migration and the Walk Free Foundation assert that almost 25 million people are held in servitude for forced labor and close to 152 million children from the ages of five to 17 are subjected to child labor.³ In the past five years, 89 million people experienced some form of modern slavery for some period of time, ranging from a few days to the whole five years. According to the estimate, modern slavery occurred in every region of the world.⁴



Brick is one of the most used at-risk materials. Children and adults are often held in debt bondage and breathe hazardous dust all day.



© top to bottom: Sushavan Nandy/NurPhoto via Getty Images, Dennis Gilbert/View Pictures/Universal Images Group via Getty Images

While scholars and diplomats can contest the fine nuances among the various terms, this report uses such terms as modern slavery, forced labor, human trafficking, involuntary servitude, and related terms largely interchangeably, reflecting the global policy consensus that compelled service – whether triggered by debt, overt force and threats, psychological manipulation, or document confiscation – is properly criminalized.

That global consensus was brought together as a unified effort in the year 2000 with the passage of the U.S.' Trafficking Victims Protection Act⁵ and the United Nations' Trafficking in Persons protocol,⁶ and has been sharpened since then through laws at national and sub-national levels, most notably in common-law countries such as the U.S., the U.K., and Australia. Corresponding European laws are broader, reaching a wider set of human rights issues about which companies must undertake due diligence. Regardless of the variations of these instruments, they boil down to one takeaway: firms are no longer able to outsource responsibility for abuses in their supply chain, but now have a duty of care to know who makes their inputs and under what conditions.

The new laws define the heart of the human trafficking concept as the exploitation of a person, and address all of the activities involved in reducing someone to (or holding them in) compelled service, effectively extending liability to everyone from a recruiter in a village to a boss who enslaved a worker. In recent years, this idea of expanded responsibility has extended further, holding accountable those who would profit from trafficking in their supply chain, those who use trafficking victims in commercial sex, and even governments that turn away from their duties of investigation or victim protection.

Another form of exploitation, which is unfortunately widespread globally and in its worst forms involving forced la-

bor, is that of child labor. Some child labor is considered uncoerced, but is still banned under international practice and domestic law. More dangerous or coercive instances of child labor, and those involving commercial sexual activity, are classified by international law as the "Worst Forms of Child Labor." These forms of child labor are strictly prohibited, no matter the age of the child, the type of work, or the conditions and circumstances of the work.

DEFINITIONS

Modern slavery is defined as "situations of exploitation that persons cannot refuse or leave because of threats, violence, coercion, deception, and/or abuse."⁷

Forced labor is defined as "all work or service that is exacted from any person under the menace of any penalty and for which the said person has not offered themselves voluntarily. A forced labour situation is determined by the nature of the relationship between a person and an 'employer' and not by the type of activity performed, however arduous or hazardous the conditions of work may be, nor by its legality or illegality under national law."⁸

Child labor is defined as "work performed by a child under coercion applied by a third party either to the child or the child's parents, or work performed by a child as direct consequence of his or her parents being involved in forced labor."⁹

¹ [Global Estimates of Modern Slavery: Forced Labour and Forced Marriage](#), International Labour Organization (ILO). Geneva, September 19, 2017.

² [Profits and Poverty: The Economics of Forced Labour](#), International Labor Organization (ILO). Geneva, 2014.

³ [Global Estimates of Child Labour: Results and Trends, 2012-2016](#), International Labour Organization (ILO). Geneva, 2017.

⁴ [Global Estimates of Modern Slavery: Forced Labour and Forced Marriage](#), International Labour Organization (ILO). Geneva, September 19, 2017.

⁵ [Victims of Trafficking and Violence Prevention Act \(TVPA\)](#), Public Law

106-386. October 28, 2000.

⁶ [Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children](#), United Nations. New York, November 15, 2000.

⁷ [Global Estimates of Modern Slavery: Forced Labour and Forced Marriage](#), International Labour Organization (ILO). Geneva, September 19, 2017.

⁸ Ibid.

⁹ Ibid.



150 billion

dollar value of the modern slavery criminal industry worldwide¹⁰

152 million

children aged five to 17 are subjected to child labor¹¹

12 materials

(raw and composite) at highest risk of forced labor in buildings¹²

11.4 trillion

construction-related spending globally (USD)¹³

Construction is the largest global industrialized sector and at the highest risk of forced labor.¹⁴

© Olesksandr Zhabin

¹⁰ *Profits and Poverty: The Economics of Forced Labour*, International Labor Organization (ILO). Geneva, 2014.

¹¹ *Global Estimates of Child Labour: Results and Trends, 2012-2016*. International Labour Organization (ILO). Geneva, 2017.

¹² *Verité Commodities Atlas* and the U.S. Department of Labor's *List of Goods Produced by Child Labor or Forced Labor*, Grace Farms analysis

¹³ *Statista*, 2018.

¹⁴ *Global Estimates of Modern Slavery. Forced Labour and Forced Marriage*, International Labour Organization (ILO). Geneva, September 19, 2017.

Why we should care

The majority of people who are reading this statement will agree that there is a moral imperative to eradicate modern slavery in the built environment; in fact, I would hope that the vast majority of people in the world agree with this statement.

At the same time, the vast majority of people whose livelihood is based on their contribution to the built environment – at all levels – would say that their role within the industry is too small and their agency too limited to foster real change.

As an individual, that is unfortunately true and, to date, as an industry, we have not been able to overcome the inertia that comes with lack of agency by simply relying on our individual moral clarity.

That inertia is real.

As one of the senior leaders of a well-regarded structural engineering firm with just over \$30 million in annual gross revenue, I can attest that it is nearly impossible to change the overall behavior of industries and owners who are worth significant multiples of our worth; and, given the aggressive fee structure of my market, expending effort and goodwill with an owner to push for changes that may increase project cost and complexity is often a difficult calculus to reconcile. No matter how impassioned my partners and I may be about the condition of workers around the world, the obstacles are layered. If I, as a leader, struggle with this, I know that the ability for a single engineer in my firm or an architect, mechanical engineer, or builder in a similar situation to influence worldwide supply chains that provide commercial materials to

their project and, in some cases, workers to their sites, is inconsequential.

How, then, to catalyze the internal moral belief into industry action?

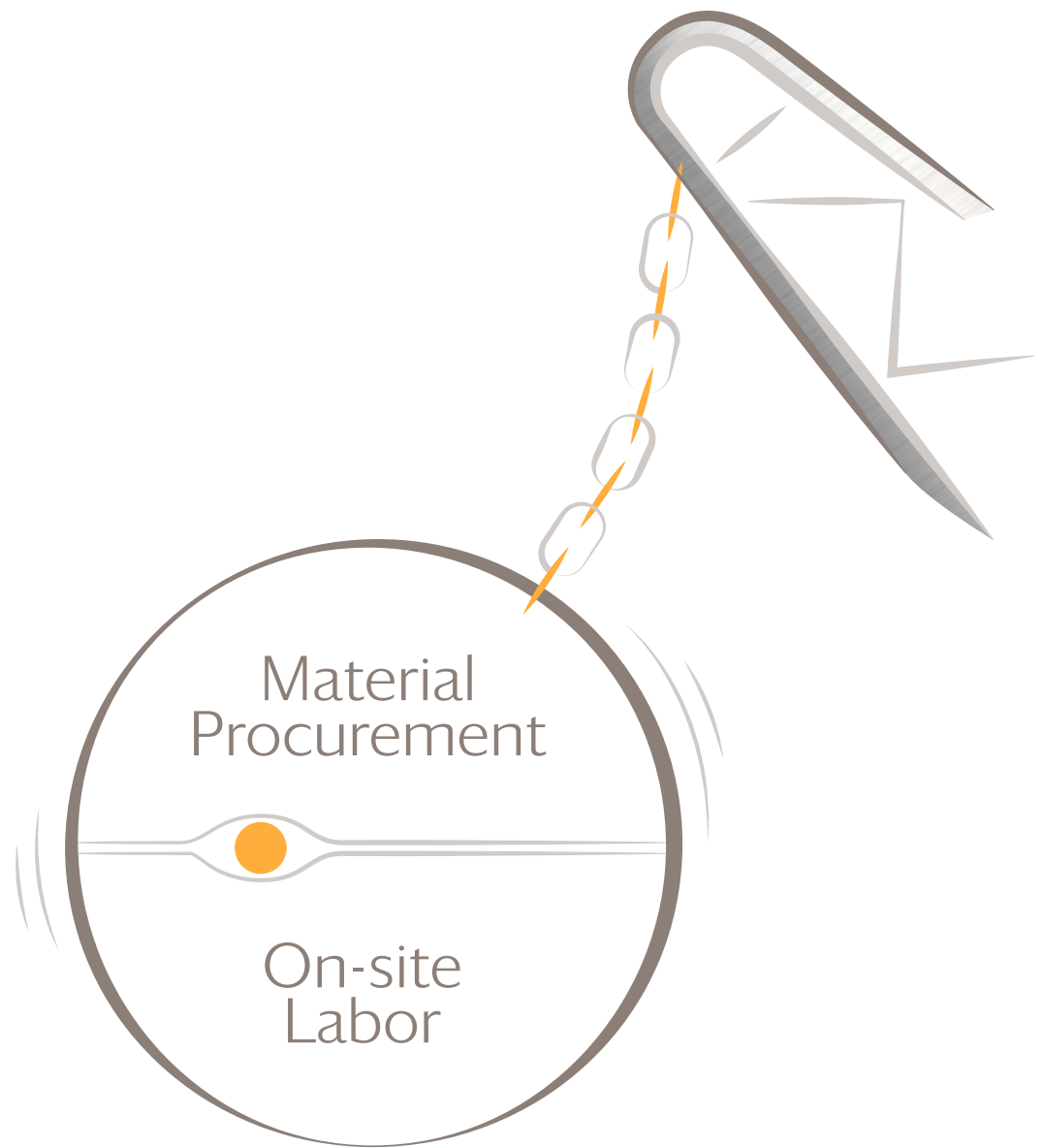
What if, for just a moment, we remove the moral imperative from the equation and look at it simply as a technical challenge. Owners, architects, engineers, and builders have consistently used advances in technology as an accelerant to fire up new ideas, new directions, and new purpose. When those advances both re-invigorate design and return value to an owner, entire architectural movements emerge; the modern movement being the prime example of this shift prompted by new technologies.

In this context, we know that in 2020, the ability to track and trace supply chains is only growing stronger, and the movement for off-site construction in a controlled environment, is taking hold. Just these two initiatives would foster more understanding and control of the supply chain and, if embedded with a slave-free filter, would advance us to a generation of ethical design.

So how to overlay the moral imperative into the technical and avoid the path that has often stalled and corrupted inspiring shifts and movements in the past? By embracing the collaborative spirit of the design world in 2020, we have an opportunity to harness voices from all ends of the industry and mitigate the risk that our collective goal becomes nothing more than an uptick in efficiency, with the shallow gloss of a new paradigm in design. We can embed the goal of eradicating modern slavery within this leap. We must!

Opacity in the Construction Sector

The construction industry is the least modernized and most disaggregated industry, accounting for more than 13% of global GDP. It's also a major offender of using forced labor on construction projects around the world. At this historic time of confronting social injustices, industry leaders are mobilizing the industry to employ ethical construction practices, including using slave-free materials.



● Forced labor on-site & in materials

Original illustration contributed by Pentagram, Eddie Opara (Working Group member)

Why has the design and construction sector been slow to adopt an ethical model?

Modern slavery found in the construction industry is rife with forced labor, with exploitation occurring on both sides of the building life cycle: raw material production and the construction site. Other high-risk sectors, including the garment, agricultural, and mining industries, have made some progress in providing transparency and have taken steps to address exploitation within their supply chain. Construction has lagged behind, leaving vulnerabilities to criminal activity in the materials supply chain and on the job site unaddressed.

While many of the efforts from other market sectors have been very specific to particular inputs or geographic locations and have at times been criticized as more talk than action, they have brought together industry leaders, civil society, governments, and, in the most effective efforts, workers and members of affected communities to agree upon standards and processes to address abuses. For instance:

- The garment industry has multi-stakeholder initiatives such as the Fair Labor Association, which grew out of the university community's concern about sweatshop labor in collegiate apparel, and the Accord on Fire and Building Safety in Bangladesh, which harnessed global brands and worker representatives to address safety and forced labor concerns in the wake of the tragic Rana Plaza factory collapse in Bangladesh.
- In fiber, efforts include the Cotton Campaign, arising from concerns about state-sponsored forced labor in former Soviet Central Asia, and GoodWeave (formerly RugMark), founded by Nobel Peace Prize win-

ner Kailash Satyarthi to confront child labor in the weaving industry.

- Beyond widely adopted fair trade certifications, the agriculture industry has commodity-specific initiatives ranging from tomatoes (the worker-led Fair Food Program) to cocoa (the International Cocoa Initiative and the Harkin-Engel Protocol) and palm oil (the Roundtable on Sustainable Palm Oil).
- The jewelry and electronics industries confronted forced labor and the exploitation of conflict in the mining sector, especially in Central Africa, through the Kimberley Process and the Responsible Minerals Initiative.

Why has the design and construction sector been slow to adopt an ethical model that insists on supply chains clean of forced labor? One explanation is that while the construction industry is one of the largest industrial sectors in the world, it is also the most disaggregated and least modernized, at one percent productivity annual growth rate.¹

Construction accounts for 13% of global GDP.² It is disaggregated, because a myriad of local actors and decision-makers persist even as finance and materials supply chains become globalized. There have been many different waves of innovation in the construction industry: industrialization, explosion of specialists, the liability crisis, globalization, sustainability, and digitally enhanced technology. All of these disruptions create opportunity, but they also increase disaggregation.



Textiles are found in shades and rugs, furnishings and walls; most anti-slavery efforts have been in garment production, but materials supply chains can include slave-made cotton, carpet, jute, sisal, and silk

While the professional stereotype of the construction industry is either one of global mega-builders or of regionally based medium-sized enterprises (which could bear the costs of adopting new technology and monitoring implementation), in the U.S., 75% of construction firms are owned and operated by one individual with no payroll, working either as freelance contractors or reliant on subcontractors for additional labor.³ This makes it difficult to organize construction firm owners around mutually agreed-upon standards and accountability measures.

The patchwork of actors that make up the building materials supply chain – miners, smelters, fabricators, suppliers, manufacturers, importers, construction managers, engineers, and architects, designers, and owners – creates a complex ecosystem that will require collaboration to succeed in the face of disruption. The best opportunity for new ethical standards, accountability, and progress starts with acknowledging a shared responsibility for change as imminent industry disruptions emerge.



© left to right: K M Asad/LightRocket via Getty Images, Tanya Semenchuk/Unsplash

The Next Normal in Construction

MCKINSEY & COMPANY JUNE 2020 REPORT

A June 2020 McKinsey study points to the industry being ripe for disruption within the next five years. We have the opportunity and the responsibility to add ethical, humanitarian criterion to the new production technologies and digitalization.

Our research suggests that the industry will look radically different five to ten years from now. More than 75% of respondents to our executive survey agreed that the nine shifts are likely to occur, and more than 60% believe they are likely to occur at scale in the next five years.

We already see concrete signs of change: for example, the permanent modular construction market share of new North American real-estate construction projects has grown by 50% from 2015 to 2018, R&D spending among the top 2,500 construction companies globally has risen by approximately 77% since 2013, and a new breed of player has emerged to lead the change. Two-thirds of survey respondents believe that COVID-19 will lead to an acceleration of the transformation, and half have already raised investment in that regard.⁴

¹ [The Next Normal in Construction, How Disruption Is Reshaping the World's Largest Ecosystem](#), McKinsey & Company, June 2020.

² Statista and World Bank, 2018.

³ [Strengthening Protections Against Trafficking in Persons in Federal and Corporate Supply Chains](#): Research on Risk in 43 Commodities, Verité, 2017.

⁴ [The Next Normal in Construction, How Disruption Is Reshaping the World's Largest Ecosystem](#), McKinsey & Company, June 2020.



The construction sector is the largest industrial sector in the world, the most disaggregated, and the least modernized.

13%

construction sector's value of global GDP⁵

14 trillion

global construction projected GDP in USD by 2025, an increase of 18% over 5 years⁶

977 billion

US construction private spending, employing about 11.2 million people.⁷

⁵ Statista and World Bank, 2018.

⁶ Global Construction Expenditures 2014-2025
Statista Research Department. August 9, 2019.

⁷ Statista, 2019.

Forced labor, urban migration, and the built environment

In the 21st century, nearly every product introduced within the built environment is the result of an international supply chain of material and energy exchanges. However, those who labor in the extraction, manufacturing, installation, and recycling of building materials are typically the most disempowered, disenfranchised, and at-risk, because they are migrants – internal or transborder.

There are abundant examples of compromised labor practices in the building industry. The large-scale migration of low-skilled laborers to urban centers (the dark and dangerous underbelly of most rapidly developing cities) accelerates the problem of forced labor in the construction sector. Ambitious construction projects continue unabated despite the international economic downturn of the early 21st century. The sheer quantity and magnitude of new cities, whether planned or built, carefully designed or informal, stupefies even the most jaded observer. And yet, urbanization at this scale is only possible with a migrant workforce of unskilled laborers who are called upon to toil on its building sites.

Millions of people travel across the globe in search of work in all sectors of the materials supply chain and the construction of buildings. This transnational displacement

of vast numbers takes place within a highly de-politicized body politic, while evidence mounts that the resulting forced labor kills. According to the Center for Construction Research and Training, barriers to wage equality, safety, and union entry persist for migrant Hispanic workers in the U.S. They represent approximately 50% of all drywall installers and concrete workers in the U.S., yet they remain voiceless and at increased physical risk.⁸

Work-related fatalities amongst Latino construction workers exceeds the proportion of their representation. They are the most vulnerable of laborers in the most hazardous of industries. According to the International Labour Organization investigators in the report *Migrant Work & Employment in the Construction Sector*,⁹ migrant construction workers – whether national or international – are regularly exposed to financial debt incurred while securing employment, physically strenuous working conditions on-site, sub-standard living conditions off-site, and lax immigration laws which do not expressly forbid indentured or forced labor. And governments often provide no support: in South Africa, where entry into the country is fairly easy and where unemployment figures remain high, foreign workers are often arrested, deported, and even mistreated by law enforcement and employers.

Addressing on-site labor is only half of the equation. Forced labor in the building materials supply chain must also be addressed.



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Global attention should be brought to these issues of death and abuse. In the lead-up to the 2014 World Cup in Brazil, severe human rights violations on construction sites were registered against OAS S.A., a contractor charged with building office and airport infrastructure for the games, including forced labor and death.¹⁰ That same year saw allegations of exploitation of migrant site workers at the Sochi Winter Olympics, including withholding of documents and excessive working hours.¹¹ In 2018, similar accusations were made against the builders of the Istanbul Airport expansion as reported in *Construction News* and *The Architects' Journal*.¹² In 2019, an executive of U.S. Rilin Corp, a unit of a privately held Chinese construction company, was found guilty of having forced Chinese nationals to work under conditions of debt-bondage.¹³ And lastly, the most notorious of on-site violations may be

those registered against the various projects associated with construction of the 2022 Qatar World Cup sites, both its stadiums and larger city infrastructure.¹⁴

These are but a few of the case studies I am investigating with the help of architecture student and research assistant Jessica Marie Greene. As a faculty member in a school of architecture which educates professional architects, I believe this is an important issue which all must address when participating in the global exchange of materials and labor. After all, each of these projects was designed by an architect, and as architects, we are not immune to the responsibilities of making all work sites safe and respectful of basic human rights.

8 *The Construction Chart Book*, Center for Construction Research and Training. April 2013.

9 Buckley et al. "[Migrant Work and Employment in the Construction Sector](#)," International Labour Organization (ILO). Geneva, 2016.

10 "[Brazil World Cup Workers 'Face Slave-Like Conditions'](#)," *BBC News*. September 26, 2013.

11 [Race to the Bottom: Exploitation of Migrant Workers Ahead of Russia's 2014 Winter Olympic Games in Sochi](#), Human Rights Watch. February 6, 2013.

12 Hurst, Will and Purkis-Garner, Zak. "[Investigation: The Human Cost of Building the World's Biggest Airport](#)," *Architects' Journal*. October, 2019.

13 Pierson, Brendan. "[Ex-Chinese Construction Exec Found Guilty in U.S. of Forced Labor Charges](#)," *Reuters*. March 22, 2019.

14 [Promising Little, Delivering Less: Qatar and Migrant Labour Abuse Ahead of the 2022 Football World Cup](#), Amnesty International. 2015.

Adam Saltzman
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WORKING EXAMPLE

Advancing ethics and impact in Rwanda

The construction industry spends over \$11 trillion each year. This massive amount of production has an indelible impact on our world, creating almost 40% of global carbon dioxide emissions.¹⁵ However, this also comes with an incredible opportunity for impact: supporting over 100 million jobs, as the industry creates necessary social and physical infrastructure to further advancement and development. Every decision made while building has reverberating effects: Who is employed and under what conditions are they working? What materials are being used and where are they being sourced?

MASS Design Group was founded as a nonprofit design collective in order to align organizational operations with our values. As a nonprofit, our leadership is obligated to hold us accountable to our mission: to research, build, and advocate for architecture that advances justice and human dignity. Over the last decade of work, with 30 projects completed or in construction, one question continually emerged: What would it look like for a construction company to seek to steward a developer's mission, as well as their financial investment? Good construction companies may deliver on quality, schedule, and budget; however, it is rare that contractors are incentivized to make decisions based on, or even contemplate, the social and environmental impacts of the supply chain of the products, or the means and methods of construction.

We set out on a new venture with precisely this in mind.

In 2020, we launched MASS.Build with the goal of being a changemaker in the Rwandan construction sector – advancing both ethics and impact while still meeting traditional project targets. Rwanda is the most densely populated country in continental Africa, and it is rapidly urbanizing. Industry and manufacturing, including construction, represented almost one-fifth of the country's

GDP in 2019.¹⁶ Rwanda, like many of its African counterparts, is uniquely positioned to leapfrog Western construction practices to create better jobs, reduce carbon emissions, and create sustainable infrastructure. But how can this opportunity be capitalized on? What would it look like to have capacity building, skills training, and sustainable employment as guiding principles of a construction company? What would it mean to set a new precedent, one based on the values of being good, clean, and fair?

Everyone deserves good design – design that is beautiful and just. It is essential to delivering human rights, services, and spaces that will build a better world.

MASS has demonstrated this in the development of Ruhehe Primary School. Creating a space which encourages learning requires more than four walls and a roof. The versatile school design stimulates play, exploration, and education – with classrooms that can be closed to allow for greater student concentration while still providing adequate daylight and natural ventilation, yet spills out into courtyards when the weather allows for it, creating a versatile learning environment. The project was accomplished by working closely with the construction workers, some of whom were the parents of future students of the school. This encouraged community ownership and pride in the new school, and allowed MASS to ensure that the integrity of the design was upheld during construction, making sure that the school could withstand both seismic movement and the wear and tear of young students.

Being climate-positive is an imperative, and it can only be achieved by intentionally designing an entire supply chain to be sustainable, resilient, and regenerative.



Rwandan Institute for Conservation Agriculture © MASS

Rwandan Institute for Conservation Agriculture

The majority of construction in Rwanda is concrete.¹⁷ On the Rwandan Institute for Conservation Agriculture campus, MASS created a precedent for sustainable timber construction in Rwanda. This required tracing materials all the way to the roots of the supply chain and overcoming hurdles to make timber construction viable and sustainable. We needed, to identify a few challenges, to avoid illegally sourced timber which depletes precious rainforests, find timber of suitable strength with a manageable level of structural defects, and discover the few mills with the necessary specialized grading, treatment knowledge, and equipment. In Rwanda, the sourcing of structural materials, furniture, fuel, and the need for arable land are all interlinked. So it is paramount to continue to demonstrate the value of structural timber in order to drive demand for it as a construction material, while also helping to establish robust and sustainable supply chains.

The profession must shift to looking at the design and construction process holistically – from material extraction to assembly and operation – ensuring we have safe and equitable labor practices.

¹⁵ [2019 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector](#), [Global Alliance for Buildings and Construction](#), International Energy Agency and the United Nations Environment Programme. 2019.



Butaro District Hospital © MASS

Butaro District Hospital

The volcanic soil of Rwanda is what makes the land so fertile, but the farm fields are littered with piles of volcanic stone which are cleared to make way for crops. For Butaro District Hospital, MASS worked with local craftsmen and women to develop a way to use the otherwise worthless stone to create a beautiful, local, cost-effective building system. The volcanic stone masons have honed their craft and are now applying this technique on some of the most high-profile projects in Rwanda. A simple rethinking of a common material has created sustainable employment for a growing group of specialized masons. Additionally, through the promotion of gender equity in construction, ethical employment practices, and focusing on developing sustainable economic opportunities, MASS has become a leader pushing for a more fair and equitable construction industry.

MASS is on a path of reevaluating every aspect of the design and construction process to reclaim agency and intentionally develop processes that prioritize health in all its forms: human, environmental, public, and economic. The founding of MASS.Build is our latest step down that path, and we are constantly striving to identify ways to amplify our impact as builders.

¹⁶ Sabiiti, Daniel. [“Rwanda GDP Increases By 9.4 - NISR,”](#) *KT Press*. March 23, 2020.

¹⁷ [Energy Technology Perspectives 2020](#), IEA. September, 2020.

SECTION 3

Why You Need to Assess Risk

There is legal and business exposure as well as danger in ethical passivity for turning a blind eye to forced labor in building materials. Governments around the world are insisting on anti-slavery transparency disclosures, and criminal and civil enforcement actions are ever more likely. Seizure of slave-made goods made possible by new laws in the U.S. can create costly project delays. Our response to risk begins by having conversations about our values, and how to embed those values into our business conduct.

Legal accountability

Since 2010, California (U.S.), the U.K., Australia, and France have supplemented their anti-trafficking and forced labor statutes through a combination of supply chain transparency, human rights due diligence, and customs laws. Such policies move enforcement to a more proactive, industry-wide posture, and are therefore tools of prevention and prosecution.

California Transparency in Supply Chains Act of 2010 | U.S.

The California Transparency in Supply Chains Act (CTSCA), signed into law in 2010, was the first law to articulate a policy that large retailers and manufacturers can inadvertently condone forced labor or child labor through its supply chains. The act requires any any retail seller or manufacturer with with gross receipts exceeding \$100,000,000 and doing business in California to disclose its efforts to eradicate slavery and human trafficking from its supply chain. See, [Senate Bill No. 657](#), California Civil Code Section 1714.43.

The Act recognizes that “absent publicly available disclosures, consumers are at a disadvantage in being able to distinguish companies on the merits of their efforts to supply products free from the taint of slavery and trafficking.” The CTSCA requires that large businesses must disclose – typically on their website – the extent to which they verify product supply chains to evaluate the risks of human trafficking and slavery; conducts audits of suppliers to evaluate supplier compliance; requires direct suppliers to certify materials in its products comply with the laws in the country or countries in which it does business; maintains internal accountability; and provides training to company employees and management.¹

Modern Slavery Act of 2015 | U.K.

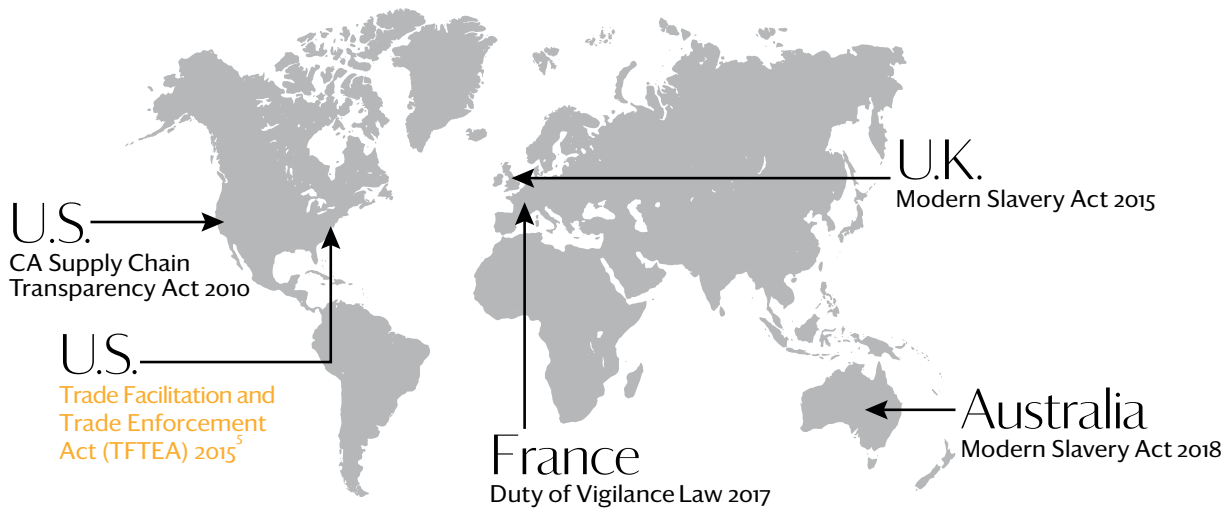
Activists and parliamentarians in the U.K. sought to build on the CTSCA while drafting and debating the Modern Slavery Act (MSA) of 2015, which requires a more-formal filing by businesses, with more governmental oversight than the California law. Commercial organizations, regardless of where incorporated, that supply goods and services with an annual global derived revenue of more than £36 million, are required to file an annual slavery and human trafficking statement about “the steps the organisation has taken during the financial year to ensure that slavery and human trafficking is not taking place in any of its supply chains, and in any part of its own business.” See, [Modern Slavery Act, S.54](#).²

In September 2020, the U.K. and European Union announced initiatives to increase human rights transparency in the private and public sector. The U.K. Home Office plans to enhance the MSA in 2021, and businesses have been advised to start auditing their due diligence and reporting on slavery and forced labor.³

Modern Slavery Act of 2018 | Australia

In 2018, the Australian government passed the Modern Slavery Act, requiring businesses based or operating in Australia, with an annual consolidated revenue of more than \$100 million, to report annually on the risks of modern slavery in their operations and supply chains. The annual reports are publicly filed and maintained in a repository known as the Modern Slavery Statements Register. See, [Modern Slavery Act, No. 153, Simplified Summary of Act, Part 1, Section 3](#).⁴

Slavery is illegal in every country.
Countries are moving to make corporations more accountable.



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178 jurisdictions are parties to the United Nations' Trafficking Protocol's⁶ call for prosecution, protection, and prevention. Supplementing other jurisdictions' reporting-based laws, the U.S. is using its tariff authority to prevent any products made with forced labor from entering the country.

The Modern Slavery Act is a significant step forward in combating modern slavery in Australia. First, by requiring businesses to assess the risks of modern slavery in their operations and supply chains, the Act forces businesses to pay attention to this issue. Second, the Act sets the stage for increased accountability by requiring each business to file an annual report setting forth its efforts to identify and curtail risks of forced labor within its operations. Finally, the Act provides for a public repository of the annual reports, accessible online, which could help increase transparency. In short, the Act's emphasis on increased accountability and transparency is essential to creating a culture that values and promotes slave-free and ethical business practices.

Duty of Vigilance Law of 2017 | France

Another set of laws, which are not limited just to modern slavery, have been emerging in the European context. In 2017, France enacted a human rights due diligence statute that went beyond the relatively neutral reporting ethos of the California and U.K. laws. See, [Republic of France Legislation. Law No. 2017-399](#). Compared to the California or U.K. laws, the French statute's require-

ments are more expansive, including a host of human rights and environmental concerns and requiring companies to not merely report on efforts, but to affirmatively adopt and carry out a "vigilance plan" that sets forth how they will assess human rights risks among subsidiaries, subcontractors, and suppliers; how they will track and mitigate risk; and what mechanisms they will use to assess effectiveness.⁷

In the immediate term, with all of the various transparency legislation, businesses can expect that architecture, engineering, and construction firms will be affected either by having to file disclosures themselves or by having suppliers who are big enough to have disclosure requirements. Those who must file disclosures themselves will have to adopt and execute policies and procedures to make their disclosures accurate or risk regulatory or criminal exposure. Those who work with businesses required to file disclosures will have the advantage of assessing potential suppliers or partners for their anti-slavery activities. Filing businesses whose public disclosures and private actions are aligned will develop a reputation for ethical business practices that will inure to those who use their products or services.

“The design and construction of such large architectural projects involves a highly collaborative and often widely dispersed group of clients, financiers, architects, engineers, consultants, manufacturers, contractors, and workers who construct a fully realized project. Many of these actors must coordinate and work together through efficient technological platforms, established standards, and global legal and trade agreements. Through shared software platforms, international sizing and manufacturing standards, and disciplinary frameworks, nearly every aspect of the design and construction process can be quantified and organized.

One area that remains shockingly unregulated is the human labor used to construct such designs of the future.”

– *Who Builds Your Architecture? A Critical Field Guide*, 2017



Jute factory in the suburbs of Kolkata, India is the only country in the world to produce jute in commercial quantities © Frédéric Soltan/Getty Images

The United Nations Sustainable Development Goal 8.7

The Sustainable Development Goals (SDGs),⁸ promulgated by the United Nations in 2015 and adopted by 193 member countries, set forth an ambitious framework for development work in the coming decade, ranging from poverty alleviation and gender equality to climate action and rule of law. SDG 8 sets forth a number of targets to ensure decent work and economic growth. Target 8.7 mandates member states to:

*[t]ake immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.*⁹

Target 8.7 is driving change. The International Labour Organization serves as Secretariat for the United Nations coordinating body, Alliance 8.7. Through this process, states, businesses, civil society, and international organizations are working to implement the target, including

specific work on supply chains. The [Delta 8.7 Knowledge Platform](#), maintained by United Nations University, seeks to increase the knowledge base around modern slavery issues and is becoming a useful repository of research and analytical tools, such as a global compendium of national laws against slavery and trafficking.

SDGs are so important because they are informing governments’ responses to modern slavery and are also being incorporated into business and investment practices, which make a real, cross-sector impact. Financiers – whether investors, banks, or the global financial institutions that often fund major infrastructure construction such as the World Bank and International Monetary Fund – are also examining projects and funding priorities through the lens of the SDGs.

Trade Facilitation and Trade Enforcement Act of 2015 | U.S.

The U.S. Trade Facilitation and Trade Enforcement Act of 2015 (TFTEA)¹⁰ prohibits all products made by forced labor, including child labor, from being imported into the

U.S. See, [Section 307 of the Tariff Act of 1930](#) (19 U.S.C. § 1307). It states:

*All goods, wares, articles, and merchandise mined, produced, or manufactured wholly or in part in any foreign country by convict labor or/and forced labor or/and indentured labor under penal sanctions shall not be entitled to entry at any of the ports of the United States, and the importation thereof is hereby prohibited ...*¹²

TFTEA operates mainly through the mechanism of a “withhold release order” (WRO), through which a sub-agency of the Department of Homeland Security, U.S. Customs and Border Protection (CBP), prohibits the goods from entering into the U.S. WROs are issued not on proof beyond a reasonable doubt, as in a criminal case, or even by a preponderance of the evidence, as in a civil action, but when there is reasonable suspicion to believe the goods are made by forced labor, prison labor, or forced child labor. WROs can be lifted once CBP is satisfied that the company has taken remedial measures in its supply chain. WROs for forced labor enforcement is a relatively new activity for the U.S. government, but the reach of the affected goods has to date been broad, ranging from agricultural commodities to minerals, from personal protective equipment to fish. Important precursor chemicals such as soda ash and potassium nitrate have also been barred entry.

Companies can also be placed on what is known as the “entities list.” In July 2020, 10 Chinese companies were placed on the entities list because of the widespread state-sanctioned forced labor of Muslim populations in their home province of Xinjiang and in other areas of China to which they have been forcibly relocated. Human rights researchers report that sanctioned producers are in the supply chains of at least 80 major multinational companies. While many of the companies were appar-

el or footwear brands or retailers, others were systems, equipment, or electronics companies such as Bosch, Cisco, Dell, Electrolux, General Motors, Hitachi, HP, Huawei, Lenovo, LG, Mercedes-Benz, Mitsubishi, Panasonic, Siemens, and Toshiba.¹³

In assessing the flow of slave-made goods in international commerce, major economies are increasingly paying attention to the role of governments, whether as actively participating in forced labor, failing to adequately protect workers from exploitation, or pursuing policies that facilitate exploitation. Accordingly, if goods or services are obtained or maintained through coercive force, it does not matter if a particular practice is legal in a country – such as holding workers’ passports, using political prisoners’ labor, or allowing child labor – the resulting goods and services are considered to be connected to slavery nonetheless. Compliance with the least-stringent legal standard in a developing or autocratic country will not shield a company from liability in the globalized world.

Governmental and Non-Governmental Reports

The most basic way to assess the likelihood of slavery in a supply chain is to be aware of current trends in particular countries and around specific commodities or manufacturing sectors. A good starting point is the three major reports: the U.S.’ *Trafficking in Persons Report* and *List of Goods Produced by Child Labor or Forced Labor*, and the Walk Free Foundation’s biennial *Global Slavery Index*. Reports by established, credible human rights organizations (such as Human Rights Watch or Amnesty International) or industry-specific watchdog groups or think tanks (such as the Environmental Justice Foundation), are not issued on as regular a schedule, but are an important – and often more in-depth – snapshot of particular areas of concern.

¹ [California Transparency in Supply Chains Act](#), State of California.

² [Modern Slavery Act](#), UK Public General Acts. 2015.

³ [With Recommendations to the Commission on Corporate Due Diligence and Corporate Accountability](#), European Parliament, Committee on Legal Affairs. September 11, 2020.

⁴ [Modern Slavery Act 2018](#), Australian Government Department of Home Affairs. 2018.

⁵ [CBP and the Trade Facilitation and Trade Enforcement Act of 2015 \(TFTEA\)](#), U.S. Customs and Border Protection. 2015.

⁶ [Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children](#), United Nations. New York, November 15, 2000.

⁷ [On the Duty of Vigilance of Parent Companies and Ordering Companies](#), Republic of France Legislation. Law No. 2017-399. March 27, 2017.

⁸ [Sustainable Development Goals](#), United Nations General Assembly. New York, 2015.

⁹ [Sustainable Development Goals](#), Alliance 8.7, United Nations. 2015.

¹⁰ Walker et al. “[Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology and Law Reform](#).” Wiley. 2019.

¹¹ [CBP and the Trade Facilitation and Trade Enforcement Act of 2015 \(TFTEA\)](#), U.S. Customs and Border Protection. 2015.

¹² [Forced Labor: Section 307 of the Tariff Act of 1930 \(19 U.S.C. § 1307\)](#), U.S. Customs and Border Protection.

¹³ [Uyghurs for Sale](#), Australian Strategic Policy Institute. 2020.

Ken Kennedy

Forced Labor Program Senior Policy Advisor, Department of Homeland Security, Homeland Security Investigations

State of international government oversight of ethical supply chains and the construction sector

Discussion of and attention paid to forced labor worldwide has steadily increased in recent years, and governments, like businesses, differ in their approaches to addressing this subject. Supply chains are becoming increasingly complex and the sourcing of goods ranges from dozens to hundreds of materials, so the risk of identifying forced labor at any stage of the production of those goods also increases.

To address the risk of forced labor in a country's supply chains, some governments have opted for a public-corporate due diligence regimen, while other governments have opted for a legal or regulatory prohibition with or without enforcement consequences, and some have chosen to do nothing. The business community has also opted for a variety of strategies from transparency and proactive engagement, to identifying and removing it through remediation, to those that take advantage of forced labor as a way to undercut competition by using labor costs as a variable in pricing goods for market, as well as those that choose to do nothing.

Laws prohibiting the importation of goods produced using forced labor in the U.S. contain both civil and criminal enforcement provisions,¹⁴ with outcomes ranging from civil penalties and seizures of goods, to jail sentences of up to 20 years. While firms in the architecture, engineering, and construction industries may wait for basic legal frameworks relating to forced labor to be created or

existing ones enforced, there is an opportunity to move forward now and be part of the solution and ahead of the trajectory. Individuals who make sourcing and purchasing decisions should understand that simply seeking, and perhaps even finding, forced labor in a supply chain, is not in and of itself problematic, but it is what they decide to do with that information that determines outcomes. Simply avoiding asking about forced labor will not provide safe harbor, but will increase the risk of it coming to light through other means.

An analysis in 2016 indicated that on any given day, 25 million people were trapped in situations of forced labor,¹⁵ and that goods produced by them could easily enter into global supply chains.¹⁶ So, what does this mean for the design and construction environment? The enormous variety of materials businesses access and the broad array of labor required by projects means that businesses are uniquely placed to have a positive impact toward eliminating forced labor in many countries around the world. The creativity of these projects ensures that new materials and processes are always being sought. By choosing to use only forced labor-free work products, to diligently examine supply chains and not simply rely on assurances that labor forces are free of exploitation, design and construction industries would move into the forefront of sectors seeking to build (or rebuild) a world that does not rely on the exploitation of some for the benefit of others.



© left to right: Bloomberg via Getty Images, Orbon Alija/E+ via Getty Images

“By choosing to use only forced labor-free work products, to diligently examine supply chains and not simply rely on assurances that labor forces are free of exploitation, design and construction industries would move into the forefront of sectors seeking to build (or rebuild) a world that does not rely on the exploitation of some for the benefit of others.”

Access to worksites to look for indicators of forced labor may be made difficult by government policy, irregular governance, remote locations, or unwilling owners, so reliance upon static and certification programs operating under such restrictions may create high-risk situations relating to forced labor. Assessing risk in supply chains and making decisions not to source from high-risk areas, as well as areas that do not permit corporate due diligence, will drive change as sourcing companies and countries begin to lose access to markets, and realize that only by being part of the solution and addressing forced labor can they hope to regain access to these markets.

The potential for criminal and civil enforcement actions, as well as the risk of reputational brand damage for using goods produced using forced labor, is growing. The

need to quickly move and redraft affected supply chains, and the resultant lost revenue while all of this occurs, are equally important considerations for the business community. It can be countered in advance of enforcement actions and changing government due diligence requirements by simply deciding to change sourcing strategies to exclude any goods potentially produced using forced labor. This is a challenge, but obtaining and using responsibly-sourced goods that do not exploit others should be part of every business decision.

In conclusion, sourcing forced labor-produced goods and materials is not a sustainable business model. The opportunities for the design and construction environment to be invested as a driver of change and a forerunner in this trajectory are broad and varied.

¹⁴ These laws include 19 U.S.C. 1307, 18 U.S.C. 1589, and 18 U.S.C. 1761.

¹⁵ [Global Estimates of Modern Slavery: Forced Labour and Forced Marriage](#), International Labour Organization (ILO). Geneva, September 19, 2017.

¹⁶ For a shared quantifiable understanding of the increase, there is a need to quantifiably track the number of legislatures discussing modern slavery/ corporate due diligence legislation, increased resourcing by governments of their labor authorities, increased collaboration and information sharing between governments on these subjects.

Add humanitarian criterion to your business model

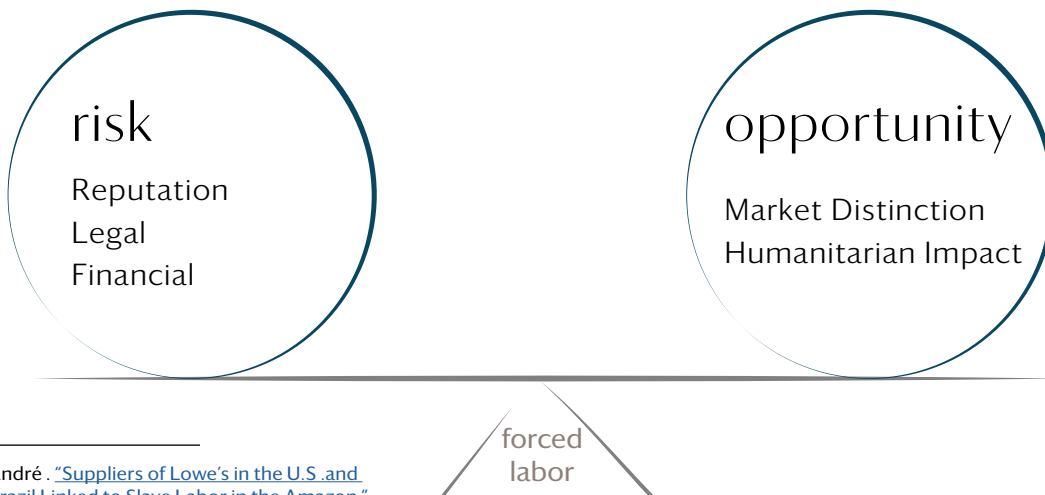
While prioritizing cost-efficiencies, delivery dates, and sustainability measures along the global building materials supply chain, valuing off-site labor in the supply chain has largely been overlooked. The perimeter around the job site is currently as far as the fair-labor lens extends.

Recent reports of high-profile wrongdoings should make everyone from owners to specifiers and engineers begin to consider the human impact that their projects have. Take, for instance, New York City's iconic Brooklyn Bridge: the city was cited for renovating the bridge with wood tainted by slave labor. Also, recently, Lowe's Home Improvement, the second largest U.S. material chain retailer, was called out for selling U.S. floor products with proven links to forced labor.¹⁷ As we incorporate humanitarian criterion into our business models, companies can avoid this type of reputation risk.

Protecting the environment is an opt-in material choice; whereas in the U.S., you cannot opt out of compliance on slave-free materials arriving in our ports. Forestry certification programs (notably FSC and PEFC) have moved the lumber industry towards protecting forests, and many third-party certifications consider toxic chemicals and energy consumption have improved both workers and consumers health. Now we need to expand Environmental, Social, and Governance (ESG) business models and incorporate social responsibility standards in the built environment to ensure our business models and leaders safeguard and dignify workers.

The construction industry is ripe for disruption, which presents a materials business opportunity in terms of new technologies and production methods. Paired with a slave-free lens, a significant impact-investing opportunity is at hand.

The risks of embedded forced labor are damaging, while the opportunities are significant



¹⁷ Campos, André . "Suppliers of Lowe's in the U.S. and Walmart in Brazil Linked to Slave Labor in the Amazon." *Repórter Brasil*. March 15, 2017.

Andrew Klemmer
President and Founder, Paratus Group

How to embrace a Building Program or OPR to build slave-free

As the founder of an Owner's Representation firm, I have found that having the opportunity to talk with our clients about values can fundamentally change the approach to building. Our role in the ecosystem of the built environment starts well before the design begins, often with a document that we call a Building Program, which is also known as Owner's Project Requirements (OPR). It outlines the intentions of a project and how architects and commissioning teams can achieve those intentions. And, I believe that it is in this formative stage that we have an opportunity to share the possibility of slave-free building with our clients, so that the Building Program and accompanying contracts can pursue it.

In the following action steps, I describe how to embrace a Building Program or OPR to build slave-free:

1. Articulate a client's values

The act of conceiving, designing, and building should all be consistent with the client's values. We find these guideposts to be critical to staying on course over the long process of actualizing their vision. If a value is well articulated, it can permeate the documents that constitute a design and construction process.

2. Share the possibility of slave-free building

Our firm has begun to surface this goal of ethical materials procurement and reduction or elimination of slavery in any form, and we are successfully including it in our documentation from a project's inception. Values-aligned clients appreciate these proactive conversations since there is not yet mainstream awareness of slavery in the making of building materials. Owner's Representatives can direct clients to designforfreedom.org for key information that includes ethical imperatives and risk assessments for not taking action.



Start a project by talking about a client's values, and embrace a conversation about ethical procurement.

Can a client imagine choosing glass made with sand procured with slave labor? Without it?



© (top) Kupicoo/E+ via Getty Images,
(bottom) SOPA Images/LightRocket via Getty Images

3. Help advance the industry through our client's decisions

In recent years, clients have asked and/or agreed to incorporate new standards for environmental sustainability, safety, and accessibility as an extension of their values. Similarly, a Building Program can ask that the supply chains and labor used on the project can be traced back to original sources. This goal can be described in the program, reinforced in the contracts for both design and construction teams, and carried out in a very systematic way over the life of a project.

4. Bring in a values-aligned design and project team

When the Building Program is complete, it is used to describe the project to potential architects. The ability to fully understand the program's intention, as well as visits to past projects and conversations, distinguish one candidate over another. The Program is also sent to the engineers and other specialists needed. By the time the design team is assembled, everyone is aware of the client's mission, goals, and values.

5. Ask better questions

At every design iteration, from concept design through schematic design and design development, this Building Program serves as the measuring device for assessing design progress and design success. Is the design enabling or better yet encouraging the accomplishment of the mission? Are the spaces being provided in a way that ensures an impact that supports the client's values and meets the functional needs of the client?

We now should be empowered to ask these same questions about ethical building materials supply chains. And the answers to these questions are the basis of all agreements and decisions to move forward in a design direction.

6. Mitigate dilution

Because there are so many stages and groups managing facets of an architectural project, it is important to have committed partners to mitigate dilution of the Building Program goals and associated values. This includes selecting a worthy builder and understanding how a construction process will be managed from beginning to end. It is helpful to direct the project on-site so that the initial intentions are never lost among contracted partners or overtaken by other priorities.

At Paratus, we are confident that clients – individuals and corporations, universities and foundations – will all embrace this ethical goal, and we are ready to stand with them to exercise control and compliance throughout a complicated chain of ownership.

Once an owner commits to a clean building materials supply chain, select architectural and construction teams that will retain this value throughout the project.



Hayes Slade, AIA, IIDA
Co-Founder and Principal, Slade Architecture
2019 President, AIA NY

Now is the time to include slave-free criteria in our industry code of ethics

The year 2020 created challenges greater than most of us have ever faced. For many, the crisis has focused how our decisions and actions impact our community – and society in general. From social injustice and political absenteeism to public health and safety, we see repeatedly how ripples of individual actions together form a tsunami of societal conditions. In the solitude of quarantine, the interconnectedness becomes clearer, whether concerning environmental or economic resources, justice, or access to healthcare. The common link is that these are all facets of equity.

As an architect and former President of the New York chapter of the American Institute of Architects (AIA NY), I know how our profession yearns to incorporate equity in our practice. For starters, the AIA ethics code requires us to deliver our craft to “enhance and facilitate human dignity and health safety and welfare.”¹⁸ I have seen how seriously most of us in the profession take that mandate. For many, it is the potential for improving the conditions we find ourselves in that drives us to the profession in the first place.

Slavery is the most extreme form of inequity. It is the most extreme violation of human dignity, safety, and welfare.

The design and building professions have successfully confronted inequities before. For example, this year, we celebrate the 30th anniversary of Americans with Disabilities Act (ADA). Through our concerted effort, consideration of accessibility has become the norm in the built environment. There are improvements to be taken in this regard, but great strides have been made. However, just as we as a profession for too long ignored how people with disabilities experience our designs, the fact

that forced labor is still part of our global supply chain is something we need to face and address in every arena in which we act. The indisputable evil of enslavement makes it difficult to understand as a contemporary problem, rather than “comfortably” understanding it as a terrible relic of the past. We must resist that temptation; eradicating forced labor will require maintaining a concerted and focused effort.

As architects, engineers, consultants, and contractors, our decisions and specifications represent tremendous consumption of materials and labor. As members of the groups leading this industry, we have an imperative responsibility to consider the wider social and environmental ramifications of our material choices and specifications.

Throughout our history, we have adapted and adopted evolving standards to improve the health and well-being of society – think about standards for water and waste safety, fire codes, material safety, and more recently, concerns for sustainability and environmental conservation.

Last year, the AIA New York Chapter honored Design for Freedom Working Group founder Sharon Prince with its NYC Visionary Award for helping turn our gaze to the problem of modern slavery in our work. It is particularly appropriate to move on this challenge in this year, in which we celebrate the anniversary of the ADA that fundamentally changed the way we design. We have proven that we are a group that can rise to a challenge of inclusion and equity; it remains to mobilize toward practicing ethical construction with ethically sourced materials, and ethical practices on our job sites.

¹⁸ [AIA 2020 Code of Ethics and Professional Conduct, E.S. 1.5](#), American Institute of Architects (AIA). 2020.

Take a Closer Look at the Materials You Build With

The disaggregated and opaque nature of the construction industry makes it easy to exploit workers. Forced labor and inexpensive and no-cost labor subsidizes a project's return on investment (ROI). The complexity and the thousands of unique raw and composite materials per building makes it nearly impossible to purchase slave-free materials. But a growing list of risky raw and composite materials, as well as global "hot spots," can provide navigation to make ethical decisions. Working examples, conducted by Grace Farms internally and for engineering classes at Princeton University, also provide real-world examples of how ethical decisions can be built into the design and construction process.

Drivers of forced labor in building materials

The disaggregated nature of the construction industry is not the only driver of forced labor in the building materials supply chain. There is a problem in global manufacturing and commodities systems across the board.

Modern slavery seems like an aberration, but continues to exist despite being illegal for at least two clear reasons:

- 1) it is profitable, and
- 2) it is hidden

Worker exploitation is profitable because cheap or even no-cost labor subsidizes material costs. It does so in a way that shifts the risk and exploitation down to workers in the supply chain. Low material costs, and the percentage of profit margin attributable to them, may flow not from innovation, but from exploitation.

Forced labor also subsidizes the industry by ensuring an available and exploitable workforce, minimizing recruitment costs and lost days due to labor shortages, as well as tamping down any worker activism, including that which stands up for fair wages, better living and working conditions, or a workplace free from physical or sexual abuse or sexual harassment.

End users in other industries, most notably the buyers and retailers involved in the Fair Food Program, have seen little extra cost in insisting on standards and auditing, and

even the initially reluctant growers have reported that sexual harassment and forced labor have plummeted since they stopped turning a blind eye to abuse by crew leaders (the direct managers of most farmworkers), as long as they got the crops in on time. What the growers who have signed onto the Fair Food Program have realized is that the old system was profitable, but for the unscrupulous crew leaders, not for the farms. Once the workers delinked the commonality of interest between the growers and their field-level managers, the growers realized that having those profits flow to the workers—rather than their abusers—would result in a more professional workplace, with less harassment and increased retention, especially of female employees.

Hidden (But Often in Plain Sight)

Another reason for the lack of forced labor transparency in the building materials supply chain may be as attributable to its size and the lack of brand-driven consumer end-products as it is to anything specific to building materials. Put simply, many of the economic sectors that have moved to confront modern slavery, whether through corporate social responsibility, multi-stakeholder initiatives, auditing schemes, industry standards, or even worker-led efforts, are in industries that have been through a national or international scandal, and in which instantly recognizable global consumer brands can suffer reputational and regulatory damage. The Working Group is raising the issue before a tragedy like the Rana Plaza disaster¹ or a shocking exposé, such as in *The Washington*



Source: Verité and the Department of Labor, Grace Farms analysis

Key risk factors for modern slavery in global supply chains

There is a moral and legal imperative for you to examine your building materials supply chains.

Post's reporting on the West African cocoa industry, puts the construction sector under the microscope.²

Certifications

Certifications started in response to human rights violations in the developing world in support of multinational corporations, often extractives or commodity agriculture. Concerns over forced expulsion of vulnerable communities from land desired for production led to certifications for items such as coffee or forestry products. Initially, fair trade certification focused on small producers, typically in rural areas, encouraging fair commodities pricing and the formation of cooperatives to equalize power relationships with global purchasers. Over time, the underpinning of these certifications became as much focused on the communities as stewards of the environment as they were upon the idea that the communities were rights-holders or stakeholders independent of Western activists' environmental goals. Many certifications that are seen as trustworthy by consumers are in their standards and auditing practices highly concentrated on ecological concerns, with auditors from environmental sciences or forestry backgrounds. Such efforts were not built with the conditions of the workers front of mind. For instance, certified timber companies that successfully replant to their targets have only recently begun to face scrutiny for the enslavement of guest workers who are reforesting after harvest.

Whether certifications are good, bad, or neutral is not even a discussion to be had when dealing with the built environment. There are no certifying bodies, and if a certification touches on the construction industry, it is often tangential and likely not focused on forced labor. However, there are certifications for specific materials that

can provide a starting point. Please see the Appendix for a list of more than 30 supply chain transparency resources and reporting mechanisms as a starting point for obtaining insights into one's supply chains. When working on a project, we need to verify the sources and components of all building materials. The complexity of the supply chain, coupled with the lack of an oversight entity that can verify and certify all materials are slave-free, presents challenges for accuracy. While we recognize more work needs to be done, we must use the certifications we have now to help ensure we take steps toward a clean, ethical building materials supply chain.

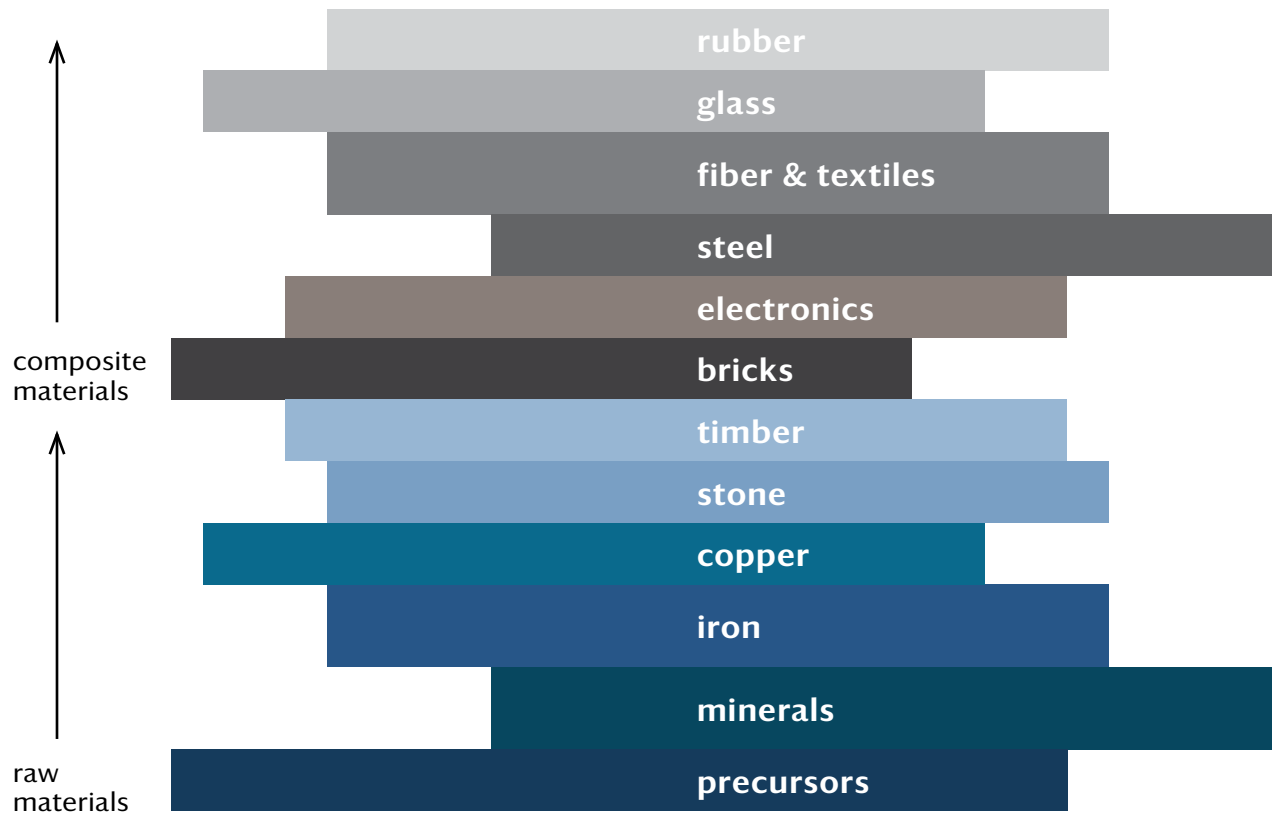
Much of the knowledge base around slave-made goods has been at the commodities level, as evidenced by the U.S. Department of Labor's annual report or the *Verité Forced Labor Commodity Atlas*. Researchers are beginning to apply those broad commodities classifications to the resulting manufactured items, and to analyze the sectors that use them. Cost, time, and distance argue for starting with targeted analysis, homing in on workplaces and industries with strong correlation to forced labor. Key risk factors for human trafficking align closely with the construction, engineering, and architecture professions, an alignment that has first been recognized in on-site practices, especially in projects that involve large numbers of temporary, transient, international labor. But even more unseen are the workers who are involved in crushing the gravel, mining or smelting the minerals, or harvesting the fiber that will go into a project.

Materials Inspection

Throughout history, much of the activity on a job site and the logistics of a project required an intentionality around inputs – many of which would be made on the site itself. In

There are currently more than 30 supply chain transparency resources and reporting mechanisms as a starting point for obtaining insights into one's supply chains

raw and composite materials at the highest risk of embedded slavery



Source: Verité *Commodities Atlas* and the U.S. Department of Labor's *List of Goods Produced by Child Labor or Forced Labor*, Grace Farms analysis

contrast, in today's globalized world, the modern construction process is predicated on materials and components arriving on the site complete, available, and standardized. Other than knowing their local suppliers, contractors might not have any insight into how or where inputs originated, or under what conditions. Instead contractors are mainly concerned that the materials or components arrive on time within the construction schedule. But now that shipments from overseas are being scrutinized for forced and child labor, "on time" and "to spec" aren't the only things that have to be taken into account. Even the most perfectly designed and built-to-standards components are useless if they are in a seized shipping container at a port of entry.

Architecture and construction are risky businesses if you consider how many common building materials are produced through labor exploitation. While few items are exempt from the chance of any exploitation in their supply chain, a number of inputs are consistently raising red flags in the fight against modern slavery. These ubiquitous global materials listed above are the top 12 building materials at risk of being made with forced and child labor under the most horrific and dangerous conditions. With awareness, we can initialize change that can lead to the elimination of such pernicious practices.

¹ [The Rana Plaza Accident and Its Aftermath](#), International Labour Organization (ILO).

² Whoriskey, Peter and Siegel, Rachel. "[Cocoa's Child Laborers](#)," *The Washington Post*. June 5, 2019.

Know the source, lessen your risk

Timber is one of the most widely used construction materials in the world and is ranked as the fifth-largest product (by value) at risk of forced labor imported into the U.S.³

The U.S. is the world's second-largest importer of wood products valued at \$48.7 billion,⁴ following China, and both import hard and soft woods from countries that have high rates of forced labor in their logging industries. Although China does not prohibit imports of illegally logged forestry products, the U.S. specifically amended the Lacey Act in 2008 to include the prohibition of illegal timber from entry.⁵ See, [Lacey Act \(16 U.S.C. §§ 3371-3378\)](#).

Given that an estimated 38% of wood products globally are being used for buildings and construction,⁶ an examination of timber's provenance and the labor input is the responsibility of all decision-makers on design, construction, and manufacturing teams worldwide.

Workers in illegal timber operations are vulnerable to unsafe working conditions without regulations due to their remote locations, the presence of organized crime, government corruption, and a lack of oversight and regulation. Global timber forests are also valuable to countries and its workers. Considering up to 50% of global illegal logging depends on forced labor, which eliminates job and wealth creation that supports rural economies in many countries,⁷ it costs source nations up to \$15 billion in lost annual revenue and more so, the human cost of generations of enslaved laborers who are deprived of their human dignity.⁸

Forced labor in the timber industry is widespread, especially in countries such as Brazil, Peru, and Russia, which are among the world's major exporters of sawnwood. Di-

verse species of hard and soft woods are harvested from these countries, then enter the building materials supply chain, and are sent to projects across the globe. It is estimated that about three-quarters of harvested industrial roundwood is softwood,⁹ from gymnosperms such as pine, Douglas fir, spruce, and cedar. Softwoods are less expensive and faster-growing than hardwoods, and can be load-bearing for use in building components and furniture. Hardwoods are milled from angiosperm trees like oak, maple, teak, mahogany, and walnut, and are primarily used for finishes and furniture.

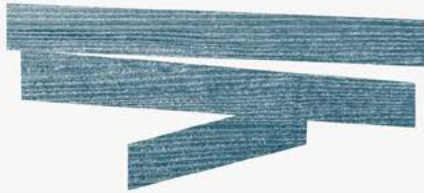
Below is a snapshot of the timber industries in these nations show how pervasive forced labor is:

Brazil: Supply chain investigations have shown that major retailer and construction groups in the U.S. source timber through intermediaries whose logging practices involve the use of slave labor, as defined by Brazilian law. Brazil's

"As a noble profession we choose to address global challenges while practicing even in our most modest local endeavors. Everything we build with has impact. Impact on the planet and impact on people. Our power and our duty is to be informed, to choose wisely, and to understand the true human impact of our choices. Ending forced labor means speaking with a collective and individual voice through our design choices to ensure fair and just treatment of all those who help us build the skylines of the future."

– Michael Green, AIBC, FRAIC, AIA
Principal, MGA | Michael Green Architecture

AT-RISK SAWNWOOD TIMBER



BRAZIL SOFTWOOD

Pine



BRAZIL & PERU HARDWOOD

Peru | White Oak and Walnut
Brazil | Tropical Lumber (Teak, Mahogany, Ipe, etc.)



RUSSIA SOFTWOOD

Pine, Spruce, and Fir



RUSSIA HARDWOOD

Oak, Birch, Aspen, and Elm

Sources: Repórter Brasil, World Bank, Verité,
U.S. Department of State, EIA

valuable ipe remains in demand despite this human rights violation and even though environmentalists flagged it. Forced forestry labor is found in wood products and charcoal manufacturing as a steel input, as noted in this report.¹⁰ With initial, yet waning government oversight, 880 workers were liberated from 2011 to 2017 from modern slavery conditions while harvesting timber.¹¹

Peru: A 2012 World Bank report indicated that 80% of Peru's timber exports were tied to illegal logging operations.¹² An estimated 33,000 people, mostly on lands of indigenous people in the Peruvian Amazon, are trafficked in the logging industry, which is also pervasive in the Brazilian Amazon. In addition to the exploitation of timber workers themselves, the sexual exploitation of children and teenagers is reported to be a major issue in and around the major logging operations within the country.¹³

Russia: An estimated 80% of all timber is illegally harvested and primarily located in eastern regions that contain old-growth forests. The timber workforce in this region is typically comprised of North Korean migrants sent on a state-sponsored labor-export scheme, who are isolated in remote, prison-like logging camps.¹⁴ A large portion of the timber produced under these modern slavery practices is exported to China, where it is blended with legally sourced material and exported worldwide, where it is routed to the U.S. including Lumber Liquidators, which was fined under the Lacey Act. Russian timber totals a quarter of all China forestry imports by volume.¹⁵

³ [Global Slavery Index 2018. Findings by Country - United States](#). Minderoo Foundation. 2018.

⁴ [Shifts in U.S. Merchandise Trade](#), U.S. International Trade Commission. 2018.

⁵ [Food, Conservation, and Energy Act of 2008](#) (Pub. L. 110-246).

⁶ Ramage, Michael, et al. "The wood from the trees: The use of timber in construction." *Renewable and Sustainable Energy Reviews, Volume 68, Part 1*. February 2017.

⁷ [Forced Labor in Forestry](#), Know the Chain, 2020.

⁸ [Sustaining Forests and Livelihoods in a Changing World](#), World Bank. January 29, 2013.

⁹ [Forest Products Annual Market Review](#), United Nations Economic Commission for Europe. 2007 - 2008.

¹⁰ Campos, A. "[Suppliers of](#)

[Lowe's in the US and Walmart in Brazil linked to slave labor in the Amazon](#)," *Repórter Brasil*. March 15, 2017.

¹¹ "[Timber Industry: Modern Slavery and the British Market](#)," *Repórter Brasil*. 2018.

¹² Goncalves, Marilyne Pereira; Panjer, Melissa; Greenberg, Theodore S.; Magrath, William B. "[Justice for Forests: Improving Criminal Justice Efforts to Combat Illegal Logging](#)." World Bank Study. Washington, D.C., 2012.

¹³ [Strengthening Protections Against Trafficking in Persons in Federal and Corporate Supply Chains](#), Research on Risk in 43 Commodities Worldwide. Verité. 2017.

¹⁴ [Trafficking in Persons Report](#), U.S. Department of State. 2020.

¹⁵ [Russia](#). Environmental Investigation Agency.

Rod Khattabi
Chief Accountability Officer and Justice Initiative Director, Grace Farms Foundation

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Meredith Gore, Ph.D.
Associate Professor, University of Maryland

At-risk timber

A conversation about forced labor in the building materials supply chain

Rod - Meredith and Mark, we have been looking into wood being imported into the U.S. from countries that are known to be at high risk for forced labor. Illegal logging is not just associated with modern slavery, but also with other illicit activities such as militias, child soldiers, organized crime, and terrorist outfits. What do we know about the impact of illegal logging in general?

Meredith - As a scientist, I have active projects in Vietnam, Mexico, and the U.S., and I have gained extensive experience with Madagascar, home to a number of forests with protected tree species like rosewood. Loggers indiscriminately cut into forests to get to that valuable protected hardwood, leading to irreversible environmental degradation and worker exploitation.

Mark - Between 50-90% of all tropical timber is illegally and unsustainably logged.¹⁶ That massive number should give us all a reason to insist on certified, sustainably-managed timber and to be intentional about it.

Rod - According to KnowTheChain,¹⁷ timber ranks as the fifth-largest imported commodity that is at risk of being processed with forced labor. They also estimate that up to 50% of illegal logging globally is dependent on forced labor.

Mark - Forced labor also represents a major issue in South America, with a huge percentage of timber being harvested illegally in areas like Brazil, Peru, and Colombia. Traditionally, the indigenous populations protected

the land. However, they are now being forced off their lands and into slavery-like conditions where they are obliged to cut down their own forests to benefit these criminal enterprises.

This is not just an overseas problem. In the U.S., we have witnessed instances in which timber was cut from endangered rainforests, shipped to China for processing and re-packaging, and then put on the market by retailers such as Lowe's¹⁸ and Lumber Liquidators.¹⁹

Rod - China is one of the top importers of wood globally, and according to The World Bank,²⁰ the U.S. is the world's second-largest importer of wood from high-risk countries for modern slavery and illegal logging, like Brazil. It seems that recently, a few years back, China shifted its import strategy from sourcing illegal wood in Southeast Asian countries such as Cambodia, Myanmar, and Vietnam by sending many of its traders to Africa. Have you noticed this phenomenon, Meredith?

Meredith - When I travel to Madagascar, I see it. The logs are stockpiled into large piles on the beach in these depots, sometimes in a port city. Then they are shipped east on container ships to places like Singapore or Kuala Lumpur, where they are offloaded onto trucks, and they might even be commingled with legal commodities. This is an organized, systematic, well-oiled machine.

Rod - Right. And from my experience investigating organized crime, you can't just enter a forest, cut all this wood, then transport it, get it to port, and ship it without somewhat complicit governmental and local authority involvement.

So, how can we stop this phenomenon? What can the architecture firms and companies do to ensure that they are using their purchasing power to procure slave-free building materials?

Meredith - I believe that there are three things that the U.S. and the private sector can do to try to reduce their involvement in perpetuating illegal logging: gain awareness about the sourcing of products and their supply chains; collaborate by bringing together key stakeholders such as the private sector, scientists, foundations, and law enforcement agencies to better understand the big picture; and harness usable and meaningful data to inform policies and interventions that can disrupt the illegal supply chain.

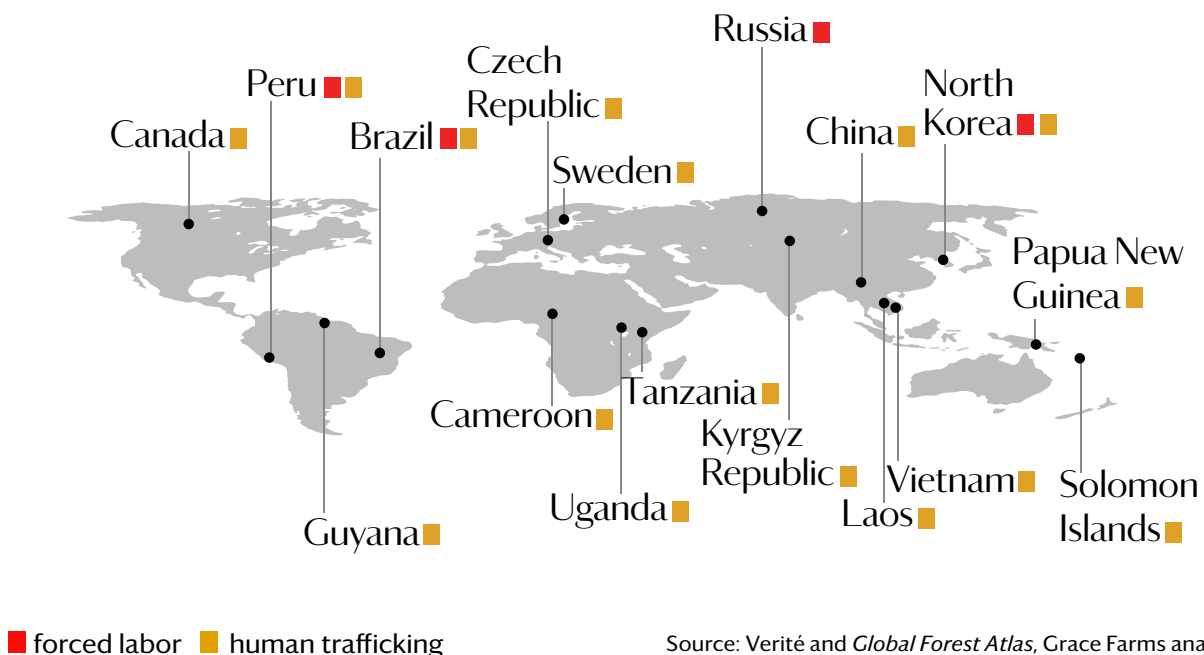
Mark - One of the proposed solutions is to explore new sources. We do not need to travel to Asia, Africa, or the Amazon to get tropical wood; we can find substitutes

like black locust, which is native to the U.S. and looks and feels like a nice tropical timber. If we sustainably manage our own forests, we can extract timber and actually create thriving local and regional economies. We also need to think about "mass timber." Cross-lamination timber (CLT) is a way to harness the potential of woods like hemlock which, for instance, has been relegated to pallet-making.

Meredith - I am so glad that you mentioned CLT. Michigan State University is building a major facility for STEM teaching and learning made out of cross-laminated timber – the first of its kind²¹ in the U.S. It will be a flagship example of the power of glue-laminated timber, which is providing a new market for sustainably-produced timber by encouraging forest owners to keep their woodlands growing.

Mark - CLT in many cases is stronger than concrete,²² without its massive carbon emission related problems. It's even carbon-negative (not only absorbing carbon during its growth, but then trapping it into the building). We can create products that are more ethical, with far superior inputs, and that are not criminal or in violation of human rights.

Nations producing timber at risk of forced labor and human trafficking



Rosewood

"When I travel to Madagascar, I see it. The logs are stockpiled into large piles on the beach in these depots, sometimes in a port city ... This is an organized, systematic, well-oiled machine."

—Meredith Gore, Ph.D.
Associate Professor,
University of Maryland



Rosewood in Madagascar © Toby Smith/Getty Images

Rod - And it is hard work to prevent this crime from happening. There is no quick fix for this. This represents an ongoing monitoring effort, with human rights policies enforced upon suppliers ... and to even know one's suppliers in the first place! Construction companies and architects should ask up front for the source of the wood and conditions of production. If suppliers become evasive or reluctant to look into their supply chain, this should raise a real red flag. In the new regulatory environment, that sort of willful blindness can no longer be tolerated just because a given supplier has offered good prices in the past. Warding off the seizure of materials or the reputational risk from using slave-made goods on a project is just good business.

Meredith - In my opinion, without proper due diligence, your supply chain may be easily exploited by some nefarious actor. I think that it is critically important for leaders in the built environment to understand the interconnections that exist between their bottom line and these broader security issues posed by natural resource and human exploitation. It is possible to engage in best practices and still have a very healthy bottom line. It just takes a little bit of proactivity and engagement.

¹⁶ [Green Carbon, Black Trade: Illegal Logging, Tax Fraud and Laundering in the World's Tropical Forests](#), UNEP and INTERPOL. 2012.

¹⁷ [Global Slavery Index](#). 2018.

¹⁸ Campos, A. "Suppliers of Lowe's in the US and Walmart in Brazil linked to slave labor in the Amazon". *Repórter Brasil*. March 15, 2017.

Rod - Whether we are optimists or pessimists, we are in a race against time to stop this forced labor and environmental disaster. While we can raise awareness, we need action, and real cross-sectoral collaboration. That includes the public sector, the private sector, and non-governmental organizations, all working together to advance justice.

TOOLS TO IDENTIFY HOTSPOTS AT RISK

1. [ILAB Sweat and Toil App](#)
2. Verité [Forced Labor Commodity Atlas](#)
3. [FRDM](#)
4. Thomson Reuters' [ONESOURCE Supply Chain Compliance tool](#)
5. [Trafficking in Persons Report](#)

¹⁹ [Lumber Liquidators Inc. Sentenced](#), U.S. Department of Justice. 2016.

²⁰ [World Wood Imports by Country](#), World Bank.

²¹ Michigan State. "First-of-its Kind Timber Product to be Used in MSU building," *MSU Today*. 2019.

²² [Concrete vs. CLT](#), Structurlam Mass Timber. June 12, 2017.

Steel's tensile strength and low cost can have a high human cost

As a primary and preferred structural building material, steel combines tensile strength with low cost, but can also have a high human cost. There are many points of potential forced labor along the steel supply chain due to the hazardous conditions and lack of transparency ranging from extraction and smelting to production, rolling, and erecting.²³ Steel service centers, through which an estimated 70% of steel flows from mills to end users, are an important pivot point in the supply chain.²⁴

Steel, an alloy of iron with carbon and other minerals, has a two-pronged production method that traditionally first adds concentrated carbon to 4.5% by adding coke to mineral iron and fluxes (e.g., nickel, chromium, manganese, molybdenum, titanium, vanadium, or tungsten) to create pig iron. Thereafter, carbon is reduced through high-intensity furnaces and, with the addition of further fluxes/precursors, iron converts into steel.²⁵

The route used for most U.S. domestic production is via the "mini-mill" method, which converts steel scraps, pig iron ingots, and additional fluxes into "recycled" steel.²⁶ Either production method can add another smelting step, with additional additives like boron and other fluxes to customize the properties of the steel. Charcoal made from trees is used to smelt mineral iron and limestone.

Global steel production averages 1.6 billion tons of crude steel every year, approximately half in China mills.²⁷ The myriad components are extracted from many countries, including Brazil, China, Colombia, India, Mexico, and Pakistan. All six of these countries have been identified by the U.S. Department of State as countries known to use forced labor in their mining industries.²⁸

After extraction, there are a number of stages and locations involved in steel-making: production mills with comparably dangerous conditions that are a part of the steel production chain ranging through coke making, iron making, steel making, steel recycling, continuous casting, and rolling/finishing, with routing to service centers.

Brazil: Brazil's iron and steel industries are dependent on charcoal found to be produced by slave labor in rural areas such as the western state of Maranhão and the Amazon jungle state of Pará. As a major exporter of pig iron, the Brazilian government has attempted to address slave labor within the industry, particularly through the Mobile Inspection Team. Yet, effective monitoring is limited, and many instances of forced labor and/or hazardous working conditions are still reported and going undetected due to new tactics to reduce the size of raw material operations.²⁹

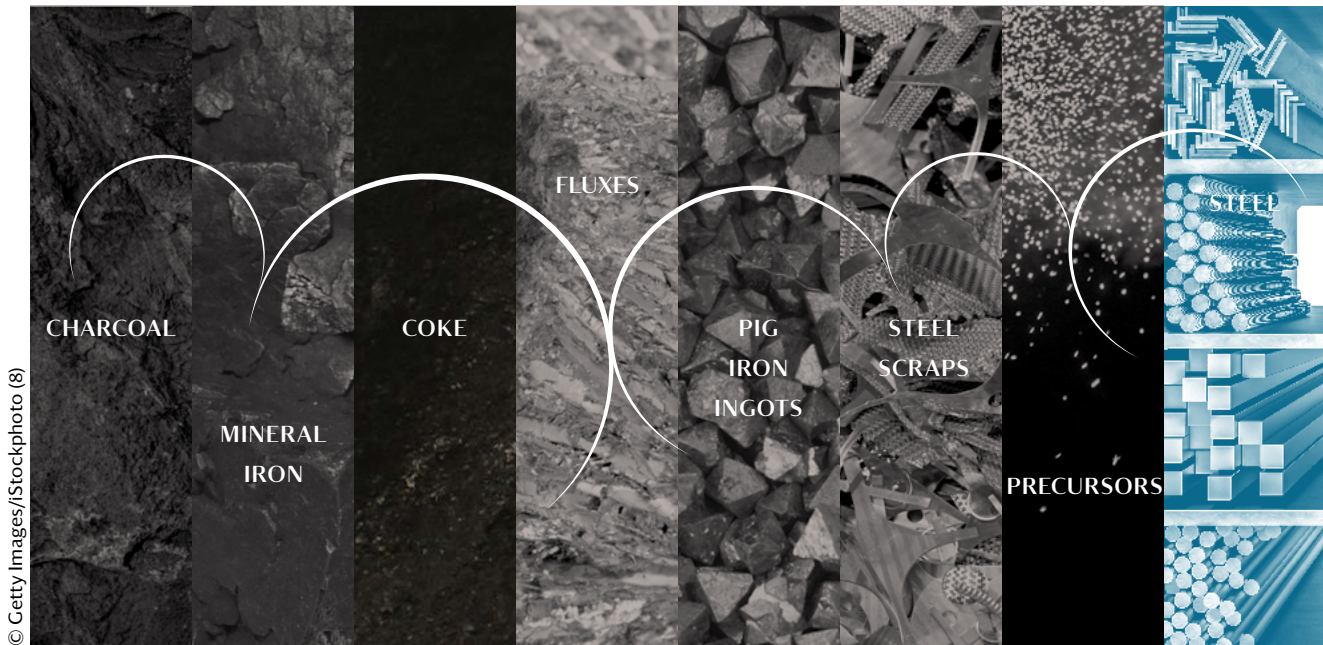
China: As the world's leading producer of iron and steel, China has been found to rely on forced labor in extraction of its raw materials. Forced labor coal mining in China typically occurs in prison or re-education camps. Coal is also imported from North Korea, where state-imposed labor is utilized, and Mongolia, where forced labor is prevalent in the mining industry. China is also reported to import workers from North Korea, effectively sourcing state-sponsored forced labor.³⁰

Colombia: Coking coal mined in Colombia is a primary source of carbon used in the steel-making process. To address child labor that is actively used in typically hazardous mines throughout the country, the Ministry of Labor launched training for labor inspectors last year resulting in eight upheld sanctions for child labor violations, yet significant gaps in oversight in insecure rural regions remain.³¹

India: Although India has modernized its steel industry and has grown to be the second largest steel producer behind China,³² there continues to be widespread evidence of human rights and forced labor violations in illegal iron ore mining operations. Despite the Mines Act of 1952 specifically forbidding child labor (under the age of 18) to occur above ground, below ground, or to even be in the vicinity of the mines, it has proliferated without enforcement in coal, iron ore, and bauxite mines.³³

Mica is used as a high-performance insulator in the steel industry for reducing cracks and as one of the largest

Steel's opaque raw, composite, and recycled materials supply chain



Source: Grace Farms Foundation

The production of steel entails many dangerous stages as well as material extraction from countries known to use forced labor in their mining industries. In the first stage, charcoal, mineral iron, coke, and fluxes comprise pig iron. In a second stage, pig iron, steel scraps, and precursors then produce steel, which also requires smelting and the reduction of carbon.

producers in the world, it is also documented to be dependent on the small hands of children. Seventy percent of all India's mica production is estimated to be sourced from illegal, hazardous mines. Although touted as an environmentally-friendly material, an examination of who is extracting mica from the earth, and under what conditions, is not considered for this widely used mineral in construction.³⁴

Mexico: Iron ore mining in Mexico is a highly lucrative business for drug cartels that export ore to Chinese mills.³⁵ As the organized crime epidemic has infiltrated the industry, miners have been left with few labor protec-

tions, leaving them exposed to violence, human trafficking, and other human rights abuses.

Pakistan: Although bonded labor has been illegal in Pakistan since 1992, forced labor in Pakistan, primarily in the form of debt bondage, is prevalent in the growing coal mining industry, as well as the over 25,000 brick kilns, without nationally coordinated oversight for exploited children. Reports estimate that 70% of bonded laborers working in brutal conditions are children who are also frequently subjected to sexual exploitation. Evidence of children working in life-threatening mines have been documented this year in Balochistan.^{36, 37}

23 [Supply Chain](#). World Steel Association.

24 [Steel Supply Chain, Service Centers](#). American Institute of Steel Construction.

25 [How is Steel Made](#). American Steel Institute.

26 S & P Global Platts. "U.S. Steel Sector Thrives as Mills Move Up Quality Ladder." S & P Global Platts Insights. May 9, 2019.

27 [2020 World Steel in Figures](#). World Steel Association. 2020.

28 [Trafficking in Persons Report](#). U.S. Department of State. 2020.

29 [Slavery Modernises, Adapts to Stay Alive in Brazil](#). Inter Press Service. March 5, 2020.

30 [Global Slavery Index](#). Minderoo Foundation. 2018.

31 [2019 Findings on the Worst Forms of Child Labor: Colombia](#). U.S. Department of Labor.

32 [Indian Steel Industry Report](#), India Brand Equity Foundation. August, 2020.

33 [Violation of Children's Rights in the Extractive Industries in India](#), Dhaatri Resource Centre for Women and Children. August 2016.

34 ["Blood Mica: Deaths of child workers in India's mica 'ghost' mines covered up to keep industry alive."](#) Thomson Reuters. August 2, 2016.

35 Vella, Heidi. ["Cartel Culture – Mexico's War Against Illegal Mining,"](#) *Mining Technology*. May 26, 2014.

36 [2019 Findings on the Worst Forms of Child Labor: Pakistan](#). U.S. Department of Labor.

37 Baloch, Shah Meer and Ellis-Petersen, Hannah. ["Coal workers are orphans: the children and slaves mining Pakistan's coal,"](#) *The Guardian*. February 20, 2020.

Leaders in the built environment must know their supply chains and understand the interconnections that exist between their bottom line, the planet’s natural resources, and human exploitation.

top global producers of construction related timber products

Industrial Roundwood (2019)³⁸	Sawnwood (2019)³⁹	Wood-Based Panels / Plywood (2019)⁴⁰
28% United States	26% China	62% China
15% Russia	24% United States	11% United States
13% China	13% Russia	5% Russia
11% Brazil	12% Canada	4% Germany
10% Canada	7% Germany	4% Poland

top trading partners for building materials | U.S. imports

Crushed Stone (2015-2018)⁴¹	Iron Ore (2015-2018)⁴²	Refractory Brick (2018)⁴³	Mica (2015-2018)⁴⁴
56% Mexico	19% Brazil	30% China	45% Canada
27% Canada	18% Canada	11% Germany	31% China
11% The Bahamas	13% Sweden	10% Canada	10% India
5% Honduras	9% Chile	6% Brazil	4% Finland
1% Jamaica	4% Other	5% Italy	10% Other
		5% India	

NOTE: 98% OF U.S. IMPORTED ZINC IS FROM PERU

³⁸ [Food and Agriculture Organization of the United Nations](#), FAOSTAT: Forestry Production and Trade. 2020.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ [Mineral Commodity Summaries: Crushed Stone](#), United States Geological Survey, National Minerals Information Center. 2020.

⁴² [Mineral Commodity Summaries: Iron Ore](#), United States Geological Survey, National Minerals Information Center. 2020

⁴³ World Bank, [World Integrated Trade Solution](#), World Bank. 2018.

⁴⁴ [Mineral Commodity Summaries: Mica](#), United States Geological Survey, National Minerals Information Center. 2020.

Joseph G. Mizzi
President and COO, Sciam Construction

WORKING EXAMPLE

Sourcing Grace Farms' roof



Anodized aluminum roof, Grace Farms © Dean Kaufman

Introduction

In 2015, Grace Farms completed construction of its new center in New Canaan, Connecticut, designed by SANAA, an internationally recognized Pritzker Prize-winning firm. The project was met with enthusiastic reviews from the public and the design community for its seamless integration of nature, geometry, and materials. Those materials: glass, wood, metals, and concrete, are sourced from contractors, vendors, and suppliers that Sciam Construction, the general contractor, employed for the construction of the building.

As one of the founding members of Grace Farms' Design for Freedom Working Group, Sciam Construction was asked in 2019 to take a deep dive into the supply chain of the materials used in the construction of Grace Farms.

The roof of Grace Farms is a highly visible and unique rain-screen system that took years to design, engineer, and fabricate. The following pages describe the methods used to reveal the global supply chain of the roof and critical findings and shortfalls of this investigation.

Methodology

The 60,000 square-foot roof of Grace Farms is an aluminum rain-screen that covers the actual waterproofing system. A rain-screen is a decorative skin used to hide the roofing membrane but also provides additional protection from the elements and ultra-violet rays.⁴⁵ Zahner Inc., a sheet metal manufacturer from Kansas City, Missouri, was hired by Sciam to assist the architects with realizing the roof system and fabricating it. After a one-year design process that involved many decisions on costs,

Exhibit A: Grace Farms Roof Suppliers

Roof Components	Materials	Primary Material Source	Raw Material Sources
Sheet Metal Screws	Stainless Steel	Unknown, but most likely from Taiwan	Steel Ingots
Aluminum Extrusions (various shapes)	Stainless Steel Alloy 6063-T6	Steel used for Dies is purchased from multiple vendors	Steel Ingots Recycled Content
Metal Panel System 3MM Aluminum Polished with Clear Finish	Bright Dip Anodizing Solution Alloy 5J7S	Bright Dip suppliers are from UK, various sources not able to trace	Chemical Plants Bauxite Mine Smelter
Fascias .032 Expanded Aluminum	Alloy 3003-H14	Unknown, Aluminum supply varies by region/price	Recycled Content
MicroGutter Caps .019 Aluminum with Mill Finish	Alloy 5052	Unknown, worldwide suppliers change frequently	Bauxite Mine Smelter

Source: Sciamé Construction with Grace Farms

What we know now: An ethical approach and tracing components' origins needs to happen early in the process.

finishes, and constructability studies, a fully realized design was achieved. The aluminum roof consists of several parts that include rails, gutters, clips, standoffs, panels, and mesh screens.

In 2019, Sciamé started a forensic survey by first cataloging each material into a matrix that indicated the primary and secondary materials. Zahner then offered a list of suppliers that provided the raw or manufactured materials that they would, in turn, cut, shape, and bend into the rain-screen system. These suppliers are primarily located throughout the U.S., where forced labor is illegal.

After establishing the primary suppliers of the roof components to Zahner, Sciamé contacted each company and inquired about how they purchased their materials. If those firms were able to, they provided Sciamé with additional contacts or leads further down in the supply chain.

Sciamé then contacted the purchasing departments for each of the suppliers. They, in turn, provided contacts for raw material suppliers or purchasing agents if the information was available.

The research conducted led to the development of the chart titled "Exhibit A." The source of items in orange cannot be identified, for two main reasons:

- First, the purchasing departments of the suppliers to Zahner did not keep records for the materials specific to their customer, Zahner. For example, Fastenal, the screw supplier, purchased stainless steel to maintain stock. That stock contained stainless steel from multiple sources. Therefore, no conclusion could be reached as to whether the screws used in the Grace Farms project were produced using forced labor or not.

"The purchasing departments that Sciame contacted did reference a chain of custody form that could be used for future purchases. This form would indicate the origins of each component and how it traveled from factory to factory. However, this process must be set up early in the lifespan of the project."

- Second, some purchasing departments explained that they buy raw material every day from different commodity brokers who are always adjusting their prices based on global market conditions. The source of the raw material may not even be known to the broker, who is often dealing with a network of buyers and sellers worldwide. This was the case for the aluminum where it is made at smelting plants, located across Asia with raw and recycled materials. Again, this led to an indeterminate conclusion about the nature of the labor used to produce the raw material.

The purchasing departments that Sciame contacted did reference a chain of custody form that could be used for future purchases. This form would indicate the origins of each component and how it traveled from factory to factory. However, this process must be set up early in the lifespan of the project, and it requires oversight and management, potentially leading to additional project costs, which should be considered by the project stakeholders.

Conclusion

Tracing the origins of any material is a formidable task that requires some understanding of the manufactured goods and commodity markets. Often a builder, owner, or architect will specify a material or piece of equipment without considering the issue of who makes it. These decisions are typically made early in the design process and concern themselves with questions like aesthetics or

budgets. However, asking how the supply chain operates should be measured alongside those considerations. For example, can we take an ethical approach to material selection and integrate it into the decision-making process? And how does one verify that all parties along the supply chain are adhering to those values? Can technology help trace the lifespan of an air conditioner, a light fixture, or a concrete block? Can it help pinpoint the actual people who touched it and if those people are being paid equitably and treated fairly?

Key Takeaways

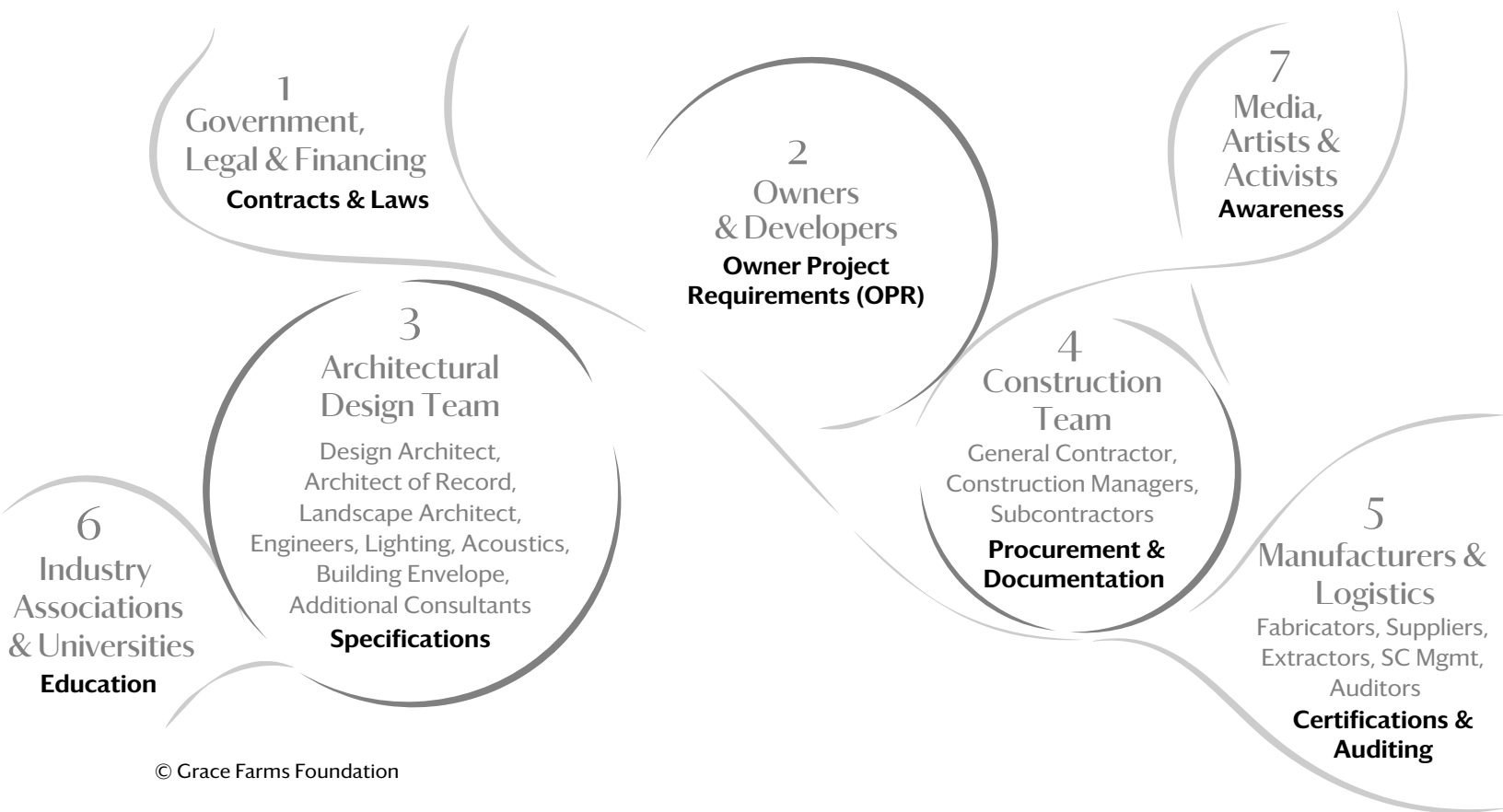
- Acknowledge that buildings, which consist of thousands of complex parts, have an opaque supply chain where questions of ethical labor practices cannot be fully understood.
- As a project stakeholder, commit early on in the design process to ask where each material might come from and revise your selections to avoid benefitting from unfair labor practices. Get buy-in from all other stakeholders on the project. Use contract language or incentives to compel suppliers and vendors.
- Enact a system for tracking and monitoring where materials and equipment originated. Use technology to collect and analyze data. Verify the accuracy of the information with periodic checks and address grey areas.

45 Fechino, Steven. "[The Two Types of Rainscreen Wall System Design](#)," *Construction Specifier*. August 7, 2019.

Mobilizing the Full Ecosystem of the Built Environment

One of the key proposals throughout this report is the necessity of harnessing and mobilizing the full ecosystem of the global design and construction industry to eliminate forced labor from the building materials supply chain. Expert architects/specifiers are incorporating rigorous specifications and auditing standards in the procurement process, while leading attorneys combating forced labor abuses discuss strategies companies can use, including contractual language, to help make ethical material purchases. The excuses of not knowing or thinking forced labor is another company's problem are increasingly much harder to hide behind.

Who influences the building supply chain?



Achieving ethical supply chains will require mobilizing the full ecosystem of the global design and construction industry,

harnessing the power of innovators and leaders to not only test and model solutions, but to collaborate and share information, integrating slave-free criteria at intervention points within the ecosystem.

Such intervention points include contracts, specifications, procurement decisions, procurement software, documentation, and auditing of construction materials. The steps to confront slavery in the built environment should include how we incentivize the industry to collect data and develop industry-wide standards and best practices, including company-wide education on ethical procurement policies, and closing legal and policy loopholes that perpetuate the illegal use of forced labor.

1
**Government,
Legal &
Financing**

"Forced labor has no place in our global supply chains nor in the goods and services we buy every day. Only by insisting on transparency in building materials can a builder or architect know that they are not importing exploitation into a project."

– Amb. (ret.) Susan Coppedge, Krevolin & Horst, Former U.S. Ambassador-at-Large to Monitor and Combat Trafficking in Persons

2
**Owners &
Developers**

"It's not enough to build projects with socially responsible programming. How we build is also important. We have a moral obligation to pay attention to how our buildings go together, how materials are made, and where they come from. We probed our supply chain and began asking questions about what role we want to play in creating an environment our children will inherit."

– Jhaelen Hernandez-Eli, SVP, Head of Design and Construction Division, New York City Economic Development Corporation

"Lendlease is a signatory to the United Nations Global Compact and is striving to implement the Ten Principles of that compact. We are committed to taking steps to help mitigate modern slavery risk and have commenced work on several initiatives, taking an enterprise-wide approach. Given the scale of our supply chain, however, mitigating the risks of modern slavery is a complex undertaking and will need to be staged over time."

– Paul Bradley, Global Supply Chain Manager, Lendlease (U.S.)

3
**Architectural
Design Team**

"As lighting designers and building engineers, we specify an array of complex technical devices. For a given project, the component parts easily sum to the thousands. Each part touches many hands from material extraction to on-site products. Our Grace Farms team shed light on human rights abuses through the construction materials procurement process. It is incumbent upon the design and construction community to demand transparency and reject these practices. Further, the scale of our industry demands the creation of a system that qualifies ethically sourced materials, thereby ensuring the health and wellbeing of all people contributing to our built environment. We will deliver."

– Gabe Guilliams, Principal, Lighting Specialist, Buro Happold Engineering

4
**Construction
Team**

"We searched for ways to infuse our designs with qualities which would give the contractors no choice but to do things ethically ... But, without a paradigm shift, enforcing these standards will remain a nagging source of disagreement which results in compromises in schedule, budget, and quality."

– Adam Saltzman, Director, MASS.Build

5
**Manufacturers
& Logistics**

"At Herman Miller, we *design for the good of humankind*. We believe in using business as a force for good, and throughout our history have been at the forefront of creating industry standards for a better world. We're proud to be associated with Design for Freedom and are committed to working with our stakeholders to ensure the development of an ethical supply chain within the ecosystem of the built environment."

– Debbie Propst, President, Herman Miller Retail

5 Manufacturers & Logistics

“I act immediately if I feel and detect something wrong. And all of my employees act in the same way, becoming, all of us, like a whole body, where every organ takes care of the health of any other organ. And all the project managers can be a daily checkpoint which certifies the slave-free job site.”

– Antonio Rillosi, CEO & Founder, Extravega Architectural Fabrications

6 Industry Associations & Universities

“The Design for Freedom report is essential reading for everyone involved in the design and construction industry. As a complement to the AIA Code of Ethics, which asserts that members should uphold human rights in all their professional endeavors, this report provides invaluable perspectives that underscore an architect’s obligation to enhance and facilitate human dignity and the health, safety, and welfare of everyone who uses, as well as creates, their buildings. AIA New York is a proud participant in the Working Group that has created this report, and through this work, we will continue to encourage AIA members to understand their pivotal role in ending forced labor.”

– Benjamin Prosky, Executive Director, AIA New York Chapter | Center for Architecture

“Workers are still not represented in emerging Integrated Project Delivery (IPDs) as part of the project team. Similarly, workers are not represented on teams across industries in the supply chain, beyond the construction site, including manufacturing facilities and architecture offices, to name a few.”

– Kadambari Baxi, Barnard College, Professor of Professional Practice in Architecture, Co-Founder, WBVA-Who Builds Your Architecture?

7 Media, Artists & Activists

“Borrowing from the green building movement – which has promoted environmental product declarations and lists of materials that don’t have a negative impact on human health or the planet – the [Design for Freedom Working Group] is pushing for transparency in the sourcing and manufacturing of materials; it plans to develop a list of “slave-free” building products. And drawing on a broad coalition of experts and activists ... they are raising awareness of the exploitation of labor among those who influence every stage of construction, from owners and lenders to designers, engineers, and consultants to contractors and product manufacturers. They are looking to intervene through any possible channel to prevent those who specify from ordering building products that can’t be certified as made without forced labor. And they are actively pursuing a pilot project to test constructing a certifiable slave-free building.”

– Cathleen McGuigan, Editor-in-Chief, *Architectural Record*

“Where Do Building Materials Come From?” *Architectural Record*, Oct. 1, 2019

1

Government,
Legal &
Financing

Fiona Reynolds
CEO, Principles for Responsible Investment (PRI)
Chair, Financial Services Commission into Modern Slavery and Human Trafficking (The Liechtenstein Initiative)

The investment case for ending slavery

The most severe and long-lasting impacts of modern slavery and human trafficking are borne by its victims and survivors. An estimated \$150 billion each year is generated from the theft of their labour, making it one of the top three international crimes, alongside drug trafficking and trade in counterfeit goods.

Yet there is growing evidence that modern slavery leaves us all worse off. The profits are privatized, while the costs are socialized. By allowing people to be treated as disposable assets for short-term exploitation rather than full economic and social agents for the long-term, we permit significant economic and social potential to be locked up.

Modern slavery and human trafficking represent a tragic market failure.

Businesses that tolerate or generate modern slavery and human trafficking have lower labour costs and an unfair competitive advantage over those that do not, and they consequently enjoy unfair and unsustainably reduced costs of capital.

Modern slavery also represents a failure by labour markets to provide decent work and support safe and dignified employment opportunities for all.

The investment sector cannot end slavery alone. Nor, however, will slavery end without the active engagement of the sector, as the world's investors, insurers, and financial partners have unparalleled influence over global business and entrepreneurialism. The investment community has a unique role to play by investing in and fostering business practices that help to end modern slavery and human trafficking.



© Sarin Soman/Getty Images

2
Owners &
Developers

Darren Walker
President, Ford Foundation

Sharon Prince
CEO and Founder, Grace Farms Foundation

A CONVERSATION

Upholding human dignity



© Hogarth Worldwide

Sharon - Darren, as you know, at Grace Farms we are trying to confront how underlying issues of racism, extreme poverty, and even unchecked business practices have contributed to modern slavery in the buildings around us. And you and the Ford Foundation have always been on the leading edge for a more just future. Last year, when you received The Architectural League's President's Medal, we agreed to schedule reciprocal visits at each of our newly built spaces, which we both believe can uphold human dignity and be a place of hope.

Darren - Our friend and your artist-in-residence at the time, Carrie Mae Weems, nudged me to go to Grace Farms. It is clear that Grace Farms and the Ford Foundation believe strongly in confronting issues of racism and inequality.

Sharon - Tell us about the racial and gender equity requirements for your new building that you successfully executed with Madeline Burke-Vigeland, Principal with Gensler, who is a member of the Design for Freedom

Working Group. She believes these requirements could be adapted to this movement.

Darren - When we were redesigning the Ford Foundation Center for Social Justice, we included diversity requirements in our OPR (Owner's Project Requirements). We approached this project with the belief that architecture can be an extension of values, which we know has to be articulated before the project begins. We encouraged the employment of minority and female workers to perform the construction work of this project, using best efforts to meet or exceed a goal of 35% of overall trade labor hours, with the participation of people who identify as being of a minority race or ethnicity and with the goal of 15% participation of women.

Sharon - This is exactly how owners can accelerate values-driven architecture – for freedom and equality – by mandating it. There will be a cascading effect in the industry as more owners share this ethos and make specific requirements part of their OPRs.

3 Architectural Design Team

Bill DuBois, CSI, CCS
Certified Construction Specifier and Architect, Gensler

Amb. (ret.) Luis C.deBaca
Justice Initiative Sr. Advisor, Grace Farms Foundation
Former U.S. Ambassador-at-Large to Monitor and Combat Trafficking in Persons

A CONVERSATION

Specifying freedom

Lou - Bill, how do you as an architect/construction specifier approach an overarching ethos like anti-slavery?

Bill - First of all, I center my professional activities and my personal approach. I take my licensure seriously, with the duty to ensure the health, safety, and welfare of the inhabitants of our environment, which I understand to encompass the entire planet. The challenge is to then go a step further – to include joy, inspiration, and happiness for the benefit of mankind.

Lou - And specification, done well, can reach that bigger goal?

Bill - As an architect, it is my job to provide my clients with design solutions that will satisfy their desires within the reach of their budget. For me to do my part, I must depend upon the actions of an entire team of participants in the construction process. As a construction specifier, I communicate the design intent by way of the words that accompany the drawings. The drawings are the graphical means to communicate the arrangement, quantities, relationships, and extent of materials that become the form of a facility. However, that only represents a piece of the story needed to get a project constructed. The specifications are part of the project manual that complement the drawings and provide all the necessary information about the quality and procedures needed to transform a design concept into reality.

"Currently, specifications are not generated within the BIM software."

Lou - So, the project manual is where you can bring it all together?

Bill - Yes, and it is where we can get a little humanitarian focused. We have all become very aware of sustainability issues in the past few decades. With substantial effort and public awareness, our designs have become much more aligned with best practices to protect the health of our planet, and therefore the health, safety, and welfare of its inhabitants. But are we holistically protecting everyone? It has taken us centuries to recover from slavery within our own country, and there is still inequality to this day that we must address. Furthermore, modern slavery and human trafficking still thrive, representing a global problem.

Lou - How does that global problem come into a local project?

Bill - When we incorporate materials in today's construction that have the embodied energy of mistreated humans, we are enabling those practices to continue and have that karma embedded in our built environment. As a professional, I want to do my part to help humanity evolve beyond our barbaric selves. So, what can I do as a construction specifier? Well, I certainly cannot do it alone. As the saying goes, "it takes a village." When I assemble a set of contract documents for every project that goes out for construction, I prepare the project manual containing procurement requirements along with specifications. This book of documents establishes the contractor's contractual requirements for purchasing the materials and products for construction. This is where I believe the construction industry must become vigilant to abolish slavery and human trafficking.

Global complexity & disaggregation increase opacity



Source: Design for Freedom Working Group

Thousands of raw materials and products sourced in a matrix globally make up an estimated 90% by volume on an average building.

Lou - When you are specifying, how do you ensure that the diverse cast of characters speaks the same language?

Bill - To become a contractual requirement that can be identified and enforced, there has to be a set of industry-recognized definitions and standards, similar to building codes, that establish achievable methods of assuring the ethical treatment of all lives involved in the production of a material or product. Once an accepted standard has been established, we need a means to verify that the standard has been met by a qualified third party. This kind of process is already in practice for finding and specifying sustainable “green” products. Perhaps a comparable process should be established for finding and specifying socially just and “humane” products? When there is an established standard by which manufacturers and suppliers can verify compliance, they can use that standard as a competitive edge to become more desirable as a specified product in construction.

Lou - And do you feel like those “humane” products are identifiable for these needs?

Bill - The next step for me as a specifier is to become

aware of which “humane” products are on the market and available to specify in my project manuals. Going forward, as an architect/specifier, my hope is that all participants in the construction process will become more aware and concerned about building a better environment in our world. Architects cannot do it alone. It will take the action of all owners, designers, contractors, and suppliers. As an architect/specifier seeking to incorporate a freedom ethos, my part is concerned with making sure that the environment we design into reality doesn’t embody the negative karma or spiritual energy that manifests in practices like modern slavery.

Lou - Do you think that slave-free specifications will make it understood that it is a requirement in the construction process? Are there any ways around it after it gets specified?

Bill - The project manual that accompanies the drawings created in Building Information Modeling (BIM) will clearly identify that slave-free requirements are included in the contract documents. These requirements can be incorporated into standard parts of the manual, such as Division 00 – Conditions of the Contract or Division 01 –

General Requirements, and further elaborated in specific product specifications. When these requirements are a part of the signed agreement between the owner and the contractor, the contractor has legally agreed to abide by the requirements. If one of the parties goes in a different direction, they had better have a very compelling reason to tell the judge!

Lou - Could technology help in the communication of newly available slave-free materials to specify? Is there any technology that you think is useful for slave-free specifications? And – just for my clarification – do the specifications we have discussed then go into the BIM system?

Bill - Currently, specifications are not generated within the BIM software. However, there are two commercially available software specification programs that do communicate directly to the BIM. The BIM model becomes a virtual 3-D Digital Twin of the physical reality and has embedded data related to the physical features. It typically does not contain the specification text but can link directly to it. It is often through product research needed to prepare a specification that material selections are processed, and that process certainly involves access to large amounts of data that can be filtered into applicable bits. The construction industry is constantly working to develop interoperability among the various software programs used to construct and operate facilities. Construction Specifications Institute (CSI) has recently released an API (application programming interface) called CROSSWALKSM that integrates fundamental construction industry organizational standards. This new technology connects CSI's MasterFormat®, UniFormat®, and OmniClass® for the first time, and accelerates the communication cycle from designers to specifiers, to contractors and subcontractors, so that they can build with more accuracy and safety, and with significant savings in cost and time.

Lou - If slave-free materials were available today, could you immediately start specifying them and where would you get that information from?

Bill - I would most likely question known manufacturers

of products and assess whether they are “slave-free” material providers. I would also like to be able to query the Internet or an established database for products with an identifiable “slave-free” attribute. Once those materials are found, they would most certainly be ranked high along with a product's other salient performance attributes.

Lou - We have discussed environmental sustainability and energy efficient materials as part of the industry's “muscle memory.” Was it an easy change to move toward specifications of green materials? Comparatively, in terms of change management, in your opinion, what elements should be incorporated in the specifications of slave-free materials?

Bill - It has taken several decades for the sustainability movement to become relatively mainstream in the design community. During that time, we have been able to establish reliable, substantiated claims about products being “green” and what green characteristics apply. I expect that the slave-free aspect can be accomplished somewhat more rapidly now that there is a similar model to follow. It is still a challenge to research and identify sustainable products to suit the performance requirements of projects. It will be essential to develop databases that would allow construction programs to efficiently interface with the slave-free supply chain.

Lou - Where does that take us as a community of practice and humanity?

Bill - Together, we must raise our public consciousness, establish defined standards of practice, be able to verify or certify the practices being followed, enforce those practices, be able to find the ethically produced materials and products, and get those products assembled into construction, following acceptable practices. Ultimately, as a human race, we can evolve by creating an exploitation-free environment that houses our everyday life, whether it is a building, a bridge or a tunnel, a park or an entire city, country, planet – or even a space station! It all comes down to the spiritual energy that is built into our environment: our being alive, together, in the pursuit of health and happiness.

“To become a contractual requirement that can be identified and enforced, there has to be a set of industry-recognized definitions and standards, similar to building codes, that establish achievable methods of assuring the ethical treatment of all lives involved in the production of a material or product.”

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**Government,
Legal &
Financing**

Leslie P. King, Esq.
Shareholder, Construction Law, Carlton Fields

Amb. (ret.) Luis C.deBaca
Justice Initiative Sr. Advisor, Grace Farms Foundation
Former U.S. Ambassador-at-Large to Monitor and Combat Trafficking in Persons

A CONVERSATION

A view from the Bar

Lou - Leslie, I'm sure that when you first passed the bar exam you never thought someone would start a conversation by saying "let's talk about slavery."

Leslie - And yet, here we are. Many people think human trafficking is all about prostitution, or that forced labor only happens in faraway countries, but just last year a construction company owner was convicted in New York City for enslaving workers on projects including a high-rise project in midtown Manhattan and a mansion on Long Island.¹

Lou - Given the state of the law, that idea that modern slavery is other people's problem seems like a complacency that could really set a project up for scandal.

Leslie - Well, first and foremost, as we see from that New York case, human trafficking and forced labor on construction projects is immoral and criminal. I'm sure that no one reading this conversation, nor any of our clients, would ever want to contribute to such a practice.

Lou - But, of course, we aren't so lucky as to stop there; the lack of overt forced labor on a job site doesn't mean that our projects are "slave free." Far from it. Construction projects are complex; while the job site might be local,

the materials supply chain has become global, so in many ways you are inheriting whatever forced labor might have been involved with that input.

Leslie - That's right – there is, of course, direct liability for abuses someone participates in or turns a blind eye to. But as a construction lawyer, I'm increasingly worried about a different type of risk – that forced labor could wreak havoc with completion and delivery requirements and penalty clauses in contracts.

Lou - Let me tease that out. Supply chains now are predicated on being "just in time," and especially as components are getting more complex, anything that keeps them from making it to the job site on time can upend a project's schedule.

Leslie - Exactly. We've certainly seen that with COVID-19, where many folks realized for the first time that they even had a supply chain. In the modern slavery arena, especially after the Trade Facilitation and Trade Enforcement Act of 2015² closed off some loopholes, it is unequivocally illegal to import anything produced by forced labor, and U.S. Customs and Border Protection (CBP) is increasingly active in not letting in tainted materials.

From roof membrane and weatherproofing to classroom flooring, rubber remains an indispensable material. Without rubber for gaskets or tires, the site could not be cleared. Without rubber balls, the playground would be silent. For over a century, forced labor has plagued the rubber industry.



© (left) Getty Images/Westend61, (right) Dethan Punalur/Photodisc via Getty Images

Lou - We know from the Department of Labor reports that some common building materials are more likely to have been tainted by forced labor and deserve more scrutiny. Bamboo, timber, glass, rubber, textiles, steel, and electronics. It's really a sobering view.

Leslie - And a worrisome one. Imagine if your client's substantial completion deadline was compromised because a supplier fell behind as a crucial material was the subject of a CBP Withhold Release Order (WRO) at the border. What if the only reason that input was required is because you had specified it and hadn't taken the time to see if it raised any red flags for modern slavery?

Lou - Even if we are still in early stages, no matter what role I played in a project, I'd certainly want to know that my counterparts were thinking of this issue – and I'd maybe even incentivize that through contract language.

Leslie - Contract language seems to be the way to go. Regardless of delivery method and contractual scheme, every member of the team – design professionals, construction managers, contractors, owner's representatives, and design-builders – should promise to abide by the law in the performance of their duties. As CBP starts seizing materials, it is going to be disruptive, but it will force the industry to at least acknowledge the problem.

Lou - It wouldn't be the first time. We've seen through previous safety issues that acknowledgment (and liability) can drive change. Hopefully freedom can become a value that is also front of mind for the industry.

Leslie - Agreed. But to get to that goal, we're going to need everyone to fully engage. From owners to architects and specifiers, from engineers to contractors – and yes, even lawyers! We all are going to have to get comfortable with your opening challenge: "Let's talk about slavery."

¹ Pierson, Brendan. "Ex-Chinese Construction Exec Found Guilty in U.S. of Forced Labor Charges," *Reuters*. March 22, 2019.

² *CBP and the Trade Facilitation and Trade Enforcement Act of 2015 (TFTEA)*, U.S. Customs and Border Protection. 2015. (P.L.114-125).

Innovations to Move Faster Toward Slave-Free Buildings

The construction industry is the least modernized of the industries, allowing the use of forced labor to hide behind inefficiencies and complexities. But there are technological innovations used in other industries and emerging technologies, such as blockchain, that can improve supply-chain transparency, as well as the accuracy and efficacy of trustworthy data. Besides incorporating technology into the decision-making, industry policies and educational institutions must address how sustainable practices are viewed. In other words, while our building may be green, forced labor is contaminating every aspect of the building.

Harriet Harriss, Ph.D.
Dean, Pratt Institute School of Architecture

USING THE GREEN BUILDING MOVEMENT'S MUSCLE MEMORY

Incorporating social sustainability concepts into climate crisis action within the profession

For years, the architect, designer, or developer has focused on the ecological impact of construction. This is reflected in the number of sustainable or “green” product certifications. There are now more than 600 green product certifications in the world,¹ with nearly 100 in use in the U.S. alone. While the number of green product certifications continues to grow, we are failing to acknowledge the social sustainability impact of building and construction.

By not incorporating social sustainability concepts such as forced labor into sustainability certification criteria, we are limiting the extent to which a building’s true ecological credentials can be assured, leaving the environmentally-conscious architect, designer, or developer unable to make socially responsible choices.

Whereas the metric for economic sustainability is monetary, social sustainability is measured in people: their value as workers, their ability to live safely and well, their access to forms of social equity such as healthcare and education, their human rights and labor rights, the identity and integrity of their communities, and the resilience of those communities in the face of unrest, hardship, or instability. More recently, however, the term sustainabil-

ity is firmly understood to encompass the ecological, meaning that social sustainability is an “ecological domain” – in other words, a form of human embeddedness in the environment.

Architecture students are educated to believe that sustainability is an embodied value and they are taught to question what building components are made from. Meanwhile, little attention is given to the pre-manufacturing process and if humans were abused or harmed along the supply chain. Similarly, the afterlife of buildings, such as the recyclability or degradability of the materials after deconstruction, is often overlooked, and by implication so are the social sustainability factors, such as workers’ or residents’ exposure to contaminated post-construction waste and toxic sites.

Of the hundreds of sustainable or green product certifications, few of these certifications encompass social sustainability, failing to understand the inherent interdependencies that exist between social and ecological sustainability. By not incorporating social sustainability concepts such as forced labor into sustainability certification criteria, the measure of human embeddedness in

Modern concrete has allowed for new achievements in efficiency, grace, and design innovation; the seeming simplicity of the finished product can disguise the many ingredients – from gypsum to gravel – which have been associated with forced labor



© Clockwise from top: Dominic Sandrini/EyeEm via Getty Images, Thierry Falise/LightRocket via Getty Images

the environment is overlooked.

In addition to radically reforming certification standards, architecture schools, whose pedagogies and curricula ensure architects and designers demand these products of manufacturers, need to also reform their way of thinking. Driving pedagogy and curricula, however, are canonic 'traditions' and formalist value systems that place far greater value on the appearance of the outcome rather than its composition. This is where the accreditation associations, such as the National Architectural Accrediting Board, could make ethical supply chain education a core, rather than an optional curriculum component in all registered schools of architecture.

A certification overhaul relies upon a policy change con-

tingent on the current and contextual political climate and may therefore be harder to enact in the short- to medium-term. An accreditation transformation would ensure that the ethical supply chain movement can anticipate exponential impact as graduates enter the profession within the next five to 10 years.

The long-standing ethical void in which architecture has long enjoyed operating is no longer tenable, thanks to the shared objectives of both Black Lives Matter and the Decolonizing Education movements.² Removing forced labor should be prioritized and achieved on a much shorter timeline, not only because it affords dignity to those currently enduring it, but because the construction industry urgently needs to address its own operational and ethical dignity issues as well.

¹ Vierra, Stephanie, Assoc. AIA, LEED AP BD+C. "Green Building Standards and Certification Systems," *Whole Building Design Guide*. August 5, 2019.

² Fox, Jonah. "Decolonizing the Curriculum: The BLM Approach to History," *The College Post*. July 24, 2020

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USING THE GREEN BUILDING MOVEMENT'S MUSCLE MEMORY

Slave-free buildings | A pre-requisite

Less than 30 years ago, only a small handful of advocates, architects, and designers were the active voices in expressing a need for a higher environmental and social consciousness between the building industry and the built environment. This consciousness-raising manifested over time in two forms: the green building movement and design for environmental justice. Green design proved to be more successful, in great part because of the widely adopted United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Certification as a rating system, as compared to advocacy for re-centering the focus on social justice and context when designing buildings and cities. What they both share – then and now – are a deep concern about buildings and their impact on the environment. Now is a time to reflect and take stock of the rating systems used to make buildings and reevaluate the criteria by which we evaluate and admire buildings.

Today, we need to shift industry consciousness and focus on *where* materials are sourced, *whom* is sourcing, and *how*. In this way, we can connect the dots between environmental injustice (and the associated inequalities) to unethical sourcing. The inequality that allows environmental injustice and forced labor to proliferate has in many ways not been addressed directly by the building

industry or professionals in the built environment. Illuminated by today's data-focused era, we can see in the U.S. that "essential workers" have been bearing the burden of developers and industries that did not choose to "build green," taking the cheaper, rather than lower-carbon, route on delivery systems. Thirty years ago, we had a chance to frame leadership in energy and environmental design as part of dismantling systemic racism and inequalities, but that connection was never fulfilled.

It is time to amend our certification and rating systems to place greater priority on addressing forced labor in our building materials. The narrow definition of sustainability by the many programs and accreditation criteria (the root causes of environmental degradation of the built environment) that the green movement and LEED put forth more than 25 years ago is out of date and needs additional tools for its rating systems. In the mid-1990s, when a group of architects and builders led by Robert Watson, a scientist from the Natural Resources Defense Council (NRDC), came up with a system to transform building in the U.S., it succeeded wildly in its mission. With that success in mind, it is worth looking back on the previous environmental movement for ways to improve and revitalize the initiative for the future. This era was written about by Robert Bullard, Dolores Hayden, and also practiced by

Zinc is used for rust-proofing as well as gutters, pipes, and roofs in even the most environmentally sustainable buildings; one of Canada's largest zinc and copper mining companies was successfully sued for forced labor in its supply chain.⁴



© left to right: Sergey Zaykov/Shutterstock, PhotoAlto via Getty Images

academics like Ghislaine Hermanuz, Glenn LaRue Smith, Elizabeth Kennedy, and others. That work, also dating to the same period, which was referred to as "environmental justice," sought to combine the agenda of environmentalism and social justice. This work articulated environmentalism as a civil rights issue for underserved communities and people of color. It shared with the sustainability movement a push for accountability and greater access to environmental data and presented the idea of having a broader group of participants in the environmental decision-making process. While it is a positive and influential certification process, LEED Certification originally discounted the direct link between the ethical basis for environmentalism and the social injustices that are committed through the building environment life cycle.

The moment where "local materials" amounts to more of a concern over reducing truck miles and our carbon footprint is upon us. The need to act locally and think globally is the core of sustainability and makes resilient people and communities possible. Understanding the origins of materials can tie together ethics and environment in both policy and practice. For instance, revealing the role American prison labor plays in purchasing decisions for architects and clients leads to accounting for the human cost of not asking about sources.

If we use environmental justice as a key metric of sustainability, and the need for an ethical supply chain becomes

a broad and transparent criteria, it will clarify the next steps needed to tie together ethics and environment in policy and practice. Let's not make the same mistake we did then. By focusing on developing the sources and tools which we critique and making an ethical supply chain the main goal and objective for all environmental causes, we can be effective moving forward at striking at the roots of inequity in our industry.

The USGBC has made strides in making social equality a consideration and has even developed three pilot credits addressing the topic,³ which a project can seek to apply for. However, it is time to make social equality a priority or even a prerequisite for certification. Today, it has never been more obvious, backed by hard data connected to the global pandemic, that environmental health is public health. Lack of transparency about *where*, *who*, and *what* is being taken advantage of destroys and damages people. Lack of support for the ethical standards needed to support environmental sustainability skews any image that we are moving toward a more sustainable environment. The goal of an ethical supply chain is extremely important to an even broader coalition of advocates than those whose awareness was sparked by green building. The health and freedom of people and places must be the ultimate goal for not only LEED accreditation but for the next generation of builders and designers.

³ [LEED Pilot Credits](#), U.S. Green Building Council.

⁴ [Nevsun Resources Ltd. v. Araya, 2020 SCC 5](#).



The construction sector is lagging and poised for disruption

1%

construction sector's productivity growth rate over the past 20 years vs. 2.8% growth rate of the global economy annually⁵

77%

increase in R&D spending among top 2,500 construction companies since 2013⁶

50%

market share growth in permanent modular construction, from 2015 to 2018⁷

⁵ *The Next Normal in Construction, How Disruption Is Reshaping the World's Largest Ecosystem*, McKinsey & Company, June 2020.

⁶ Ibid.

⁷ Ibid.

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TECHNOLOGIES

Big data and other tools needed to move from disaggregation to aggregation and a slave-free supply chain

Introduction

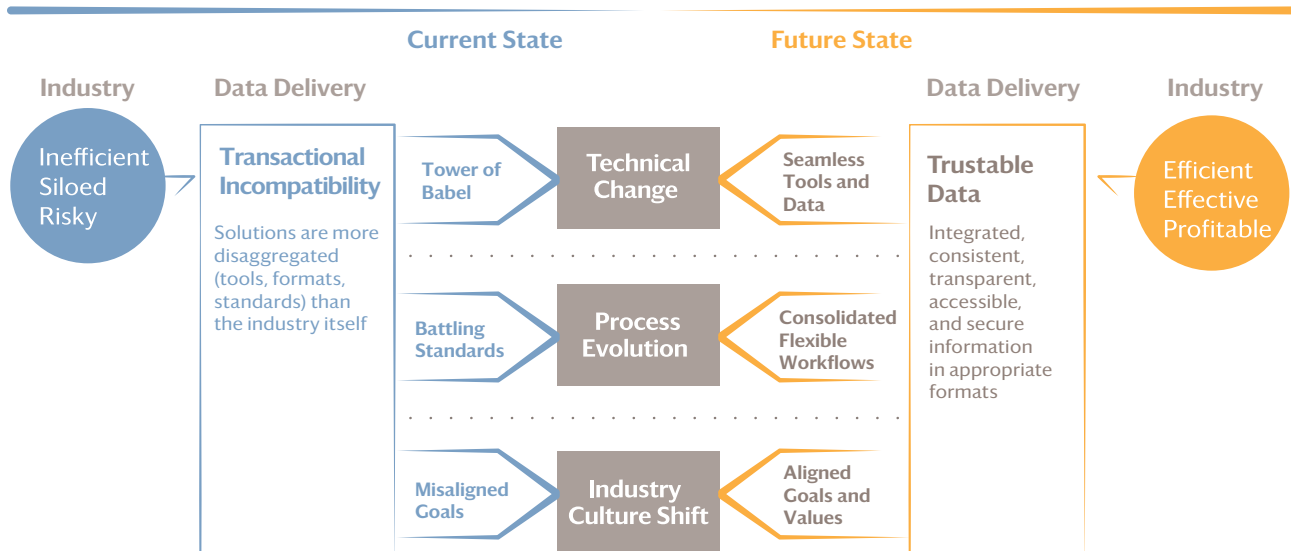
The disaggregate nature of the building supply chain, comprised of a loosely connected web of clients, designers, builders, and suppliers, is mirrored in the information infrastructure and technologies deployed in its service. Various digital tools and data flows are largely sub-optimized for the exclusive use of each player, making a comprehensive view of supply chain dynamics very difficult. These challenges are amplified by discontinuous project delivery systems, misaligned business processes designed to disabuse risk rather than manage it, and ambiguous lines of authority and responsibility for the implications of the myriad decisions that coalesce to manifest a building.

Building industry processes are thus characterized by transactional incompatibility that makes supply chain transparency virtually impossible. Efforts by design and construction providers to fight slavery in the building materials supply chain requires both a view through the sup-

ply chain itself, and reliable and clear information available to each decision-maker along the development path of a project. Efforts to achieve this transparency, and thereby allow designers and builders to rely upon the accuracy and efficacy of information flowing from suppliers through contractors, can be catalyzed by a combination of dedication to slave-free materials and improved, integrated technologies that support the delivery of trustable data.

These opportunities fall into three categories, described in the following text: **digital models** that can be representational platforms to evaluate, simulate, and integrate responsible material decisions; **design-to-construction integration** that can more deeply connect design activity and related building through vertical connections from the design models to the project site; and **big data and analytics** that can provide the information surveillance infrastructure through which slave-free supply chains can be managed.

Information is a vector for trust



Based on Project Delivery Workshops. Delivered by P. Bernstein and N. Alexander for Autodesk, Inc. 2019

To move the design and construction sector from a state of disaggregation and inefficiency to a state of efficient and ethical building, information systems that support project delivery must create trustable data that is integrated and transparent.

Models, Analytics, Simulation

by Phillip Bernstein, Yale School of Architecture

The building industry, while far behind others, is beginning to adopt the tools and strategies of the digital workplace. However, like the structure of the supply chain itself, information flows and data structures are sub-optimized to the particulars of a given task, role, or outcome. Architects work toward defining the abstract notion of “design intent,” or “how things should be when the contractor completes construction work;” contractors create vast piles of transactional information documenting the flows of money, time, and materials; subcontractors, plugged episodically into the contractors’ data stream, add shop drawings, bills of materials, and invoices; and finally, building owners sift through the resulting mountain of information to manage the resulting asset. What, if anything, might organize all this stuff, and how might that organizational strategy serve the noble goal of making ethical choices of slave-free materials?

Although largely used today for the generation and coordination of technical output called “working drawings,” at the center of these various and sundry data empires is the representation of the built artifact itself, the digital simulacrum that is a Building Information Model (BIM). More than just a three-dimensional representation of the building to be constructed, BIM is an underlying knowledge structure – an epistemological assertion – of how a building is organized, what elements comprise it, and how those elements are related. Each data object in the BIM represents the endpoint of a supply chain decision, and each can be a touchpoint from which an exploration and analysis of the origins of a selected element can begin, and its relationship to a responsible supply chain established. And since a well-crafted BIM is the headwater of the design process, those data representations can be the anchor points of slave-free procurement that can persist from design, through construction, and into building operation.

Sophisticated representation, however robust through BIM, is necessary but not sufficient toward slave-free ends. If the design-to-construction digital model is the organizer from which to explore and resolve supply chain questions, the designer requires additional insight beyond a dynamic, three-dimensional, and potentially information-rich Digital Twin. The choice of a given material, product, or building system has immediate implications for a range of issues in the performance of the building. Today's designers leverage BIM information for more proximate concerns like construction cost, energy usage, and code conformance through additional analytical engines that intelligently query and evaluate the simulated building. What if those more technical queries could be extended to questions of the ethical provenance – or lack thereof – of the architect's or engineer's decision?

Imagine the designer in the near future working within BIM on the design of a new project. As building systems, materials, or products are rendered into the digital representation of the design on her desktop computer, a parallel evaluation engine connected to an enormous "provenance" database might be running in the background. At appropriate intervals during the design, she might query a building component and be presented with a series of alternatives and specifications for designating the supplier of that element along with a description of a certified, slave-free supply sequence. Early in the design, this would eliminate choosing approaches dependent on unethical systems or components; later, it assists in proper detailed selection and specification. The resulting metadata could be encoded into the model for the reference (and continued validation) by the construction manager and its multi-tiered subs, suppliers, and manufacturers. The original BIM remains as the datum for such a system.

A similar system might, over time (and with machine-learned experience), monitor the development of a BIM-based design, analyzing the emergent construction for possible problems with eventual slave-related procurement. Much as today's energy analysis engines can evaluate the preliminary resource demands of a building based only on a rough approximation of its shape, location, and use, an "ethical supply chain evaluator" could look at a similarly conceptual model and direct the designer away from certain strategies or materials that might be challenging to ethically obtain months or years down the road. The evaluation engines could be connect-

ed with software that models supply chain dynamics and pressure points, and query the architect's or engineer's model to flag issues.

These sorts of tools presage a time when the architect designs buildings with streams of data and insight brought forward into the decision-making process by information technology supplementing hard-fought experience. Models – geometric, analytical, process-based – can be the first set of armaments with which the building industry can fight the battle of responsible, ethical, and slave-free sourcing of materials and systems.

Vertically Integrated Model-Based Delivery by Christopher Sharples, SHoP Architects

To end slavery in the building materials supply chain, we need to change behavior. To do that, we need innovation in the processes owners, architects, engineers, and contractors utilize to design and realize our buildings. Where most every industry that touches our lives has evolved significantly, in some cases unrecognizably, since the 1950s, the building industry has not. Buildings remain largely non-reproducible assemblies composed of discrete elements, and where data technologies are deployed in their creation, they are often not optimized. Only limited collaboration is possible between the essential professions and building trades. Barriers are raised by fears of liability. Communication is poor and costs continue to climb with tight profit margins forcing builders and suppliers to look for cheaper means, no matter how they are sourced.

The AEC industry is highly specialized, where relationships between the players are fractured, adversarial, and siloed. Even with the adoption of BIM, the owner, designers, and the build team continue to suffer from broken lines of communication, poor document transactions, job site inefficiency, and a general lack of transparency among all the parties involved. As a result, there is very little understanding of where materials are being sourced, in what conditions, and by whom they are being made. How can we trust the supply chain to be slave-free if we can't see it, let alone access it? What process models exist that can allow the AEC industry to not only improve the way we design and deliver buildings, but to do so in a way that is slave-free?



The Botswana Innovation Hub, located where Gaborone meets the Kalahari Desert, and designed by SHoP Architects, deployed a full range of digital modeling and visualization technologies, many developed in-house. Interiors incorporate a number of contributions from local artisans, including this mural made with a traditional wet-earth technique. Photo © SHoP Architects

We can start by looking outside of our own space to commercial enterprises with highly evolved aggregated networks like the aerospace and automotive industries. Their evolutionary approach to Design for Manufacturing and Assembly (DFMA) drives product innovation by integrating design and production.⁸

Much of what goes into developing a manufactured product is resolving its production process. As a result, manufacturing naturally embodies a movement toward process innovation. To design a car, an airplane, even a toy, you must understand all aspects of its development, from concept to market delivery, at the outset. A primary requirement is the intimate knowledge of the supply chain.

By adopting a “system-of-systems” approach, we can radically reimagine how we design and put buildings together. As explained by John Tracy, CTO of Boeing’s Dreamliner program:

System engineering starts with a very specific and rigorous definition of requirements that are synthesized into solutions that are then validated and verified. In order to do this you need a single source of product data or PLM, Product Life Cycle Management system.⁹

A similar system for the delivery of buildings would revolutionize the industry. All the information to design, manufacture, and assemble a building would be captured in this singular source of instructional data, or what is commonly referred to as the Digital Twin. It would be a comprehensive, iterative, vertically-integrated digital model that would capture every aspect of the process from design to fabrication and assembly, right down to how the base materials are sourced. Information from the supply chain can be embedded directly into the model, giving owners, architects, and builders greater confidence in understanding the mechanics and operations of their supply chain. The resulting protocols, originating with digital models and extending through “BLM” or “Building Lifecycle Management” tools, would require suppliers to follow slave-free work practices.

Supply chain verification – assuring suppliers adhere to slave-free protocols – is a primary challenge. Looking to innovators in the tech industry to accelerate the development of digital tools and applications that can interoperate with the Digital Twin to assist in verification of slavery in the supply chain will be critical. Justin Dillon, founder of Made In A Free World and FRDM (free-dom), a company at the intersection of technology and human rights, has the sole mission of improving supply chain transparency.

FRDM could have immediate impact as an important tool in monitoring and evaluating slavery as it exists in the supply chain.

By adopting a vertically aggregated model-based delivery process, as utilized in advanced manufacturing, everyone from the owner, designers, and build team can share and query information collaboratively and navigate and understand in real-time who is building our buildings. It will change how our industry interacts with the supply chain, allowing an intimate understanding of its behavior and performance, and provide a more robust and transparent means to create a slave-free built environment.

New Technology for Supply Chain Surveillance
by Brian Ulicny, Ph.D., Thomson Reuters Labs, Americas

Supply chains in architecture, engineering, and construction, as in other industries, are historically opaque to protect supplier relationships, which are generally considered proprietary trade secrets. Whether intentional or not, the lack of transparency in supplier information has allowed forced labor used to procure and create building material supplies to continue unabated. Forced labor is most likely to occur at the beginning of the supply chain, where engineers, architects, and builders have the least visibility.

It is difficult to assess the risk of forced labor in suppliers because of the inscrutability of supply chains. At most, large public companies are required only to list their most

critical suppliers, and private companies have no obligation to disclose their supply chains at any level. Standard practices for evaluating one's suppliers involve "third-party risk" assessments by large information providers, drawing on geographic and industry risk, news reports, government assessments like the U.S. State Department's *Trafficking in Persons Report*¹⁰ and other sources of information. Private audits are generally not shared across customers. Supplier questionnaires and pledges to abide by agreed-upon standards provide some procedural assurance against forced labor in supply chains, but at best, these tools provide insight into only the top two layers of a supply chain that can be considerably deeper, from finished building product to source materials and commodities. Company ESG (Environment, Social, Governance) reports and metrics are largely self-reported, very limited in coverage, and aggregated in different ways by different ratings producers.¹¹

When media reports identify bad behavior, such as the recent scandals around forced labor in the shrimp industry,¹² most of the reporting names only the well-known companies at the end of the supply chain. Very little information is provided about the identities of the suppliers and processors at the beginning of supply chains where most of the bad acts occur. It is therefore hard for companies to learn anything further about which suppliers to avoid near the origin of the supply chain, and it is easy enough for companies to change their names and hide their role in past actions. Disclosure of company own-



New tracing technology may penetrate the opacity of supplier relationships, identifying material origin and means by which inputs such as copper move across the globe, while maintaining proprietary confidentiality

© left to right: Stayorgo/E+ via Getty, mabus13/E+ via Getty

ership is opaque in many jurisdictions, enabling the hiding of many bad acts, including the use of forced labor.

Some recent technical developments can be leveraged for these purposes, including the use of new standards based on blockchain technologies and new methods to supplement on-site audits.

Recently, U.S. Customs and Border Protection implemented a proof of concept, leveraging emerging blockchain-based technologies for making supply chains auditable while preserving trade secrets using emerging open technical standards. Supplier transaction data is stored by the source and only accessible to authorized parties, allowing organizations to selectively publish sensitive trade secrets or private information on a record-by-record basis. Recipients of the private data can independently verify that the data retrieved hasn't changed since the link was recorded. This approach avoids the need for all parties to submit sensitive information to a central, hackable datastore. However, such a system would enable tracking goods from bad actors to their end products and enable customers to make better sourcing decisions.

Recent developments include the use of high-frequency commercial satellite imagery for surveillance purposes. Satellite imagery can identify the locations of producers of goods potentially made with forced labor; for example, brick kilns in Southeast Asia.¹³ Automatic Identification System (AIS) signals can be used to trace shipments on the high seas in order to identify suspicious behavior or attempts to conceal suspicious behaviors.¹⁴

Finally, contract tracing apps, such as MIT's "Safe Paths" project, recently in the news because of the pandemic, enable privacy-preserving auditing of movement within and without an industrial complex in ways that could provide indicators for forced labor assessments for building materials and job sites. Similarly, "voice of the worker" apps such as Ulula facilitate more frequent and transparent contact with workers in potentially risky operations, creating less need for costly and defeasible on-site audits of risky plants and operations.

8 Shang, Gao. et al. "[Design for Manufacture and Assembly in Construction: a Review](#)," *Building Research & Information*. September 5, 2019.

9 [Making Affordable Housing Affordable](#), Real Estate and Tech Summit. June 2020.

10 [Trafficking in Persons Report](#), U.S. Department of State. 2020.

11 Idenburg, Florian and Kölbl, Julian and Rigobon, Roberto. "[Aggregate Confusion: The Divergence of ESG Ratings](#)," *Social Science Research Network (SSRN)*. May 18, 2020.

While none of these technologies is in widespread use yet, they might contribute to the all-seeing provenance engine Phil Bernstein imagines above, enabling architects and builders to design buildings that are slave-free while producing and revising their design artifacts and preserving trade secrets.

Conclusion

We argue here that the disaggregation of the building supply chain, which can easily admit slave-produced materials and products, can be addressed by technology in three dimensions: **tools that model and simulate** buildings before they are built, **systems that connect data streams** across the delivery life cycle, and **instruments that monitor and verify the resulting material flows**, can be certified slave-free. The relationship of these technologies, working in concert, creates the backbone of insight necessary to inform decisions that best result in responsible, slave-free delivery.

That same disaggregation makes adoption of cross-disciplinary technologies in building difficult, if not impossible. Extrinsic demands like sustainability or climate change can catalyze the industry to work together toward solutions that cannot be accomplished without collaboration and integration. At this particular historic juncture, when human rights considerations are inbred in almost every conversation, there is the opportunity to add slave-free building to the list of integrated objectives of a more responsible and ethical building industry, using the powerful potential of digital technology.

12 Htusan, Esther and Mason, Margie. "[More Than 2,000 Enslaved Fishermen Rescued in 6 Months](#)," *Associated Press*. September 17, 2015.

13 Scoles, Sarah. "[Researchers Spy Signs of Slavery from Space](#)," *Science*. February 19, 2019.

14 Howald, Blake. "[Toward More Inclusive Economies: Creating a Fairer Economic System for Those Left Behind](#)," Trust Conference. November 13, 2019.

Call to Action

When presenting a seemingly insurmountable challenge such as eliminating forced labor from the built environment, it is important to also present or illuminate the “how.” Once you know, now what? This section provides practical strategies that help incorporate ethics into building. Perhaps most important of all, it reinforces that every decision an owner/investor, architectural team member, construction team member, manufacturer/importer, or teacher/student makes can effect positive and sustainable change to eliminate forced labor in the built environment.

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Good design must go beyond good intentions

Sometimes architects and designers forget that design entails producing a collection of instructions to rearrange our material world's makeup. We fail to realize that every line a designer or architect draws sets into motion a string of actions that have environmental, social, and ethical repercussions. Today, we cannot ignore this fact anymore.

Half a century ago, Stewart Brand published the *Whole Earth Catalog*, an American counterculture magazine and product catalog that has been credited for spearheading the ecological movement. It expanded the idea that through our consumption – through the design of our lives – we make environmental choices. Architecture operates in the same way. A designer prescribes how to assemble products and materials into a building or city. Over the last decades, initiatives to design with the environment in mind have reached broad acceptance within the entire building industry. Clients demand green certifications such as LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Methodology), and energy performance has been integrated into building codes, such as the NYS Energy Conservation Code.

So, if every line we draw affects a string of material practices with an ecological impact, it also affects a series of labor practices that impact human rights. Our designs

define the labor needed to extract the material from the earth, the labor to clean it, process it, assemble it, transport it, and to build it on a construction site.

Consciousness around ethical labor practices in the building industry cannot take half a century to be integrated into the design practice. As current calls for justice demonstrate, extractive labor practices cause profound traumas that may take centuries to repair.

Environmental justice initiatives and self-certifications are slowly expanding their views into this realm of ethics. The International Living Future Institute, which focuses on the building industry, has a program for corporate transparency called JUST, with self-reporting labels, but it is not a certification. More recently, #architectsdeclare, which is part of a broader international call to action, urges architects to address the disproportionate impact of ecological crises on disadvantaged communities and to ensure that mitigation and adaptation efforts address the needs of all people. It further presses professionals that shape the built environment to advocate for detailed disclosure of material provenance and environmental impact by extractors, manufacturers, and distributors to accelerate the shift to low-carbon, non-toxic, and ethically sourced and produced materials.

If every line we draw affects a string of material practices with an ecological impact, it also affects a series of labor practices that impact human rights.

These declarations only go so far and are not much more expansive than codes of conduct already in place. The American Institute of Architects (AIA) 2020 Code of Ethics and Professional Conduct, for instance, requires members to thoughtfully consider the social and environmental impact of their professional activities, uphold human rights in all their professional endeavors, not engage in conduct involving wanton disregard for the rights of others, and not counsel or assist a client in conduct that the architect knows, or reasonably should know, is fraudulent or illegal.¹

The issue does not seem to be a lack of good intentions, but a (perceived) inability to enact them. But this is a fal-

lacy. Much like our natural environment, we cannot excuse ourselves from acting, and will have to make more targeted efforts to ban unethical materials from our industry. One can imagine adding these conditions when we write our specifications. A change in culture will require continuous efforts. Supposed additional costs are the reason for our client not to engage in anti-slavery practices. In that case, we should recognize that as long as getting a building built requires a set of lines from an architect, we have the power to influence what labor practices get our buildings built. Once we know that someone pays the price, we cannot willfully close our eyes.



© left to right: David Clapp/Getty Images, Ahmed Salahuddin/ Nur-Photo via Getty Images

The many different parts of the steel supply chain, from initial manufacturing processes to fabricating and erecting, provide multiple points of influence in which a slavery-free ethos can be transmitted; the elegance of the steel should not be bought through exploitation of the workers

¹ [AIA 2020 Code of Ethics and Professional Conduct](#), American Institute of Architects (AIA). 2020.

Take action steps

Once you know what your supply chain is, are aware of the risk of modern slavery, and have made the decision to confront it, what can an architect, engineer, designer, contractor, or fabricator do? What can be done at the firm level? At the project level?

- **Replicate your own learning journey for your colleagues and peers.** Educating those within your own organization provides a shared appreciation of both the moral and legal risks, and can help to socialize the incorporation of ethics into business processes.
- **Adopt an ethical sourcing policy,** driving its adoption to subcontractors through contract language, and monitoring their compliance just as you would monitor health and safety or quality compliance – whether with in-house systems or through third-party auditors. If there is an abusive manager, take prompt action to send a message of trust and consequences: “zero tolerance” is meaningless if it is just a slogan, since perceived hypocrisy can undo even the most carefully designed standards regime.
- **Publicize your policy,** not only to help spread the word among other industry leaders and to differentiate your firm from competitors who choose not to confront their slavery footprint, but also to demonstrate your commitment to transparency. Leverage your policy and what you do to carry it out to educate clients, not only on why ethical design and construction are necessary, but why any additional costs are worth it in the long run.
- **Participate in industry efforts,** especially those which incorporate workers into the process as full stakeholders. Work within industry organizations, as well as with governments and financiers, to achieve policies that incentivize slavery-free building through tax benefits, bond consideration, and beneficial scoring that is not wholly dependent on the lowest bid.
- **File public disclosures.** Major firms might have to file public disclosures under the Supply Chain Transparency and Modern Slavery Acts mentioned in the “Mobilizing the Full Ecosystem of the Built Environment” section and companies with federal contracts will have to meet the requirements set forth in the Federal Acquisitions Regulation. Even if you don’t meet the filing thresholds, doing your own version of a disclosure (setting forth your anti-slavery commitment, how you shield against it, train your staff, and monitor compliance) will give you an advantage in subcontracting with the actors who are big enough to have to file, or are subbing out parts of federal contracts. By showing that they are working with you – an ethical firm – they are one step closer to demonstrating compliance to regulators and contracting officers.

Take action steps by stakeholder

Owners, Developers & Investors

OWNER'S PROJECT REQUIREMENTS (OPR) & CONTRACTS

Add a slave-free materials requirement to the OPR

Add a contract clause to establish:

- Expectation to examine project supply chain
- Right to review efforts to be made
- Preferably require specific reports on efforts and impacts, not just pledges and policy changes without implementation

Complete [ACAMS](#) and [FAST Initiative Certification](#) by the following:

- Compliance officers
- Risk managers
- Technology officers
- Industry consultants
- ESG specialists

Invest in a supplier audit of high risk raw materials

Participate in industry pledges

Join the Design for Freedom movement and social media campaign

Architectural & Design Teams

SPECIFICATIONS

Heighten requirements for slave-free materials in the specification process

Prefer raw and composite materials that are certified to be made without forced labor

Reassess what is in your Materials Library, **add** important new resources about ethical building materials and supply chains and **inquire** whether each material is fabricated without forced labor

Develop a decision matrix for how to choose inputs and suppliers when conditions are unknown

Determine expectations for change among suppliers, assuming many have problems and cannot or will not change quickly

Ensure your contract includes a substantial completion relief clause and includes expectations and the right to review

Add anti-slavery education to your firm's "Lunch and Learn series" and other continuing education opportunities

Participate in industry pledges and the AIA Code of Ethics

Join the Design for Freedom movement and social media campaign

Take action steps by stakeholder

Construction Teams

PROCUREMENT & DOCUMENTATION

Heighten the requirement for slave-free materials in the procurement process and prefer raw and composite materials that are certified to be made without forced labor

Ask all suppliers to provide Supplier Codes of Conduct and Certifications for all tiers in their supply chain

Determine ways that your procurement approaches might contribute to the problem (timing, order changes, price pressures, etc.) and adapt

Demand attention to labor issues among any/all certification initiatives of suppliers/products

Audit your supply chain with third-party experts

Add anti-slavery education to your firm's "Lunch and Learn series," and other continuing education opportunities

Participate in industry pledges and Building Responsibly Worker Welfare Principles

Join the Design for Freedom movement and social media campaign

Manufacturers & Importers

PROCUREMENT & AUDITING

Include anti-slavery requirements for all tiers in the supply chain for each material, raw and composite, in a Supplier Code of Conduct

Require auditing of forced labor in materials supply chain, including manufacturing/fabrication and raw material inputs

Emphasize risks for any migrant workers at points of the supply chain through accountability measures for suppliers and their recruitment agencies

Include expectations for remediation of harms associated with suppliers, including return of fees paid by migrants that lead to debt bondage

Participate in industry advocacy with government for better, more just policies related to migrants and other vulnerable communities in your supply chain

Add anti-slavery education to your firm's "Lunch and Learn series," and other continuing education opportunities

Participate in industry pledges

Join the Design for Freedom movement and social media campaign

Take action steps by stakeholder

Architecture, Design, and Construction Faculty & Students

AWARENESS & RESEARCH

Add anti-slavery criterion into all modeling, materials examination, and projects

Reassess what is in your materials library, **add** important new resources about ethical building materials and supply chains, and **inquire** whether each material is fabricated without forced labor

Incorporate labor/social issues into environmentally-driven research and certification systems

Sponsor and **Collaborate** on forced labor research and other abuses associated with construction materials

Participate in policy initiatives that promote better migration policies that prevent, rather than facilitate, trafficking risk for migrants

Add anti-slavery education to faculty meetings, “Lunch and Learn series,” and other continuing education opportunities

Advocate for universities to build slave-free

Join the Design for Freedom movement and social media campaign

An architect or designer’s drawings seep into the way a built environment is constructed. Designing for environmental sustainability has increased over time, while designing for ethical effect is just beginning.



Original illustration contributed by Pentagram, Eddie Opara (Working Group member)

The Design for Freedom movement starts with awareness of the systemic use of forced labor in the building materials supply chain



The Design for Freedom Working Group aims to inspire institutional responses that include material research, education, slave-free specifications and certifications, and labor tracking in new digitalization, and sharable Integrated Product Delivery (IPD) systems.

Original illustration contributed by Pentagram, Eddie Opara (Working Group member)

What can construction teams and manufacturers/importers do?

The appropriate standards around forced labor and human trafficking that design and building professionals should promote and enforce with suppliers have already been developed in hard and soft law – an extensive body of standards and due diligence approaches – that have been tested over many decades. Various multi-stakeholder initiatives, certification bodies, industry associations and collaborations, and advocacy efforts have created monitoring mechanisms, benchmarks for performance, and other tools that provide a roadmap for how buyers can work with suppliers in any country and for any commodity or building input. Due to the work described above, adopting standards to which all business parties are held accountable is relatively straightforward; it is the change management process within supply chains that requires long-term commitment, creativity, resources, and persistence.

The specific processes a company needs to put in place will naturally depend on the size and complexity of the company's supply chain and its inherent risks, and legal or other obligations that may apply. Companies may want to manage the processes entirely in-house or may choose to outsource some (e.g. audits) or all of them to specialized third parties.

Labor abuses are so common across sectors, and in both rich and poor countries, that one should realistically approach them as a feature rather than a bug in the system. As a result, many companies in your value chain will have business models built around routine violations of wage and hour laws, exploitative guest worker programs, systemic ill-treatment of vulnerable groups, and other structural conditions that have made modern forms of slavery shockingly pervasive. You will need to work with your

suppliers and industry peers to compel and incentivize changes in business models that have labor abuse baked into the prices and practices.

Setting Up a Risk Management System

Implementing effective management systems are the foundation for combating trafficking in your supply chain, as they are based on the realistic assumption that change is an incremental process that requires routine monitoring, adaptation, and a clear set of performance metrics. Fostering improvement over time requires a systems approach to risk management known as 'Identify, Evaluate, Control, and Monitor.' This is a set of processes that a company should implement to identify the risks of human trafficking in its supply chains to address identified issues, implement enduring solutions, and monitor supplier performance over time.

Establish a Supply Chain Code of Conduct

The first element of a management system is to clearly communicate expectations in all contracts and vendor agreements, usually through a Code of Conduct. A Supply Chain Code of Conduct establishes basic performance expectations for subcontractors, suppliers, and agents.² It is important that your firm's sourcing policy or Code of Conduct explicitly prohibits human trafficking and sets out protections and remediation for workers. A firm's code should also address factors that are "enablers" or contributors to situations or risks of human trafficking. A subsequent Social Responsibility Agreement affirms compliance with contractors, suppliers, or agents to your Code of Conduct and applicable legal requirements. It can be a standalone document or included as an appendix to a contract.

Set Expectations for Responsible Hiring and Recruitment

Human trafficking risk is most often associated with exploitative labor recruitment systems that charge vulnerable workers for their jobs and bind them in other ways that result in a condition called debt bondage. A robust due-diligence screening process for labor recruiters and current and potential suppliers, including clear metrics, will minimize the risk of fraudulent or misleading practices. So, it is particularly important that companies proactively ask suppliers and labor recruitment agents questions about recruitment and hiring performance metrics and share benchmarks based on a company's policy.

Clear performance indicators enable accurate evaluation over time to determine if genuine improvements are made in the recruitment practices of suppliers. Key areas to look for include transparent policies and procedures that relate to:

- Transportation expenses
- Training expectations and costs
- Immutable contract of employment in appropriate languages
- Prohibition of retention of personal documents (including passports)
- Prohibition on deposits that bind workers to an employer
- Clear standards for humane treatment
- Appropriate discipline and termination systems
- Freedom of movement and personal freedom
- Grievance procedures
- Expectations for workplace equality across ethnicity, gender, and other categories
- Fair wages and benefits

Companies need to obtain enough information about the procedures above to have reasonable confidence that the supplier or labor recruiter will comply with its legal requirements and standards.

Regularly evaluating the strengths and weaknesses of suppliers' and subcontractors' anti-human trafficking policies and procedures will help highlight where more improvement is needed. In evaluating how well a supplier is controlling its risks, a company needs to look for either the presence or absence of good practices and 'at risk' practices. Screening tools can be used to choose suppliers, to develop corrective action plans, or to establish key performance indicators (KPIs) to track ongoing social responsibility performance.

First-Person Feedback

A supply chain due diligence system is only as good as the information gained from workers at various levels of the supply chain. Robust compliance efforts include worker input through direct interviews or other confidential feedback mechanisms. Workers know conditions best, and effort and time must be devoted to gaining their trust and learning their needs and aspirations, as well as the problems they face. Input from nongovernmental organizations and trade unions can also help to better understand the conditions workers face.

Auditing as an Emerging Tool for Change

Audits can be used to understand and document abuses and to drive change in fundamental business practices. Audits should prioritize substantial, confidential worker input. Audits should always link to corrective action plans to correct for violations found during an audit, although it should be acknowledged that many problems (especially those associated with forced labor) are not easily remediated and require sustained engagement and new ways of conducting business that reward compliance rather than expect it, without changing underlying dynamics in that market.

Buyers should also note that many auditors are not well-trained to spot forced labor risk, and that often the "scope of work" for an audit and the rigid procedures followed by many auditors result in few or even no findings of forced labor risk, even when suspect practices are widespread. Careful screening and on-going quality control of auditors is also vital.

² *Principles and Standards of Ethical Supply Management Conduct with Guidelines*, Institute for Supply Management. 2020.

Materials library manifesto

“If others use this as their guide, we can transform the industry.”

FXCollaborative is committed to being advocates for change in order to have a positive impact on our profession, our community, and the planet. Key tenets that are critical to our mission are:

- Advocate for positive change in the AEC industry by acting as a resource to firms, organizations, and clients.
- Actively support initiatives and movements that focus on equality, anti-racism, cultural literacy, and gender inclusivity.
- Vigorously address the degradation of our planet by product manufacturers in the AEC industry, specifically the impact on climate crisis (embodied carbon) and environmental and health issues.

Our resource library should reflect these tenets and articulate our values and commitment to issues of social justice, sustainability, and the health and well-being of our planet and the inhabitants of the environments we create. The resources we select must contribute to the creation of a healthier, more equitable future for humankind and the planet. What we specify has significant and lasting impacts on the ecosystems of our planet and the human condition. As designers, we can influence and look to our practice to insist on industry accountability and change. By signaling to manufacturers and product suppliers our firm values, we send an important message

and convey our sense of responsibility to collectively advance manufacturing practices and industry resources.

Finding clear, simple, and transparent information about materials is difficult. Databases are incomplete, and the issues are often complex, technical, and can seem insurmountable. We lead busy lives, working to tight deadlines and often don't have the luxury of time, nor the resources to research in depth. We rely on supplier information which can be ambiguous and selective as it comes with its own agenda. Without the right information, we are prey to whitewashing and/or greenwashing.

How can we make informed choices and advocate for better outcomes in our objective? This manifesto is our action plan for doing so, and we encourage our peers and faculty at universities to create a manifesto, too.

As we prepare for our move to Brooklyn, it is a time to reflect, edit, and reformulate our resource library. Our goals are:

- To cultivate an awareness in the AEC industry and to be advocates for change.
- To help designers make better informed decisions in the selection of the products and materials that we specify.

We want to know what we are specifying. To do so, we



© left to right: iStock via Getty Images, Dean Kaufman

Brick can be a highly economical material, but not at the expense of human rights; environmental sustainability efforts must be supplemented with a slavery lens.

will ask manufacturers and product suppliers to divulge information related to their production and practices. Below is an outline of the criteria – three primary lenses – we will use for evaluation: social justice and ethical sourcing, human health and well-being, and embodied carbon and sustainable practices.

Social Justice and Ethical Sourcing:

- JEDI initiatives and commitments - strategies and educational programs currently in place or an indication of specific timelines toward these goals
- Anti-racism stance - public record against racism with actionable items to implement positive and restorative change
- Corporate structure and leadership - report of current leadership, workforce, and recruiting policies that promote equitable gender and diverse representation
- Ethically sourced supply chains - confirmation that the products are created without the use of child and/or enslaved labor

Human Health and Well-Being:

- Disclosure of material ingredients - transparent disclosure of material ingredients and health impacts using industry-recognized standards such as Health Product Declarations, Declare Labels, etc.
- Optimization of material ingredients - efforts to reduce the number and quantity of products with harmful content and to avoid using Red List and High VOC materials

- Life cycle health - inclusion of effects in all stages of a material's life: extraction, manufacturing, installation, finish product, re-use, and disposal
- See [FXCollaborative's Base Green Specification](#) for specific preferences

Sustainability and the Climate Crisis:

- Embodied Carbon / Global Warming Potential - provide Environmental Product Declarations and use carbon reduction and sequestering practices
- Recycled Content - maximize pre-consumer and post-consumer recycled content
- Responsible Disposal and Reuse Efforts - provide materials and assemblies that can be disassembled and recycled. Offer take-back programs, Cradle-to-Cradle certifications, and similar circular-economy activities
- Local Materials - provide locations of raw material extraction and harvesting, and manufacturing of material components and finished products
- Responsible Sourcing - utilize responsible sourcing certifications
- See [FXCollaborative's Base Green Specification](#) for specific preferences

Amb. (ret.) Luis C.deBaca
Justice Initiative Sr. Advisor, Grace Farms Foundation
Former United States Ambassador-at-Large to Monitor and Combat Trafficking in Persons

Afterword



© Dean Kaufman

This report represents the hard work and personal journeys of the members of the Design for Freedom Working Group. From the starting point of grace and peace represented by Grace Farms and its founder Sharon Prince, the Working Group's trajectory reflects in some way the needs of the construction industry as a whole to recognize, educate, and act against modern slavery. It reflects the growing business and regulatory case for change that is as strong as the moral imperative. And it reflects the realization that we are at the beginning of that change.

The coming years will require research, innovation, and compliance systems. But, most of all, they will demand a willingness to recognize the presence – and hear the voices – of the people in supply chains rather than simply reaching for their handiwork as unexamined inputs for our projects. While high-profile scandals and advocacy campaigns have drawn attention to slavery and trafficking on projects of international scope, less attention is paid to how those practices are reflected “here at home.” Modern slavery manifests not just as an exploited con-

struction worker on a jobsite, but through the complex and global materials supply chain. Even a firm that is vigilant about health, safety, and workers' rights can be touched by modern slavery, because each brick, each beam, and each pane of glass embodies not only the pride and craftsmanship of its creators but also their experiences of exploitation and abuse.

By recognizing and acting upon the lived experiences of the people in the supply chain, we can reach a level of intentionality and honesty as we work toward a more efficient and sustainable built environment. This *Design for Freedom* report has set forth legal and enforcement responses that are increasingly changing the regulatory landscape and introducing concrete risks into the industry. It has suggested innovations and disruptions that will transform the industry. And in the reflections and insights of the Working Group members, we see a new vision of practice that incorporates an ethical lens into procurement, contract, and design decisions. We hope that you join us, as we continue together to Design for Freedom.

APPENDIX

Design For Freedom Working Group & Resources

Design for Freedom Working Group



© Dean Kaufman

Not only are we working to illuminate and change the pernicious stream of modern slavery within the built environment, we are doing so within one of the largest global industries. Sharon Prince has challenged the Working Group with the question: “Are owners unknowingly subsidizing their returns on investments (ROIs) with slave labor?” The answer is yes.

MISSION The Design for Freedom Working Group aims to eradicate modern slavery from the built environment by convening an ecosystem of leaders and creating actionable outcomes with systemic impact.

GOALS To illuminate the permanent imprint of slavery in the building materials supply chain that has yet to be surfaced within architecture, engineering, design, and construction. To create a radical paradigm shift within the built environment.

ABOUT THE DESIGN FOR FREEDOM WORKING GROUP In fall 2017, CEO and Founder of Grace Farms Foundation Sharon Prince, and the late Bill Menking, prolific professor, curator, and Founding Editor-in-Chief of *The Architect's Newspaper*, discussed the fact that ac-

knowledging forced labor in the building materials supply chain, or what could be done to eliminate it, was not on the industry's agenda.

From their initial conversation at the SANAA-designed Grace Farms in New Canaan, Connecticut, they convened leading principals across the architecture, engineering, and construction sectors for the Design for Freedom Working Group and first met in 2018 at Rogers Partners Architects+Urban Designers in New York City. Since then, an expanding group of experts and leaders from sectors that actualize or influence the built environment joined to raise awareness of modern slavery across industries and to create outcomes that will ensure a clean, ethical building materials supply chain.

The movement has started

2018

Design for Freedom Working Group launches

Meetings are held in architectural spaces that inspire action and collaboration



2018-2020 off-site meetings

Rogers Partners Architects+Urban Designers

Welcomes first Working Group meeting in Sept. 2018

Grace Farms

Grace Farms has served as a constant gathering space for Working Group members since 2018

Silman

May 2019 meeting

AIA NY | Center for Architecture

September 2019 meeting

SHoP

January 2020 meeting



Top: Jill Crawford, (Partner, Type A Projects) leading a Working Group breakout session at AIA NY | Center for Architecture in New York City | Photo © Grace Farms Foundation

Middle: Design for Freedom Working Group meeting at Grace Farms in New Canaan, Connecticut, in its glass-enclosed Library, which nestles into an 80-acre expansive landscape | Photo © Dean Kaufman

Bottom: Design for Freedom Working Group meets at the AIA NY | Center for Architecture in New York City | Photo © Niv Rozenberg



2019

New York AIA and Center for Architecture leadership raise the building materials supply chain flag, making space for Working Group meetings and spotlight for 1,000 members



Expanding awareness locally and globally

The Design for Freedom Working Group is announced in *The Architect's Newspaper*, *Architectural Record*, and other industry media.

Public launch addresses institutional obligation and commitment

This media recognition of the issue and the leaders addressing it are shortly followed by presentations and events at:

- International Association for Bridge and Structural Engineering Congress (IABSE)
- Top1000Funds Fiduciary Investors Symposium
- Urban Thinkers Campus, an initiative of the UN-Habitat's World Urban Campaign
- Grace Farms, first U.S. public program discussing forced labor in building materials supply chains



Top: Benjamin Prosky (AIA NY), Barry Bergdoll (Center for Architecture), Jesse Lazar (AIA NY), Sharon Prince (Grace Farms), Hayes Slade (AIA NY & Slade Architecture) | Photo © Niv Rozenberg

Middle: Working Group Meeting at Center for Architecture, NYC; Jill Crawford (Type A Projects), Andrew Klemmer (Paratus Group), Shawn MacDonald (Verité), Kenyon Victor Adams (Grace Farms), Jared Gilbert (COOKFOX), Hayes Slade (AIA NY & Slade Architecture) and Sharon Prince (Grace Farms) | Photo © Niv Rozenberg

Bottom: Amb. (ret.) Luis C.deBaca (former United States Ambassador-at-Large to Monitor and Combat Trafficking in Persons), Hayes Slade (AIA NY & Slade Architecture), Nat Oppenheimer (Silman, and structural engineer for Grace Farms), and Sharon Prince (Grace Farms) | Photo © Dean Kaufman

2020

Movement among industry leaders accelerates

New publicly accessible resources and advocacy efforts are launched to galvanize key stakeholders



Working Group Members inspire their firms

- Design for Freedom Working Group meetings formalize action groups, and members begin to propose changes in their own firms and a means to build awareness.
- Executive presentation at COOKFOX Architects

First full-semester class and visiting lecture series at distinguished universities

Design for Freedom Working Group members who are also faculty initiate a class at Yale School of Architecture and visiting lecture series at Cooper Union, Pratt Institute, Parsons, and more.

New branding and website launch

designforfreedom.org is launched to formalize the movement, designed pro bono by GoodFolk.

Collaboration leads to new face mask

Ethically manufactured face masks are designed pro bono by Grace Farms project architects Shohei Yoshida and Peter Miller. Herman Miller retails the masks with proceeds supporting the Design for Freedom movement through **Design Within Reach**.



Top: Rod Khattabi (Grace Farms) speaks during a Working Group meeting at SHoP Architects in January 2019. | Photo © Niv Rozenberg

Bottom: Design for Freedom primary hummingbird graphic, designed with pro bono support by WPP's Geometry Global.

2021

Once you know: digital awareness campaign begins

APPENDIX

Institutional responses | Academia

“The academy has a critical responsibility to ensure the next cadre of industry professionals are prepared to innovate and enact achievable solutions that are committed to creating an ethical future.”

–Frances Bronet, President, Pratt Institute

Students and recent graduates are seeking values-informed professional opportunities, and are eager to innovate – responding to that desire will not only harness that energy, but have a positive effect on retention and advancement of the next generation of professionals.

Design for Freedom Working Group members who are also faculty and administrators from leading undergraduate and graduate programs are an integral part of the solution. We are seeing universities working to incorporate anti-slavery education into the curriculum and hope to influence the research agenda for the years to come.

Academic Year 2019-2021

Princeton University “Introduction to the Design of Building Structures of Steel, Timber, and Reinforced Concrete” with Prof. Nat Oppenheimer (Silman) with research on steel and timber by Grace Farms Foundation (Fall 2019)

Illinois Institute of Technology | College of Architecture, “Comprehensive Building Design Studio” taught by Prof. Patricia Saldaña Natke (UrbanWorks) (Fall 2019)

Yale School of Architecture Conversation with Prof. Phil Bernstein on Modern Slavery in the Built Environment with Sharon Prince, Amb. (ret.) Luis C.deBaca, and Leslie P. King (Carlton Fields) (Winter 2020)

IE Architecture School “Futurist Forum – Urban Interventions for Social Change” class taught by Prof. Patricia Saldaña Natke in Segovia, Spain (Spring 2020)

Yale School of Architecture “Fighting Slavery in the Building Supply Chain,” a novel class taught by Prof. Phil

Bernstein and Luis C.deBaca (Fall 2020)

Design for Freedom Webinar Series presented by Pratt Institute and Grace Farms Foundation. A two-part series hosted by Harriet Harriss, Ph.D., and Sharon Prince: (Fall 2020)

Using Innovations to Move Faster Towards Slave-Free Buildings with Phil Bernstein, Yale School of Architecture; Christopher Sharples, SHoP Architects; Susan Jones, atelierjones; Michael Green, Michael Green Architecture

What We Can Learn from Other Industries with Carolyn Schaeberle, Pratt Institute; Ryan Taylor, Fair Trade Jewellery Co.; Damian White, Rhode Island School of Design; and Deborah Gans, Gans & Co.

Parsons School of Design at the New School “Design Studio 5” class taught by Prof. Claire Weisz (WXY architecture + urban design) with Sharon Prince (Fall 2020)

Cooper Union for the Advancement of Science and Art Irwin S. Chanin School of Architecture class taught by Prof. Nat Oppenheimer (Silman), opened to the public, with Sharon Prince and Luis C.deBaca (Fall 2020)

University of Pennsylvania Perry World House Policy Workshop led by Franca Trubiano, Ph.D. (Spring 2021)

APPENDIX

Design for Freedom Working Group Members

Baxi, Kadambari | Barnard College, Professor of Professional Practice in Architecture, Co-Founder WB-YA-Who Builds Your Architecture?

Bergdoll, Barry, Ph.D. | Center for Architecture, Board President

Berke, Deborah, FAIA, LEED AP | Yale School of Architecture, Dean, and Deborah Berke Partners, Founder

Bernstein, Phillip, FAIA, RIBA, LEED AP | Yale School of Architecture, Associate Dean and Professor Adjunct

Blackstock, Kaley, LEED AP BD+C, WELL AP, CDT | Gensler, Sustainability Specialist

Bradley, Paul | Lendlease (U.S.), Global Supply Chain Manager

Bronet, Frances | Pratt Institute, President

Bucher, Alissa, AIA | Rogers Partners, Associate Partner

Burke-Vigeland, Madeline, FAIA, LEED AP, NCARB | Gensler, Principal

Califano, Mark, Esq. | Dentons, Partner-Commercial Litigation practice

C.deBaca, Luis, Amb. (ret.) | Grace Farms Foundation, Justice Initiative Sr. Advisor and Former U.S. Ambassador-at-Large to Monitor and Combat Trafficking in Persons

Coppedge, Susan, Amb. (ret.) | Former U.S. Ambassador-at-Large to Monitor and Combat Trafficking in Persons & Krevolin & Horst

Crawford, Jill | Type A Projects, Founding Partner

Darling, Diana | *The Architect's Newspaper*, CEO, Co-Founder, and Publisher

Denison, Dirk, FAIA, MCHAP | MCHAP Director and Professor at Illinois Institute of Technology (IIT), College of Architecture

DuBois, Bill, CSI, CCS | Gensler, Certified Construction Specifier/Architect

Gans, Deborah, FAIA | Gans & Co., Founder and Principal Architect

Gilbert, Jared | COOKFOX Architects, Director of Communications

Gorman, Jay | Sciame Construction, Project Executive

Green, Michael, AIBC, FRAIC, AIA MGA, a Katterra Company, President and CEO

Core, Meredith, Ph.D. | University of Maryland, Associate Professor

Grennan, Elizabeth | Global Managing Counsel, McKinsey Digital

Guilliams, Gabe, PE | BuroHappold Engineering, Principal, Lighting Specialist

Harriss, Harriet, Ph.D., CONS, RIBA, PFHEA, PFRSA | Pratt School of Architecture, Dean

Hernandez-Eli, Jhaelen | NYC Economic Development Corp., SVP, Head of Design and Construction Division

Idenburg, Florian, RA, AIA-IA | SO - IL, Founding Principal

Kaiman, Elliot, Esq. | Wiggin and Dana, Partner, Design, Construction and Real Estate

Kharitonova, Olya | GoodFolk, Creative Director

King, Leslie P., Esq. | Carlton Fields, Shareholder, Construction Litigation

Klemmer, Andrew | Paratus Group, President & Founder

Laidley, Iain, Ph.D. | Good Folk, Managing Director

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Lynch, Brad, AIA | Brininstool + Lynch, Founding Principal

MacDonald, Shawn, Ph.D. | Verité, CEO

Malekshahi, M. Mark, PE | Zubatkin Owner Representation, Sr. Project Manager

Marroquin, Diego | East Rock Capital, Partner, and The World Around, Co-Founder & Executive Chairman

McGuigan, Cathleen | *Architectural Record*, Editor-in-Chief

Mettam, Kirk, PE | Silman, EVP, Senior Principal

Miller, Peter, AIA, LEED | Palette Architecture, Founding Partner

Mizzi, Joseph | Sciame Construction, President & COO

Moote, Kilian | KnowTheChain.org/ Humanity United, Director

Natke, Patricia Saldaña, FAIA, ALA, NCARB | UrbanWorks, Founding Partner and President

Opara, Eddie, AIGA | Pentagram, Partner

Oppenheimer, Nat, PE | Silman, EVP, Senior Principal

Prince, Sharon | Grace Farms Foundation, CEO and Founder

Propst, Debbie | Herman Miller Retail, President

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Reynolds, Fiona | Principles for Responsible Investment (PRI), CEO

Ricks, Alan, Int FRIBA | MASS Design Group, Founding Principal and Chief Design Officer

Rillosi, Antonio | ExtraVega, CEO & Founder

Rogers, Robert, FAIA | Rogers Partners, Founding Principal

Rolland, Ann, FAIA | FXCollaborative, Partner

Schaeberle, Carolyn | Pratt Institute, Director of the Center for Sustainable Design Strategies

Sharples, Christopher, AIA | SHoP Architects, Founding Principal

Short, Annabel | Institute for Human Rights and Business (NY), Built Environment Program-Advisor

Slade, Hayes, AIA, IIDA | Slade Architecture, Co-Founder and Principal & AIA NY 2019 President

Trubiano, Franca, Ph.D. | University of Pennsylvania Weitzman School of Design, Architect and Associate Professor in Architecture

Ulicny, Brian, Ph.D. | Thomson Reuters Labs Americas, Vice President

Walker, Darren | Ford Foundation, President

Weisz, Claire, FAIA | WXY architecture + urban design, Principal-in-Charge

Yoshida, Shohei | shohei yoshida + associates, Principal

*Institutional affiliations are for identification purposes only.

American Institute of Architects

Dodge, Sarah | AIA, Senior VP of Advocacy & Relationships

Prosky, Benjamin | AIA NY & Center for Architecture, Executive Director

Seidel, Paula, CAE | AIA, Senior Director, Industry and International Relations

Yao, Kim, AIA | AIA NY, President and ARO, Principal

Grace Farms Foundation

Prince, Sharon | CEO and Founder

Khatabi, Rod | Chief Accountability Officer and Justice Initiative Director

C.deBaca, Luis, Amb. (ret.) | Justice Initiative Sr. Advisor and Former U.S. Ambassador-at-Large to Monitor andw Combat Trafficking in Persons

Thatcher, Chelsea | Founding Creative Director and Chief Marketing Officer

Adams, Kenyon Victor | Arts Initiative Creative Director

Cleary, Eavan Michele | Director of Brand Design

Fowler, Mark | Nature Initiative Director

Rapuano, Elizabeth | Director of Communications

Reynolds, Alina Marquez, Esq. | General Counsel and Justice Initiative Senior Advisor

Sikora, Ashley | Director of Marketing

Walsh, Meg Hely | Director of Strategic Partnerships

In Honor of William Menking, (1947-2020) Co-Founder of the Design for Freedom Working Group and Founding Editor-in-Chief of The Architect's Newspaper



"Bill's well-tested observation that architects are really well-meaning and are taught to make the world a better place, and his commitment to inspire leading architects to step up for slave-free buildings was instrumental in galvanizing our early Working Group.

We will move forward with his wonderful enthusiasm and fervor."

– Sharon Prince,
CEO and Founder, Grace Farms Foundation

Above: Rod Khatabi (Grace Farms Foundation), Frances Bronet (Pratt Institute), Bill Menking (Founding Editor-in-Chief, *The Architect's Newspaper* and Co-Founder, Design for Freedom Working Group); and Sharon Prince, (Grace Farms Foundation and Co-Founder, Design for Freedom Working Group)

APPENDIX

Supply chain transparency resources

While the construction materials supply chain is in the early days of moving toward a slavery-free ethos called for in this report, there are currently several existing certifications or reporting mechanisms that may shed light onto modern slavery risk. None of these are full-on certifications that a product is “slavery-free” – such a certification would likely not withstand close scrutiny as research has shown the limitations of industry-led certifications, processes, and multi-stakeholder initiatives as opposed to worker-driven. But certifications, certificate programs, processes, rankings, benchmarks, or initiatives can be a *starting point for obtaining insights into one’s supply chain*. In coming years, additional tools will hopefully give greater visibility further down the chain, with more specificity as to individual products.

Inclusion of a certification, certificate, process, program, ranking, benchmark, or initiative in this Appendix is for informational purposes; it does not signify endorsement by Grace Farms Foundation.

American Tree Farm System

B Corp

BES 6001: Responsible Sourcing, Construction Products

BES 6002: Ethical Labour Sourcing Standard

Corporate Human Rights Benchmark

Cradle to Cradle Product Certification

Fair Labor Association Accreditation

Fair Stone

Fair Trade USA Certified 2.0

Fighting Modern Slavery and Human Trafficking Certificate, by FAST and ACAMS

Forest Stewardship Council: Chain of Custody Certification

Forest Stewardship Council Certification: Forest Management Certification

FRDM

Global Green Tag International MSD

Global Impact Sourcing Coalition

Global Recycle Standard 4.0

Global Sustainable Enterprise System (Standard)

International Tin Supply Chain Initiative

IRMA Standard for Responsible Mining STD 001

KnowTheChain Benchmark Methodology

LEVEL by BIFMA

Rainforest Alliance Sustainable Agriculture Standard

Responsible Business Self-Assessment and Risk

Responsible Minerals Initiative

Responsible Steel

SA8000 Standard Certification

Social LCA using Social Hotspots Database in SimaPro

Sustainable Forestry Initiative (SFI)

TCO Certified

TISC Report

UN Global Compact Self-Assessment tool

XertifX Standard-Label

Governmental and Non-Governmental Reports

Global Slavery Index

The List of Goods Produced by Child Labor or Forced Labor, U.S. Department of Labor

Trafficking in Persons Report (U.S.)