

FOREST IN CHAINS

A CALL FOR ETHICAL APPROACH WHEN BUILDING WITH TIMBER

CHALMERS UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF ARCHITECTURE AND CIVIL ENGINEERING
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CHAINS OF CARE

ACKNOWLEDGEMENTS

I am grateful...

To God for renewing my strength and

giving me perspective on what truly matters;

To my loving husband and best friend Kleber for his unconditional support,

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but also reminded me to breathe and have fun!

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MASTER THESIS IN ARCHITECTURE

CHALMERS UNIVERSITY OF TECHNOLOGY

DEPARTMENT OF ARCHITECTURE AND CIVIL ENGINEERING

MASTER PROGRAM IN ARCHITECTURE AND PLANNING BEYOND SUSTAINABILITY (MPDSD)

DIRECTION: DESIGN ACTIVISM BEYOND BORDERS

SUPERVISORS: SHEA HAGY & LIANE THUVANDER

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ABOUT ME

My name is Claudia Larsen and I'm originally from Curitiba, Southern Brazil. A region that received millions of European immigrants from the early 1800s. My mom's family is Italian and my dad's family is Danish/German.

My dad's family was in the timber business for many generations up until my grandfather and the woodyard was often our playground as kids.

My architectural education and work experience are combined between Brazil, Spain, the UK, and now Sweden. This has naturally prompted me to frequently look for similarities, connections, and better practices.

More recently I've started reflecting on what ties us all together, sort of 'the global market of architecture'. I learned that the construction industry is the least modernized of the industries, which allows for unsustainable practices, such as illegal



materials trade and modern slavery, to hide behind its inefficiencies and complexities.

To be honest, coming across these notions of modern slavery and illegal trades, was quite shocking to me, especially when looking at some numbers. Some people are really profiting from the suffering, literal sweat, and blood of other people, who simply have no other choice.

But this then led me to think that our profession is all about choices, however, are we making the right ones? Do we have the right information to hand to ensure our choices contribute towards achieving the sustainable development goals?



Figure SB-01. Map produced by author using Map Chart

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ABSTRACT

Globalization facilitated many advancements in society. Through technology distances have been shortened, markets connected, and cultures shared. However, it has also magnified societal issues on a global scale. Illegal trades permeate all major industries, including the construction sector, and rely on the most vulnerable to build highly lucrative operations.

“Global laws forbid the use of slave labour in the built environment, yet our buildings, and the materials that go into our buildings, are heavily reliant on slave labour.”
(Grace Farms Foundation, 2020, p.4).

In the forefront of sustainable materials, timber has been progressively taking ground for being both ecologically renewable and economically viable. However, it is also among the materials at the highest risk of embedded slavery and is often linked to illegal logging, jeopardizing the social aspect and holistic approach of the sustainable development goals.

As architects, are we taking our share of responsibility and playing our part to ensure our specifications are not promoting such practices? **Does the holistic sustainable perception of building with timber reflect the reality?** Also, does the lack of ethical criteria within the construction process compromise the sustainability status of building with timber?

This thesis aims to raise awareness of this pressing crisis, with an emphasis on the timber supply chain. Having the extraction of wood in the Amazon region of Brazil as a case study, seeking an understanding of the social impact of victims of forced labour, a major type of modern slavery within the sector. By understanding the main global actors, current practices, and policies, it pursues through design to gather the relevant information and arm professionals with the right questions in pursuit of breaking the cycle of vulnerability, exploitation, and re-victimization of those in

*“GLOBAL LAWS FORBID THE
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SLAVE LABOR.”*

(GRACE FARMS FOUNDATION, 2020, P.4)

forced labour.

Continuous graphical reflections are used to support the findings and build the alternative perspectives on building with timber. A continuous construct to the final written and graphical manifestos: **A call for ethical approach in design.** Followed by a designer roadmap directing the reader to available tools to make this happen. A practical invitation for change.

KEY WORDS:

FORCED LABOUR WITHIN THE BUILT
ENVIRONMENT
TIMBER SUPPLY CHAIN
ILLEGAL LOGGING
SOCIAL SUSTAINABILITY

INTRODUCTION

AIM

OBJECTIVE:

This thesis’ objective is to call for Ethical Criteria to be included as a requirement in every construction project, toward a comprehensive sustainability approach.

PURPOSE:

The research is structured to raise awareness of the presence of modern slavery - associated with illegal practices - within the timber supply chain globally and calls for shared responsibility and action of decision-makers within the industry.

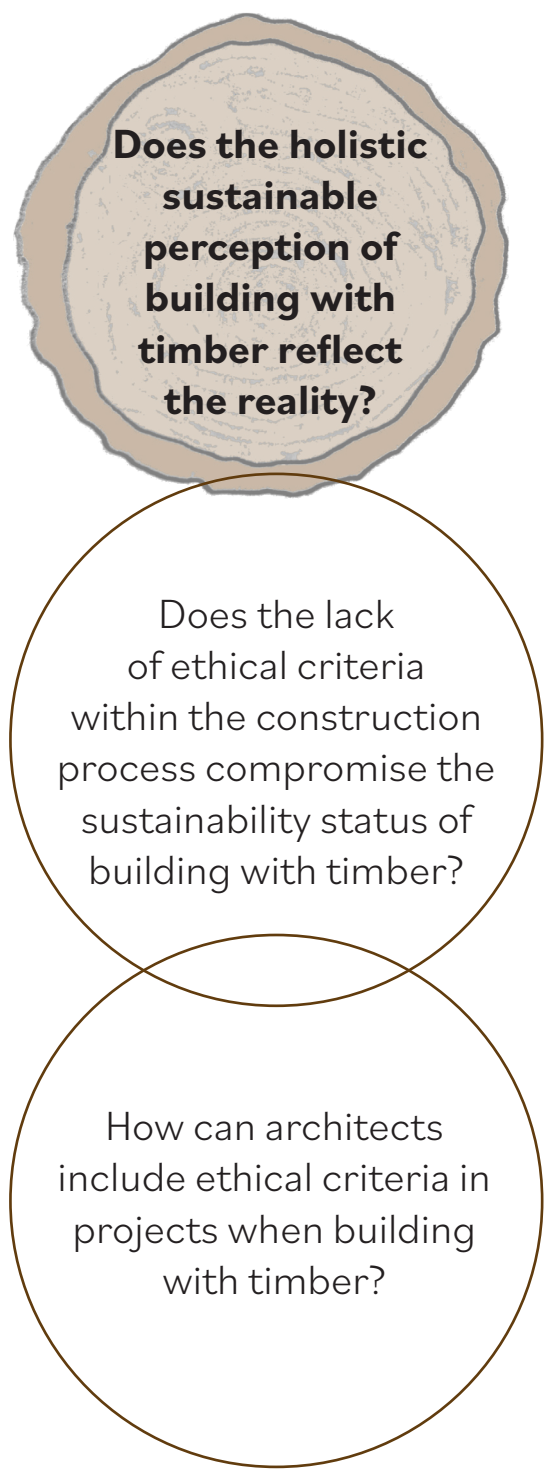
RESULTS:

A compilation on information of social unsustainability within the supply chain with a focus on timber.

Graphical and Written Manifestos: a call for Ethical Design Criteria to be included in all design projects.

Toolkit: a compilation of existing tools and resources that make Ethical Criteria Adoption possible.

MAIN QUESTIONS



BACKGROUND

For years our sustainability focus as an industry has been on the ecological and economical aspects of construction, which is reflected in the various ‘green’ certifications, however, we are failing to acknowledge the impact building and construction has on social sustainability. Inspired by the Design for Freedom Movement (Grace Farms Foundation, 2022), this thesis aims to investigate the sustainability status of timber considering its social impact within the materials supply chain.

Timber has been progressively taking ground for being both ecologically renewable and economically viable. However, it is also amongst the top five materials at the highest risk of embedded slavery (Prince, S; C de Baca, L; Thatcher, C; 2020), often associated with other illegal practices, throughout its supply chain.

Even though there has been technological progress within the construction industry over the years, it is still the least modernized, which allows such illegalities to hide behind its complexities and inefficiencies. (Prince, S; C de Baca, L; Thatcher, C; 2020). In fact, according to the (ILO, 2017), construction workers represent 18% of those found in forced labour in 2017, the second-highest rate, only preceded by domestic workers who account for 24%.

The lack of transparency within supply chains limits the effectiveness of social responsibility in our certifications. Consequently, this limits our capacity as architects and designers, to make socially responsible choices and assure a building’s sustainable credentials. Are we perpetuating this type of modern slavery within our built environment, and in that case how many slaves work for us?

METHOD

The methods used in the thesis were:

Literature studies

Literature studies: consist of a review of reports & statistics issued by Global Organizations on the topics of Human Slavery & Forced Labour within the supply chains for the built environment, with a focus on timber. A deeper investigation has been carried out on Illegal practices, such as illegal logging and laundering of wood from tropical forests

Design by Research

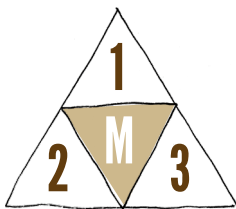
Graphical representation of findings and focus on raising awareness through questions rather than proving answers.

Case Study

An investigation of the timber supply chain within Brazil, one of the world's top producers of wood globally.

THEORY

The research has been compiled using Rhetoric Theories to attract attention and raise awareness about this pressing crisis (1), motivate professionals to act with values (2) supported by facts of the crude reality of people working within our supply chains (3). (See Figure INT-2)



- 1. LOGOS
- 2. ETHOS
- 3. PATHOS
- M = Message

Figure INT-1. Rhetoric Theory diagram (Source: C. Larsen, 2022)

READING INSTRUCTIONS

Each chapter consists of information from the different themes and critically analyses each finding by linking them – as in a chain – with the main question: *Does the holistic sustainable perception of building with timber reflect the reality?*

At the end of each chapter, there is a combination of written and illustrative expressions from a designer's point of view, intending to raise further questions, thoughts, and a potential starting point for further debate. Enjoy!

DELIMITATIONS

Is it sustainable building with timber? Not disregarding the numerous qualities of timber and the benefits of its application in the built environment, towards achieving sustainable development, this thesis focuses on the lack of ethical criteria within the

forestry industry, which allows criminal activities to take place at cost of human lives. It exposes the consequences of increasing demand within a disaggregated and unmodernised industry.a disaggregated and unmodernised industry.

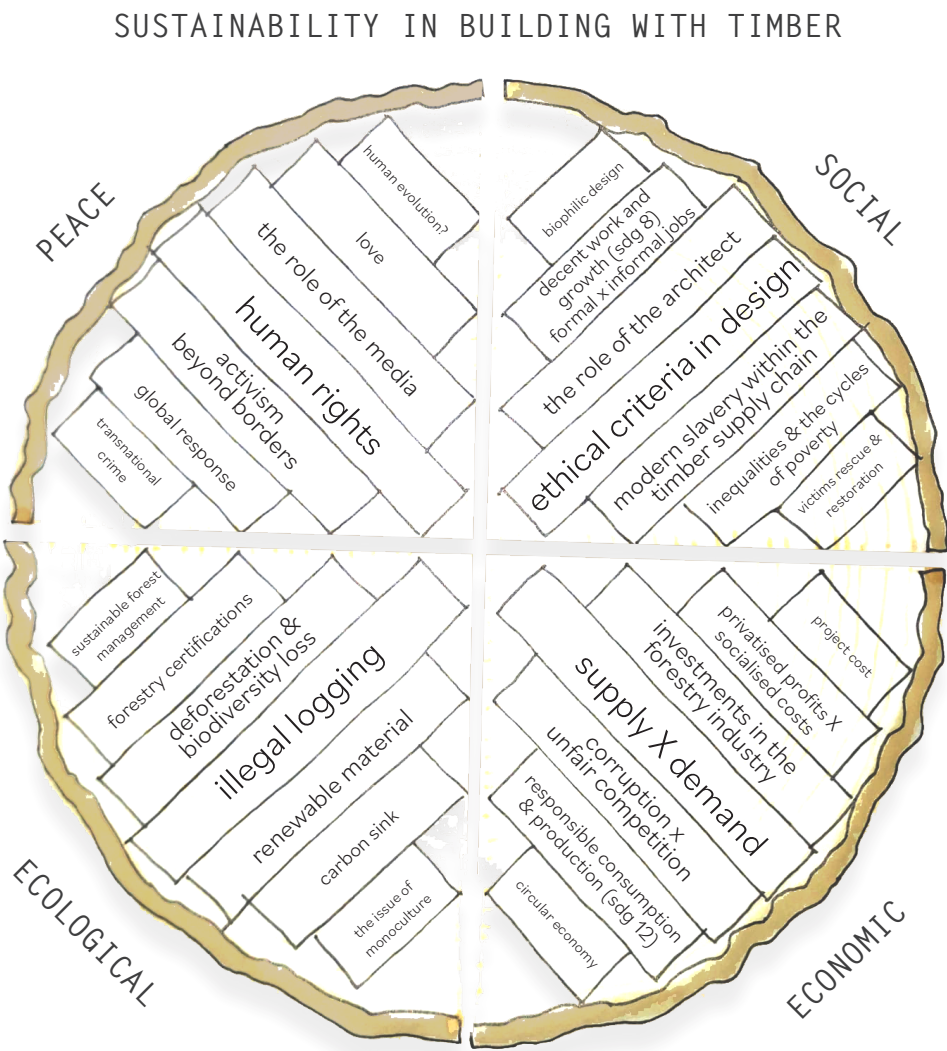


Figure INT-2. Delimitation diagram (Source: C. Larsen, 2022)

1 MODERN SLAVERY

DEFINITIONS

Modern slavery: “situations of exploitation that persons cannot refuse or leave because of threats, violence, coercion, deception, and/or abuse.” (ILO, 2017, p.16)

Modern Slavery Cycle: characterised by the victims’ conditions of vulnerability, exploitation, rescue & re-victimization. (SEE image CH1-4)

Forced Labour: "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." (ILO, 2017, p.16)

Environmental Rule of Law: “Environmental rule of law provides an essential platform underpinning the four pillars of sustainable development— economic, social, environmental, and peace. Without environmental rule of law, development cannot be sustainable”. (UNEP, 2019, p.21)

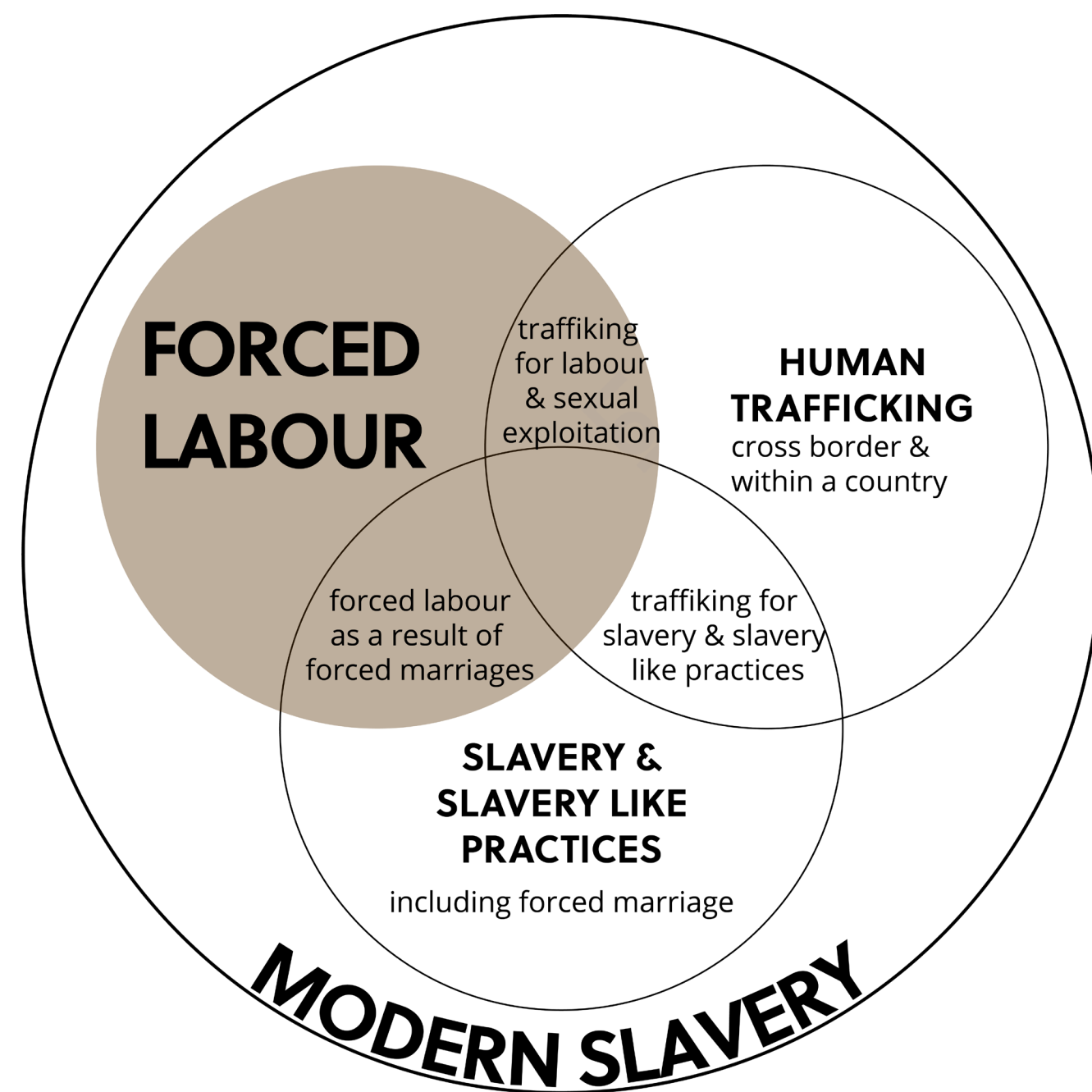


Figure CH1-1. Modern Slavery diagram. Adapted from (Walk Free Foundation, 2018)

*“I HAD NOT THEN LEARNED
THE MEASURE OF
NOR TO WHAT LIMITLESS EXTENT
OF WICKEDNESS HE WILL GO FOR
THE LOVE OF GAIN”.*

- SOLOMON NORTHUP, TWELVE YEARS A SLAVE (1853), P.48

1.1 - FORCED LABOUR WITHIN THE BUILT ENVIRONMENT

Though written more than 150 years ago, the words quoted at the top of the page express as much of a reality today as they did back then. Modern forms of slavery – forced labour, human trafficking, and forced sexual exploitation – are present in every region of the world (ILO, 2017), generate US\$150 billion per year worldwide (ILO, 2014), and permeate all major industries.

The Construction Industry is no exception, in fact, it is the largest industrialized sector globally, estimated to employ 7% of the global workforce, and at the

highest risk of forced labour. Construction workers represent 18% of those found in forced labour in 2017, the second-highest rate, only preceded by domestic workers who account for 24%. (ILO, 2017). The construction sector is known for employment conditions that are both demanding and dangerous, with high levels of industrial accidents.

Other high-risk sectors, such as garments and agriculture, have taken steps towards transparency. However, the construction sector has been slow to adopt an ethical model (Farms, 2020). Many are the challenges to overcome this reality, such as industry disaggregation, thin margins, supply chain opacity, lack of standards, enforcement, corruption, and migration workforce, all of which are

“MAN'S INHUMANITY TO MAN”,



Figure CH1-2. Trabalho Análogo ao Escravo . Source: (G1, 2019)

exacerbated by the lack of modernity within the industry. Such complexities and inefficiencies are a perfect environment for illegal practices to be hidden.

Over the years, awareness of forced labour in construction sites has started to emerge, however raw and composite materials produced using forced labour predominantly go with impunity. These are people, largely poor, who are simply searching for a decent job and a better life, that remains virtually invisible, hidden behind walls of severe exploitation, unable to leave because of violence, threats,

coercion, deception, or abuse of power. (ILO, 2020)

This is especially alarming if we take into consideration the intrinsic correlation between forced labour, poverty, and climate degradation. (Bales & Sovacool, 2021). According to UNEP (2020), the building construction industry is responsible for approximately 40% of global energy-related CO2 emissions. "A significant percentage of this comes from the extraction, processing, and energy-intensive manufacturing of building products. (CEI-Bois & Milestone, n.d., p.2)

**“HOPEFULLY
FREEDOM CAN
BECOME A
VALUE THAT IS
ALSO FRONT OF
MIND FOR THE
INDUSTRY”.**

(GRACE FARMS FOUNDATION, 2020, P.62)

**25 MILLION IN FORCED
LABOUR IN 2016**

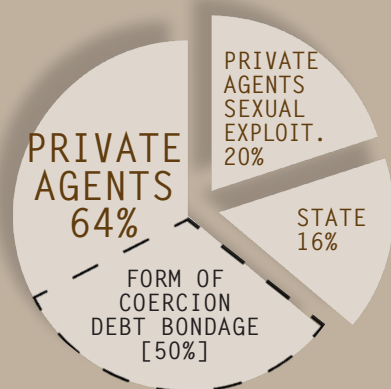
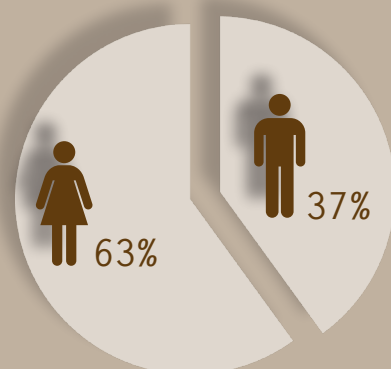


Figure CH1-3. Forced Labour Exploitation.
Produced by author based on (ILO, 2017)

1.2 KEY RISK FACTORS

The global integration of economies, including labour markets, has brought many opportunities for businesses and workers. It promoted overall economic growth, despite the economic crisis, however, not everyone has benefited from it proportionally. On any given day in 2016, 25 million people could be found in forced labour, of which 17% were children. Men accounted for 37%, women 63%, and 50% of all victims of forced labour imposed by the private sector were affected by debt bondage (ILO, 2017). [See Image CH1-5]

In fact, The Global Estimates indicate that the private economy accounts for the majority of forced labour, which highlights the importance of the collaboration with the business community, along with employers and workers' organizations, and civil organizations – to eradicate forced labour in supply chains and the private economy as a whole. (ILO, 2017)

Another important consideration found by the ILO (2017) was the differences in sex in the typology of forced labour exploitation. Male

victims were much more likely to be found in the agriculture, construction, manufacturing, and mining sectors.

Poverty, lack of education, illiteracy, gender, and migration are some of the socio-economic factors that make people vulnerable to forced labor. Some of the victims will eventually get rescued, but if they cannot find

better conditions for those that made them vulnerable in the first place, they are most likely to be re-victimized and caught up in this endless cycle of poverty. (ILO, 2014). [See Image CH1-4]

Education and literacy are crucial factors, as educated individuals are more likely to know their rights, and be able to read contracts, being less exposed to exploitation and coercion.

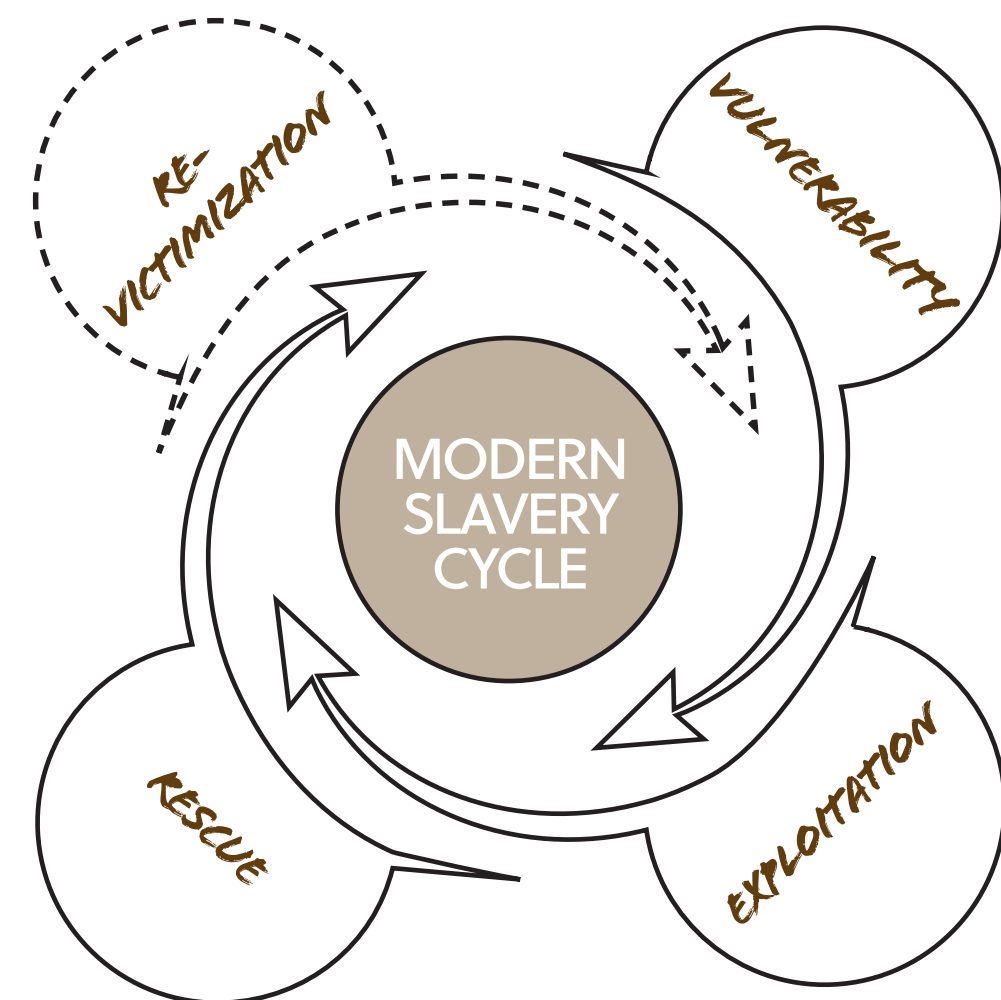


Figure CH1-4. Modern Slavery Cycle. Adapted from (A21, n.d.)

1.3 - WHAT ARE THE IMPACTS?

The most severe and lasting impacts are suffered by the victims and survivors who according to the ILO (2014), will usually lose much of their earnings due to wage retention, debt payments, and underpayment of wages, and will face strenuous conditions with little or no pay. The physical and emotional traumas may also follow them for much of their lives. (See Figure CH1-5).

The prevalence of forced labour is also bad for law-abiding businesses as they are faced with unfair competition and risks of denigrating the reputation of entire sectors and industries. Governments and societies are also harmed as “the profits are privatized, while the costs are socialized”. (Prince, S; C de Baca, L; Thatcher, C, 2020, p.56). Profits generated from the ‘theft’ of the victims’ labour bypass the national tax collection system and the costs for dealing with forced labour cases are significant. The investigation, law enforcement, rescue, and assistance of victims come at a significant cost.

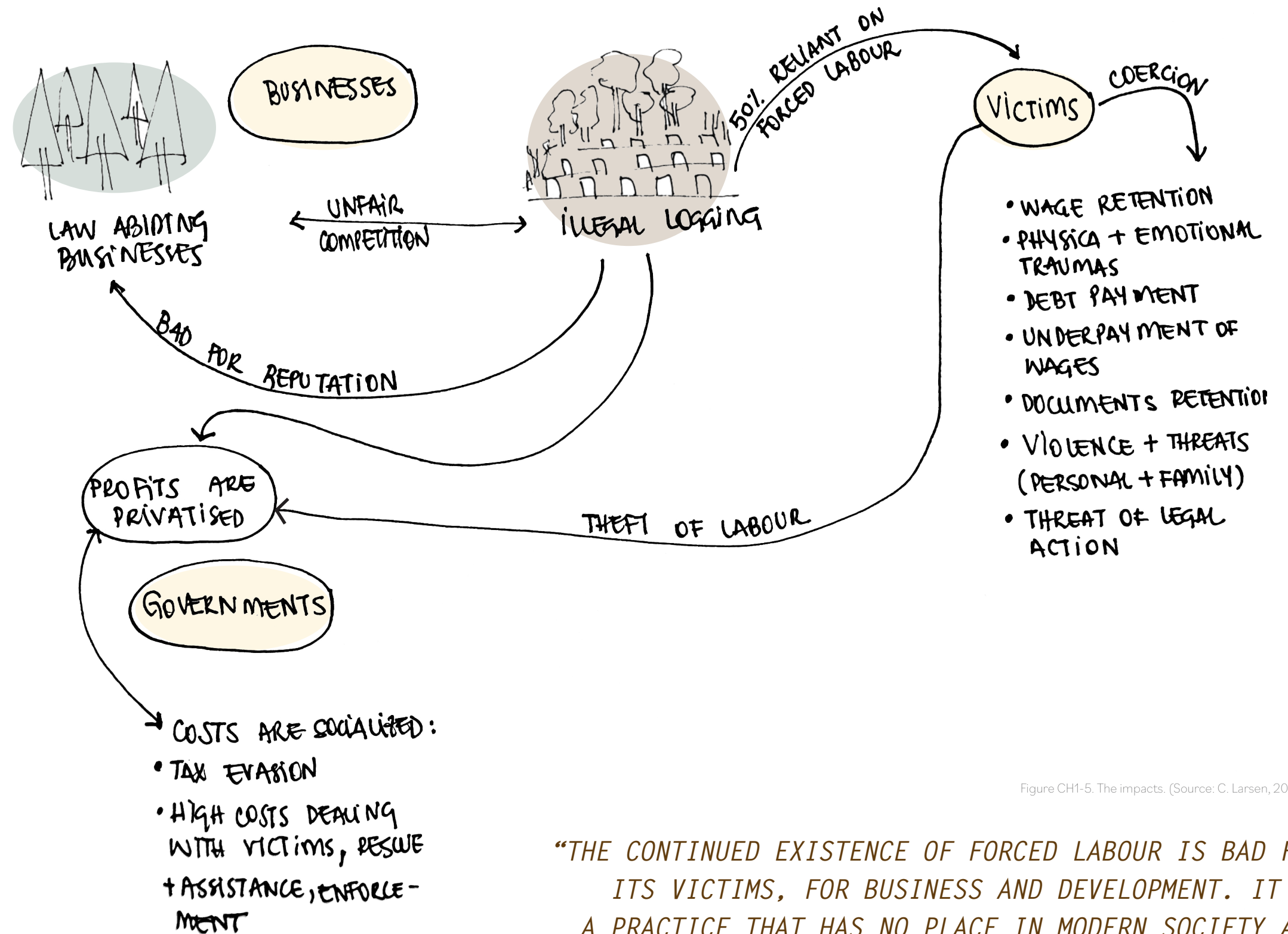


Figure CH1-5. The impacts. (Source: C. Larsen, 2022)

“THE CONTINUED EXISTENCE OF FORCED LABOUR IS BAD FOR ITS VICTIMS, FOR BUSINESS AND DEVELOPMENT. IT IS A PRACTICE THAT HAS NO PLACE IN MODERN SOCIETY AND SHOULD BE ERADICATED AS A MATTER OF PRIORITY”

(ILO, 2014, P.47)

1.4 - THE FIGHT AGAINST MODERN SLAVERY - 21ST CENTURY MILESTONES

Efforts to eliminate modern slavery in the 21st century have progressively been accomplished. From individual countries to the United Nations, as well as committed movements such as Design for Freedom, adds to the hours of research and investigation to solve this global puzzle.

The adoption of the 17 Sustainable Development Goals by the United Nations marked an important global milestone in the fight against modern slavery. As although all individual efforts are valid, it only truly becomes effective when tackled consistently and collaboratively.

This becomes especially evident when investigating modern slavery within the built environment and the global market of the materials supply chain. It is no longer possible to isolate such issues to individual countries, as the domino effect reverberates on a global scale, and therefore requires a global solution. The Design for Freedom Report and Toolkit proposes exactly that, the collaboration of all built environment professionals to develop and use consistent tools within construction materials supply chains to boost technology and bring transparency to fight this crisis.

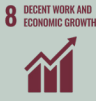
1900-2021	UNITED STATES		U.S. Lacey Act was specifically amended in 2008 to include illegal timber prohibition of entry into the U.S.
1998	ILO DECLARATION ON FUNDAMENTAL PRINCIPALS AND RIGHTS AT WORK		Member States Commit to respect and promote principles and rights in four categories: "Freedom of association and the effective recognition of the right to collective bargaining, the elimination of forced labour or compulsory labour , the abolition of child labour and the elimination of discrimination in respect of employment and occupation". (ILO, 1998)
2000	UNITED NATIONS		Convention against Transnational Organised Crime - Protocol to Prevent, Suppress, and Punish Trafficking in Persons. The first global legally binding treaty with a definition of trafficking in persons agreed upon internationally.
2004	BRAZIL		The National Pact for the Eradication of Slave labour is launched. A collaboration between civil organizations, businesses, and government to promote the engagement of companies in the prevention and eradication of forced labour in their supply chains. Enforcement includes the inclusion companies in a 'dirty list'.
2004	UNITED NATIONS		Appointment of a Special Rapporteur on Human Trafficking. Responsible to investigate, monitor, and recommend solutions to this specific human rights violation.
2005	INTERNATIONAL LABOUR ORGANIZATION		First Global Slavery Index is released. The number of slaves was estimated to be 29.8 million globally. The 2014 index estimated an increase to 35.8 million.
2011	CALIFORNIA		California Transparency in Supply Chains Act. Sets a requirement to disclose efforts to eliminate forced labour and human trafficking from major manufacturing and retail firms' supply chains.
2013	WALK FREE FOUNDATION		First Global Slavery Index is released. The number of slaves was estimated to be 29.8 million globally. The 2014 index estimated an increase to 35.8 million.
2015	BRITAIN'S MODERN SLAVERY ACT		Increases jail sentence for traffickers from 14 years to life, allows authorities to seize assets, and pay compensation to victims. Sets measures to protect people at risk and requires businesses to disclose efforts to ensure slavery-free supply chains.
2015	UNITED STATES		U.S. Trade Facilitation and Trade Enforcement Act (TFTEA)
2015	UNITED NATIONS 		Adopts 17 Sustainable Development Goals, with Goal 8 focused on Decent Work and Economic Growth where targets 8.7 and 8.8 calls for the end of slavery and eradication of forced labour and human trafficking by 2030.
2017	FRANCE		French Corporate Duty of Vigilance Law
2018	AUSTRALIA		Modern Slavery Act
2020	GRACE FARMS FOUNDATION		Design for Freedom Report
2021	UNITED STATES		U.S. Uyghur Forced Labour Prevention Act
2022	GRACE FARMS FOUNDATION		Design for Freedom Tool Kit

Figure CH1-6. 21st Century Modern Slavery Fight Milestones. Adapted from (Thomson Reuters Foundation, 2015 & SDG's)

1.5 - "ONCE YOU KNOW IT YOU CAN'T UNKNOW IT"

-SHARON PRINCE - CEO GRACE FARMS FOUNDATION
(G. FARMS, 2021)

What is it about numbers that can stir our emotions so deeply? Quickly triggers either mass activism filled with compassion or stagnation when the problem seems too big for our agency. And in that case, the thought process usually goes to – ‘Well, someone else with more influence is surely taking care of this crisis’. It appears, when it comes to modern slavery within the built environment, that all of us have been having this exact same reaction.



Figure CH1-7. Overwhelmed.
(Source: C. Larsen, 2022)

Our lack of communication and collaboration has allowed criminal activities to take place subsidized by slave labour.

How is it possible that for so many years, we have gotten away with proclaiming innovation in our designs and techniques to better serve the people inhabiting our projects and our planet, nevertheless completely ignoring all those countless people extracting and producing the materials that make buildings materialise?

To be quite honest, what struck me the most, is that even after 20 years in the industry, I had never actually found myself thinking about it, as if materials extracted themselves from the natural environment into manufacturers and suppliers' facilities, or naively assumed that at least most of those people had decent working conditions.

We dedicate our lives to designing for people, and investigating how systems



Figure CH1-8. Action now!
(Source: C. Larsen, 2022)

and materials impact our wellbeing, health, productivity, and social engagements, but how little do we engage with those that play such indispensable roles in our supply chains?

This is a crisis that can no longer be ignored, there must be a radical shift in the way we lead this industry. Otherwise, we are being nothing but hypocritical by calling our designs 'green' or 'sustainable' for future generations, when this is only true still for a minority of the planet's population.

If each sector would take their share of responsibility according to their industry's impact, with a share of 40% of CO2 emissions, the construction industry has no other alternative than to modernize now! And us, Architects hold a strategic position within the sector, with potential for real change. Every decision made, every line drawn, and every material chosen has a direct impact on the people using the space as well as

the livelihoods of people across the planet.

It is not possible to keep outsourcing the responsibility.

The profession must shift to looking at the design and construction process holistically — from material extraction to assembly and operation — ensuring safe and equitable labour practices.

The first step for this shift to happen is awareness. Instead of feeling overwhelmed and stagnated with the various challenges this shift bestows, how about we change our perspectives, our points of view, and as a collective use our agency to engage with supply chains. Turning those alarming numbers and percentages, into real people, professionals, whom we heavily rely on to keep our industry moving. The fight for their freedom and rights is the same fight to make our designs truly and holistically sustainable." Once you know it you cannot unknow it!". It is time to act!

2 MATERIALS SUPPLY CHAIN WITHIN THE BUILT ENVIRONMENT

DEFINITIONS:

Freedom of association: it is a human right that ensures humans are free to form and participate in formal or informal groups. (ILO, 1996-2022)

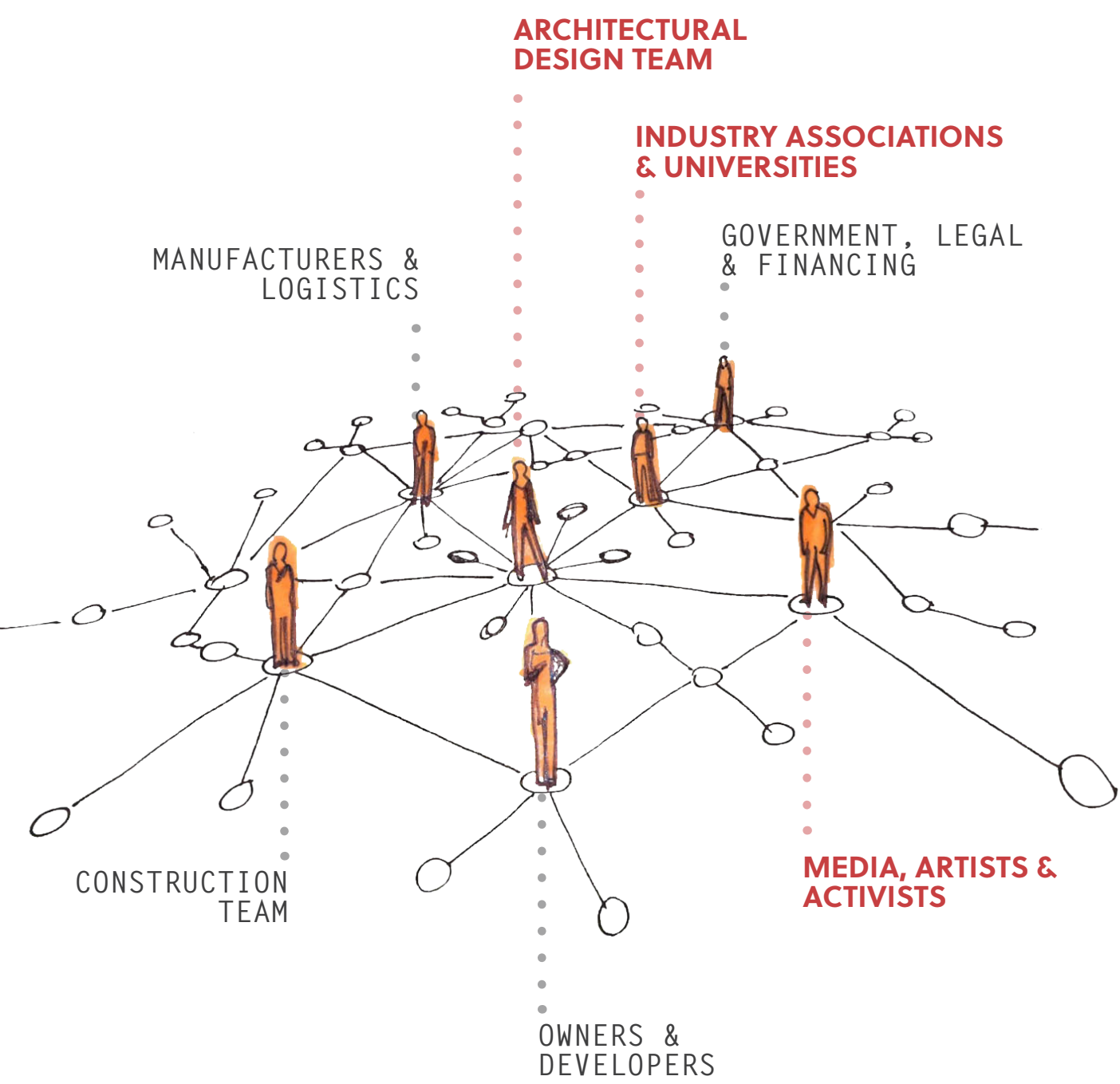
Gross domestic product (GDP): is a measure that captures a country's economic output, countries with higher GDPs will have a greater number of services and goods generated within them, often associated with higher quality of living.

G20 countries: Intergovernmental forum to address leading issues in the global economy,

such as sustainable development, financial stability, and climate change mitigation. They are *Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union*. **Spain is also invited as a permanent guest.** (Walk Free Foundation, 2018)

Timber laundering: much like money laundering, it means converting illegally cut-logs to legally certified timber by exploiting legal gaps.

WHO INFLUENCES THE BUILDING SUPPLY CHAIN?



The highlighted actors represent architects' direct spheres of influence

Figure CH2-1. Who influences the building supply chain?
Source: Produced by author based on (Grace Farms Foundation, 2020)

2.1 - THE COMPLEXITY OF THE SUPPLY CHAIN

The Built environment is complex, built by people for people. All stakeholders play a vital role in the construction process, however not all consider the impact of their decisions holistically. It is expected from construction companies, for example, to deliver on quality, schedule, and budget. However, it is rarely expected that contractors make decisions based on the social and environmental impacts of the materials supply chain or the construction methods being used. This needs to change. The increasing complexity of buildings and the global market of materials make it nearly impossible to eliminate forced labour from the supply chain without these values being incorporated into the practices of all of those involved, including subcontractors, manufacturers, and commodities-level actors in areas such as Forestry.

Changing the status quo takes time, especially when dealing with conflicts of interests and policies, however, the reality is we don't have the 50 years it took to normalize

'green materials' after a small group sounded the alarm (Prince, S; C de Baca, L; Thatcher, C, 2020), so we must review lessons learned from this process to advocate human dignity by engaging a generation committed to eliminating human suffering from our built environment.

Once aware most industry professionals would agree that the presence of modern slavery within the built environment is unacceptable, the great majority would also say that their role is too small and their agency too limited to promote real change. (Prince, S; C de Baca, L; Thatcher, C, 2020) Which evidences the need for collaboration.

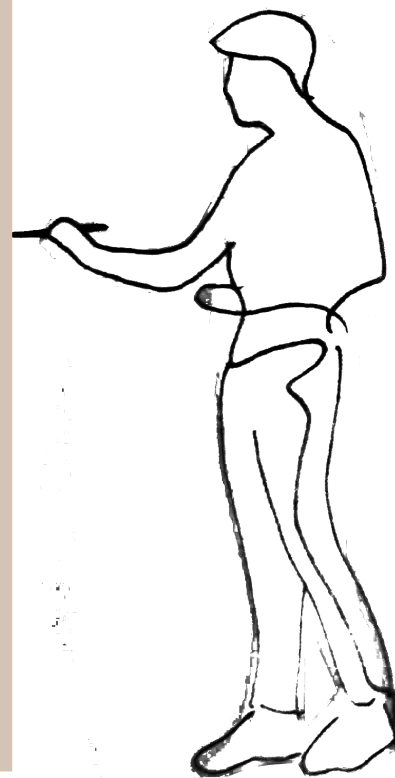
So, how to turn individual moral beliefs into industry action? Many movements within the industry emerged with advancements in technology. Two main advancements are progressively happening are the ability to track and trace supply chains and the off-site construction in a controlled environment, both of each if embedded with a 'slave-free filter'

would advance the agency of ethical design. The key is collaboration, by sharing these realities, ideals, and tools a new paradigm in design can emerge.

The **Architectural Design Team** holds a strategic position of influence and can be a key driver of change with awareness and correct tools at hand. The ethical response is now live in society and there is an opportunity to bring awareness to clients and key stakeholders.

Architectural Education also has a key role in raising a new generation of architects with an ethical design mindset, aware of the existing tools, and taking part in the advancement and development of such technologies. A holistic approach is a must-have, especially when it comes to critical aspects of projects, such as materials choice. Students tend to repeat the status quo inertia of the industry, most of the time without questioning whether who came before truly got it right or not. Change must be tackled at both levels, both at formation (students) and re-formation (industry professionals).

With the engagement of all of those involved and transparency, there is potential for less conflicting information about sustainable practices, and hopefully, public disbelief turns into activism at all levels. **The Media and Arts** can play an important role in raising awareness. On the other hand, media is also an important sales tool for industries, where only the positive side of building with certain materials is portrayed. This could, therefore, be considered a form of misinformation, as it influences designers to specify certain materials without showing all the impacts throughout the supply chain.



“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”.

(GRACE FARMS FOUNDATION, 2020, P.77)

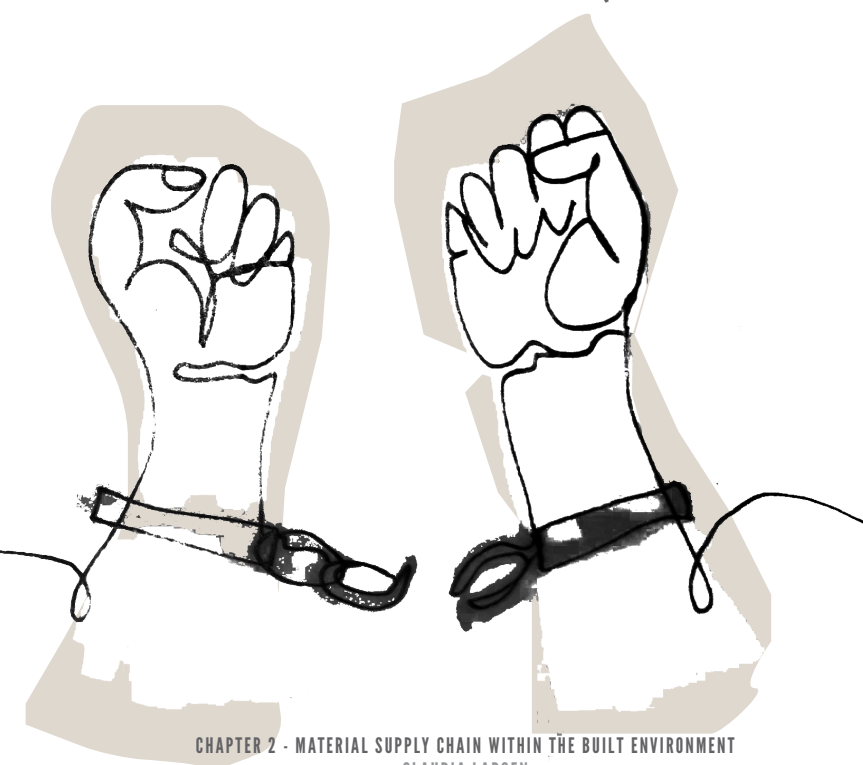


Figure CH2-2. Line impact
Source: Produced by author

2.2 TIMBER, AN AT-RISK MATERIAL

Timber is amongst the most used construction materials in the world, it is also at high risk of embedded forced labour and human trafficking within its supply chain. It is estimated that the Forestry Industry formally employs 13 million workers and another 41 million informally (FAO, 2022), which allows for exploitative conditions both in logging and sawmills.



Workers are usually migrants and

work tends to take place in **remote areas**, making labour inspections challenging (FAO, 2022). Workers are normally found in **poor living and working conditions** with excessive working hours, suffer non-payment of wages and debt-base coercion. (Baumann, 2022).

Risks of forced labour are found in both developed and developing countries, reinforcing that, efforts to end it must occur at a global level. And given that

an estimated 38% of wood products are being used for building and construction (Innovative Tools in the Movement Toward Slave-Free Buildings, 2020), the origin of timber, how and by whom it is produced is the responsibility of all those involved, from decision makers on design, construction, to manufacturing teams worldwide.

Figure CH2-3. Forced Labour
Source: Adapted from (Ripper, n.d.)

Main producers of at risk

timber

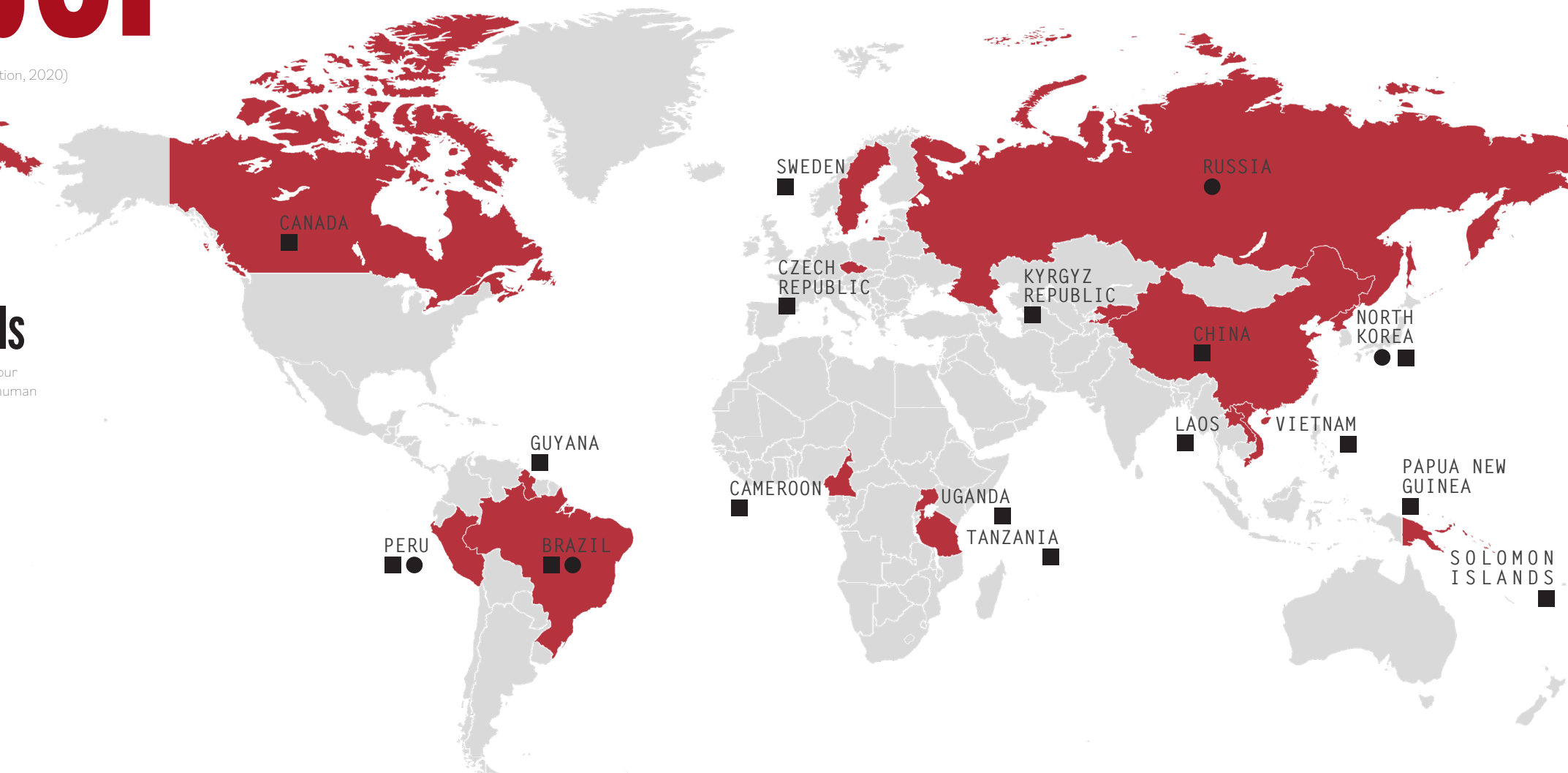
■ HUMAN TRAFFICKING
● FORCED LABOUR

Figure CH2-4. Blood timber
Source: Adapted from (Grace Farms Foundation, 2020)

The at risk materials

*at risk of being made with child and forced labour under conditions that deprive them from their human rights. (Grace Farms Foundation, 2020)

rubber
glass
fiber & textiles
steel
electronics
timber
bricks
stone
copper
iron
minerals
precursors



2.3 THE FLOW OF ILLEGAL TIMBER IN A GLOBAL CONTEXT

The increasing demand and opacity of the timber supply chain, both attract and allows criminal activities to take place. It is estimated that between **15-30% of timber comes from illegal sources**, and for **tropical soft and hardwood** that number may be **as high as 90%**. A great proportion of this is only possible due to the flows of funding from investors based in the EU, U.S., and Asia. (Nellemann, 2014)

Illegal logging is the most profitable environmental crime. It can **generate revenues up to 5-10-fold higher than legal practices** for all those involved. It usually goes without impunity as

it normally takes place in conflict regions or where there is widespread corruption. (Nellemann, 2014)

This then becomes a transnational crime challenge when timber is laundered within its supply chain and this lack of transparency makes it extremely difficult for those purchasing the material to ascertain whether it comes from illegal or legal sources and under what conditions it has been produced.

Although some actions have been taken by countries, China, the largest importer of timber globally, as an example, has been found processing and selling timber found in illegal shipments from Asia and Africa (Waldhorn, 2022).

At risk sawn timber

Brazil softwood	Brazil & Peru hardwood	Russia softwood	Russia hardwood
Pine	Peru: White Oak Walnut Brazil: Tropical lumber	Pine Spruce Fir	Oak Birch Aspen Elm

Applications and end products

Sawn timber

Architectural roof trusses, cladding, decking, fencing, flooring, framing, pergolas | Rails, balustrades; interior/exterior | Retaining walls | Stairs | Packaging

Wood veneer

Laminated wood | Furniture applications and decoration | Interior doors | Mosaics | Inlays | Flooring decoration | Door cladding

Plywood

Laminated wood | Furniture | Formwork for wet concrete | External wall construction | Flooring systems | Packaging

Laminate wood

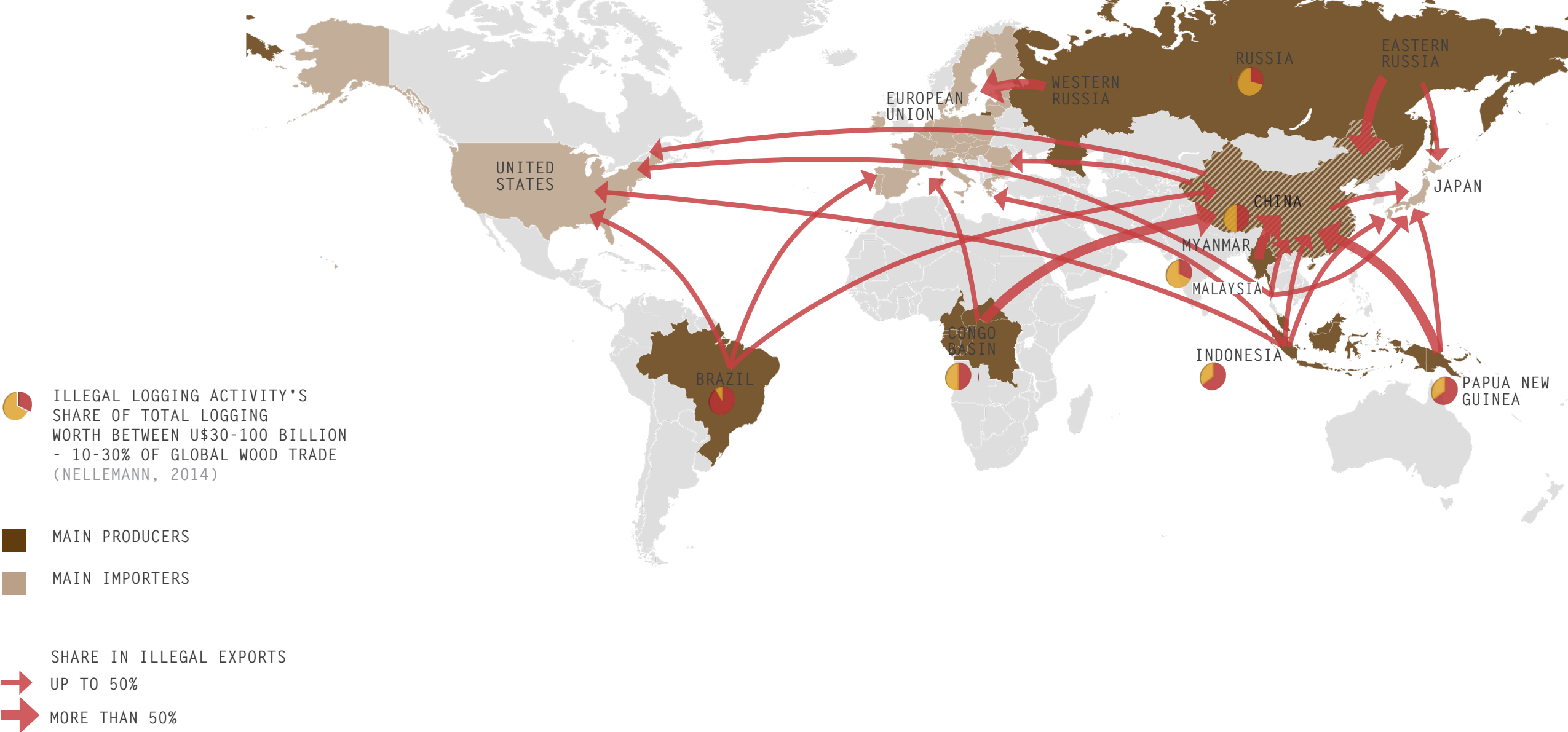
Flooring | Furniture | CLT (Cross-Laminated Timber) | Doors | Cabinetry

Figure CH2-5. At risk sawn timber. Source: Adapted from (Grace Farms Foundation, 2022)

The production & flow of illegal

timber

Figure CH2-9. Blood timber flow
Source: Adapted from Black wood dependency - Main bilateral flows of illegal timber map (Nellemann, C, INTERPOL Environmental Crime Programme, 2012)



10 ways to conduct illegal logging

1. Logging in protected areas
2. Logging without permits in unprotected areas
3. Illegal logging in conflict zones
4. Logging in excess of permit or concession quotas
5. Logging with forged or re-used permits
6. Obtaining permits through bribes
7. Establishing or expanding plantations
8. Agricultural expansion by small scale farmers
9. Cattle ranching and soy production
10. Widening road corridors, mining, or other fellings

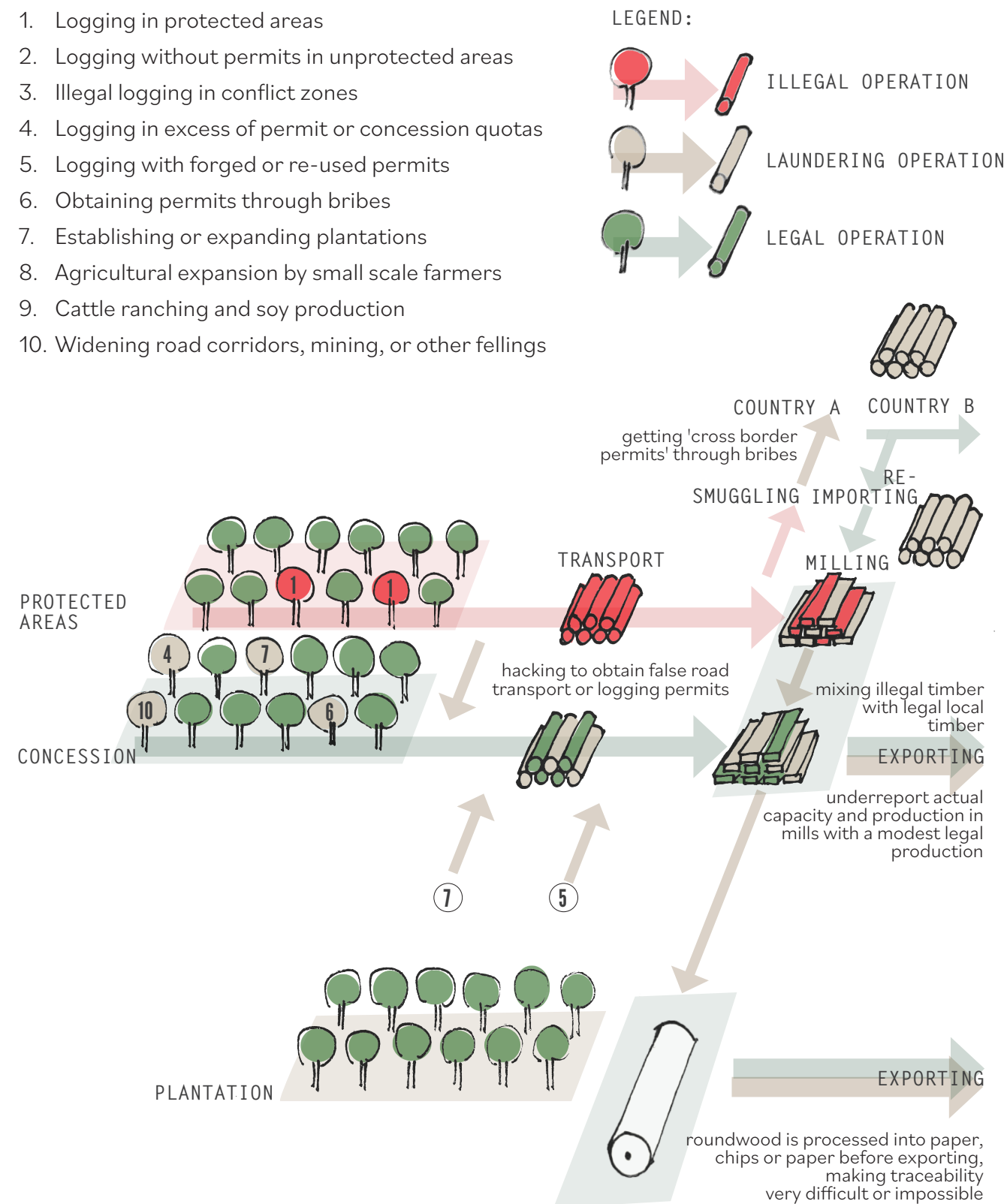


Figure CH2-7. Illegal logging and log laundering . Source: Adapted from (Nellemann, 2014, p.65)

2.4 FORCED LABOUR AND ILLEGAL TIMBER: INEXTRICABLE RELATIONSHIP

Illegal logging can occur in any phase of the supply chain (see Figure CH2-7) and perpetrators use various tactics to conduct their ‘businesses’ unnoticed. Workers in illegal timber operations, usually migrants, are exposed to unsafe working conditions where regulations are not usually enforced due to their remote locations, lack of oversight, and government corruption. It is estimated that up 50% of illegal logging globally is reliant on forced labour. (ILO, 2017)

When compared to other sectors,

Forestry holds 11% of victims of forced labour

exploitation and there is a prevalence of **male victims – 68%**, while female victims account for 32%. (ILO, 2020) They are usually kept in poor living conditions, usually exposed to the elements, with no sanitation, or proper cooking facilities, working long hours with minimal, if any, safety equipment.

Perpetrators will use various forms of coercion to prevent them from leaving, which may include personal threats to them and their families, retention of documents, and even death.



“AT THE END OF THE YEAR, IF YOU HAVE A LOT OF MONEY TO RECEIVE, THEY WON'T PAY YOU. THEY'LL HAVE YOU KILLED. THEY MIGHT OWE R\$10,000 OR 15,000 [US\$2,400 OR 3,600] TO A WORKER. BUT A GUNMAN WILL COST ONLY R\$3,000 [US\$700]”

– FORESTRY WORKER IN THE AMAZON (KNOWTHECHAIN, 2019, P.1)

Figure CH2-8. Violence in the Forest
Source: Adapted from (Pimentel, 2019)

2.5 TIMBER TRANSPARENCY:
ALREADY AVAILABLE AND REQUIRED

Although most forestry certifications available (See Figure CH2-9), figure the mandate of slave-free workmanship as part of the criteria, companies can still have the certification without disclosing a supplier list and/or information on their supply chain workforce. Through research Know the Chain (2019) revealed the results of an assessment of the largest publicly listed companies in the forestry and paper sector. There were major gaps in supply chain transparency, stakeholder engagement, and freedom of association. It is shocking to learn that none of the companies disclosed their supplier list with the associated workforce, nor do they engage with global or local trade unions to support freedom of association in their supply chains. (See Figure CH2-10)

As an industry, it is imperative that we not only know where the materials are coming from, but who is sourcing and how. Unethical sourcing can be connected to environmental injustice, as well as ecological degradation. (Prince, S; C de Baca, L; Thatcher, C, 2020)

CERTIFICATIONS

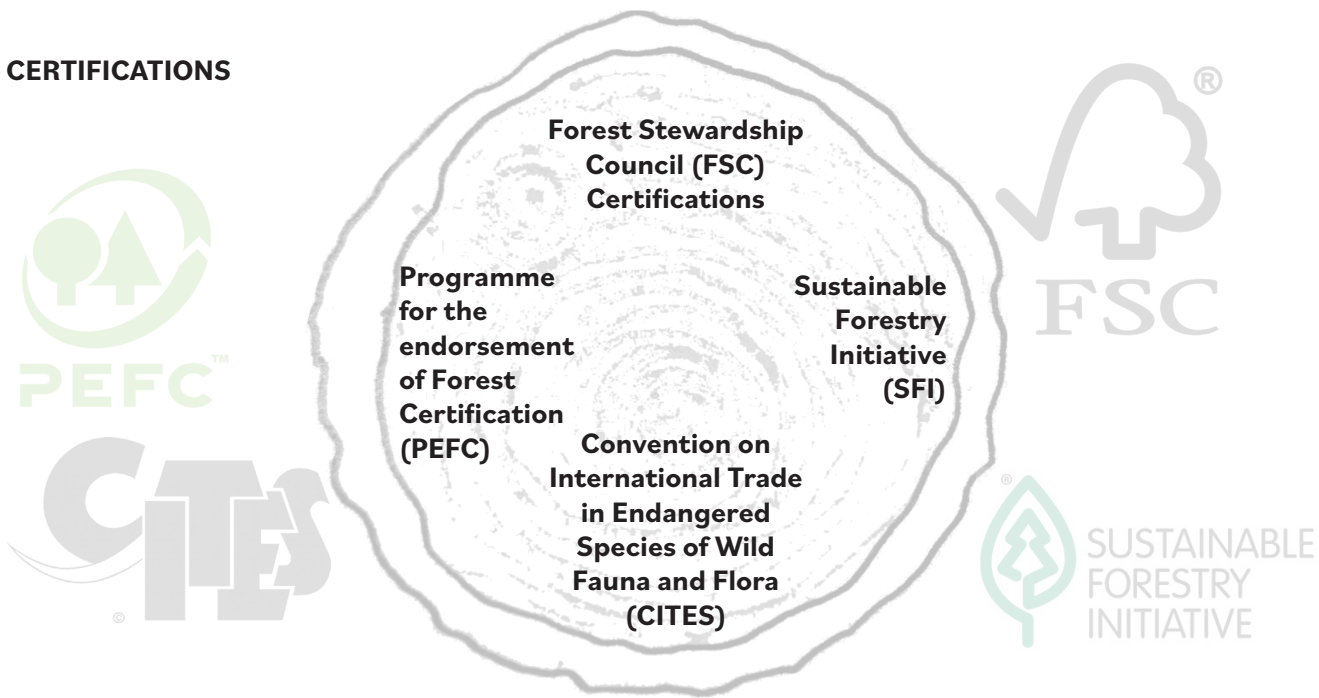
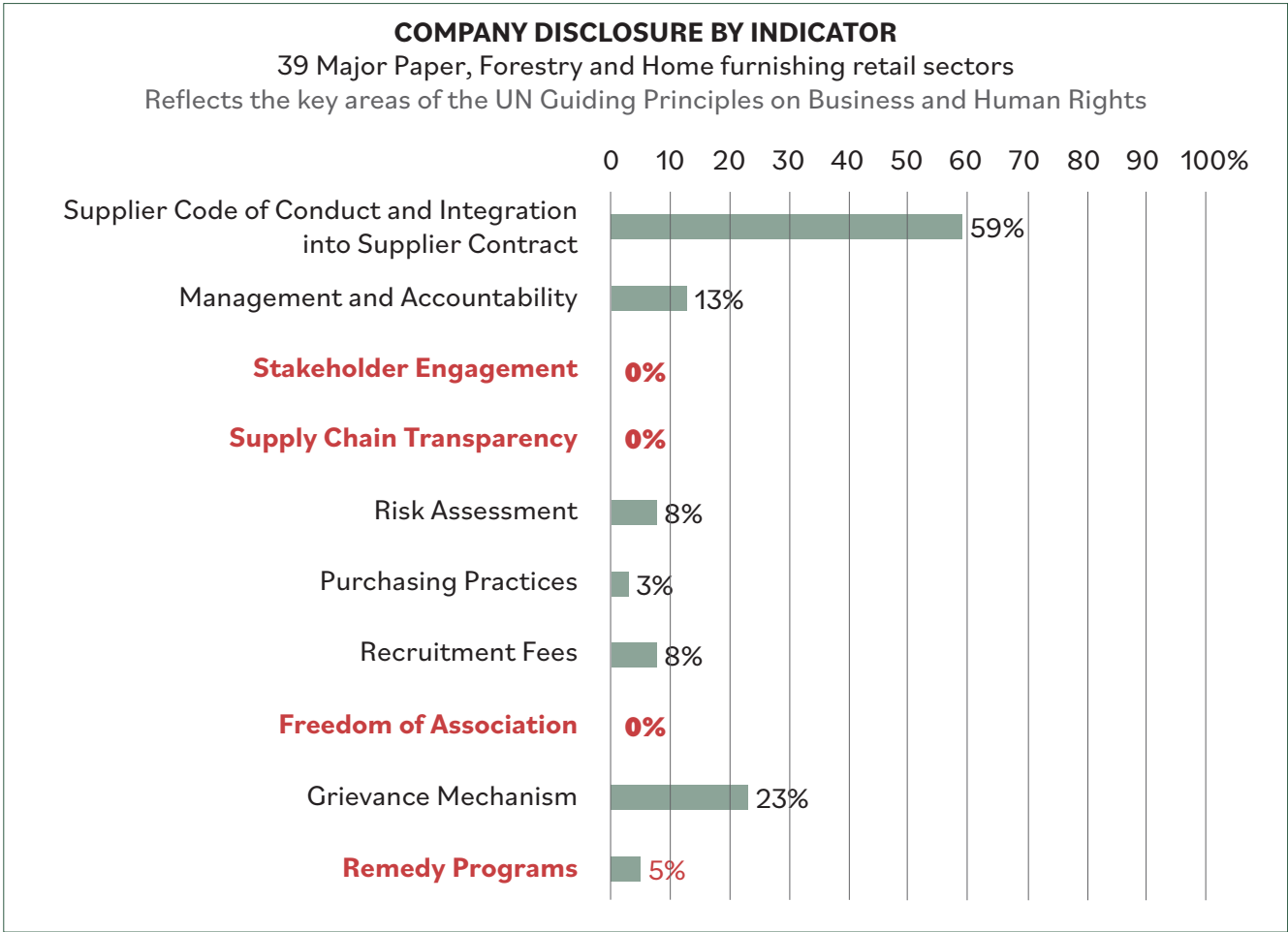


Figure CH2-9. Certifications
Source: Produced by author



The graphic captures the percentage of companies disclosing at least some information on each of the indicators.
Figure CH2-10. Company Disclosure by indicator. Source: Adapted from (KnowTheChain, 2019)

“IT IS TIME TO AMEND
OUR CERTIFICATION AND
RATING SYSTEMS TO
PLACE GREATER PRIORITY
ON ADDRESSING FORCED
LABOUR IN OUR BUILDING
MATERIALS”
(GRACE FARMS FOUNDATION, 2020, P.66)

2.6 WHO IS TO BLAME?

Expanding markets and networking beyond borders are the modus operandi for most businesses, suppliers from across the globe take orders and make shipments regularly.

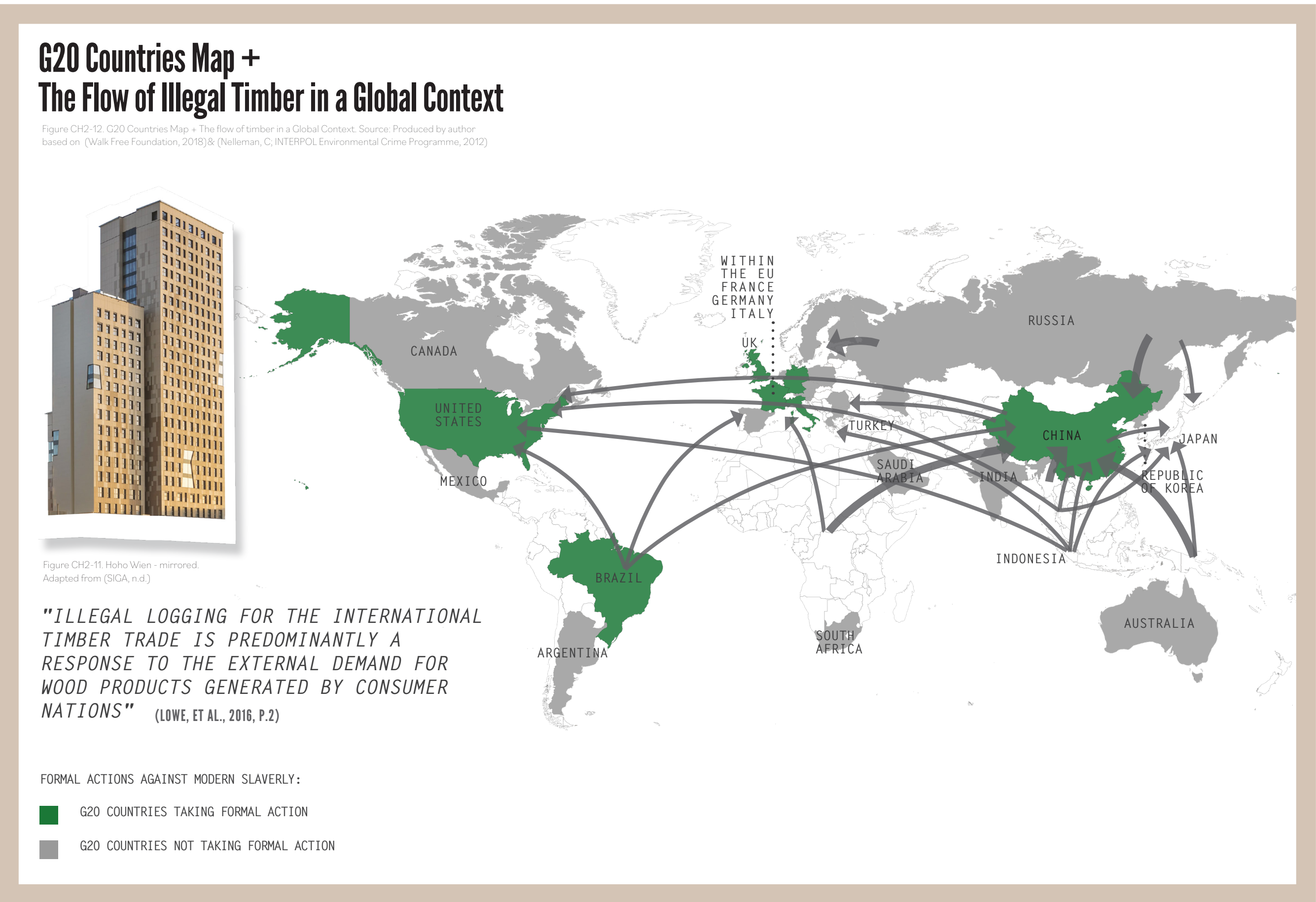
The social responsibility for eliminating illegal logging and associated forced labour practices within the timber supply chain is often placed in the countries where the crime is happening. Although these countries have their share of responsibility, they are certainly not alone.

Simply put, legal or illegal, there is supply because there is demand. It is important to understand where the products produced by forced labour are being sold and consumed. According to the Global Slavery Index (Walk Free Foundation, 2018) taken together, the **G20 Countries are annually importing U\$354 billion worth of these at-risk materials – of which U\$ 1.4 billion relates to timber.** However, only seven G20 countries have formally taken

action to stop governments and businesses from sourcing services and goods produced by forced labour.

So, who is buying all these materials? Well, governments are the biggest buyers, but we, the common citizen should not take our impact for granted, we can and must demand accountability from our governments, as well as take our individual share and act on it. It is not good enough to expect change and continue to consume ‘as if there was no tomorrow’.

Also, it is important to note that **institutional investments in forestry have grown exponentially “from an estimated US\$10-15 billion in the early 2000s to over US\$100 billion today”.** (KnowTheChain, 2019) However, what is truly shocking is that their risk assessment is limited to deforestation and climate change, and forced labour risks are rarely on the agenda, even though very little if any, action is taking place to address them.



2.7 IT'S ALL FOR PEOPLE BY PEOPLE.
WHICH PEOPLE?

Building with timber is sustainable for whom? Biophilic design and the ecological sustainability sense are progressively driving designers toward timber.

However, **is the industry ready to extract and process all this timber with the same dignity for ALL?**

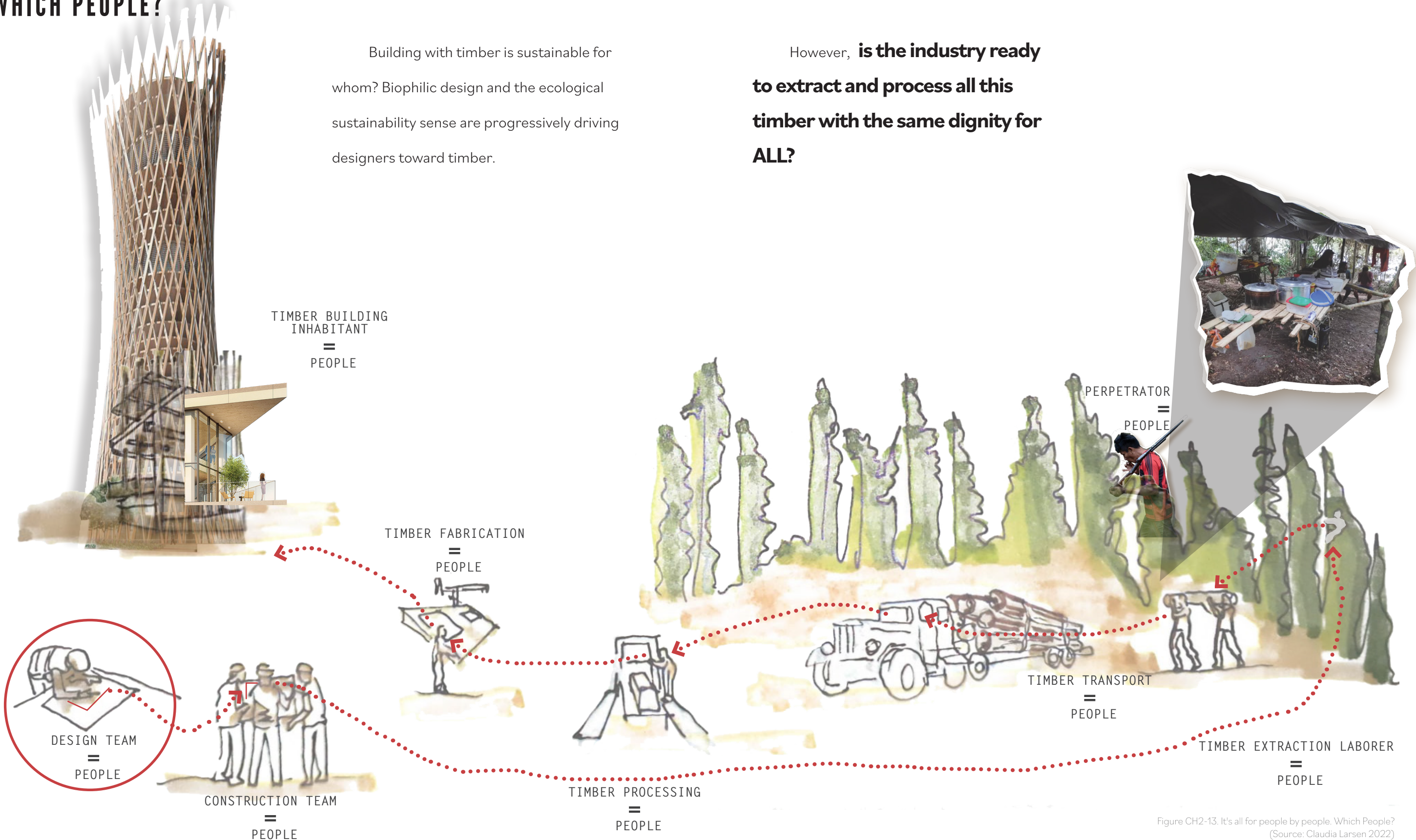


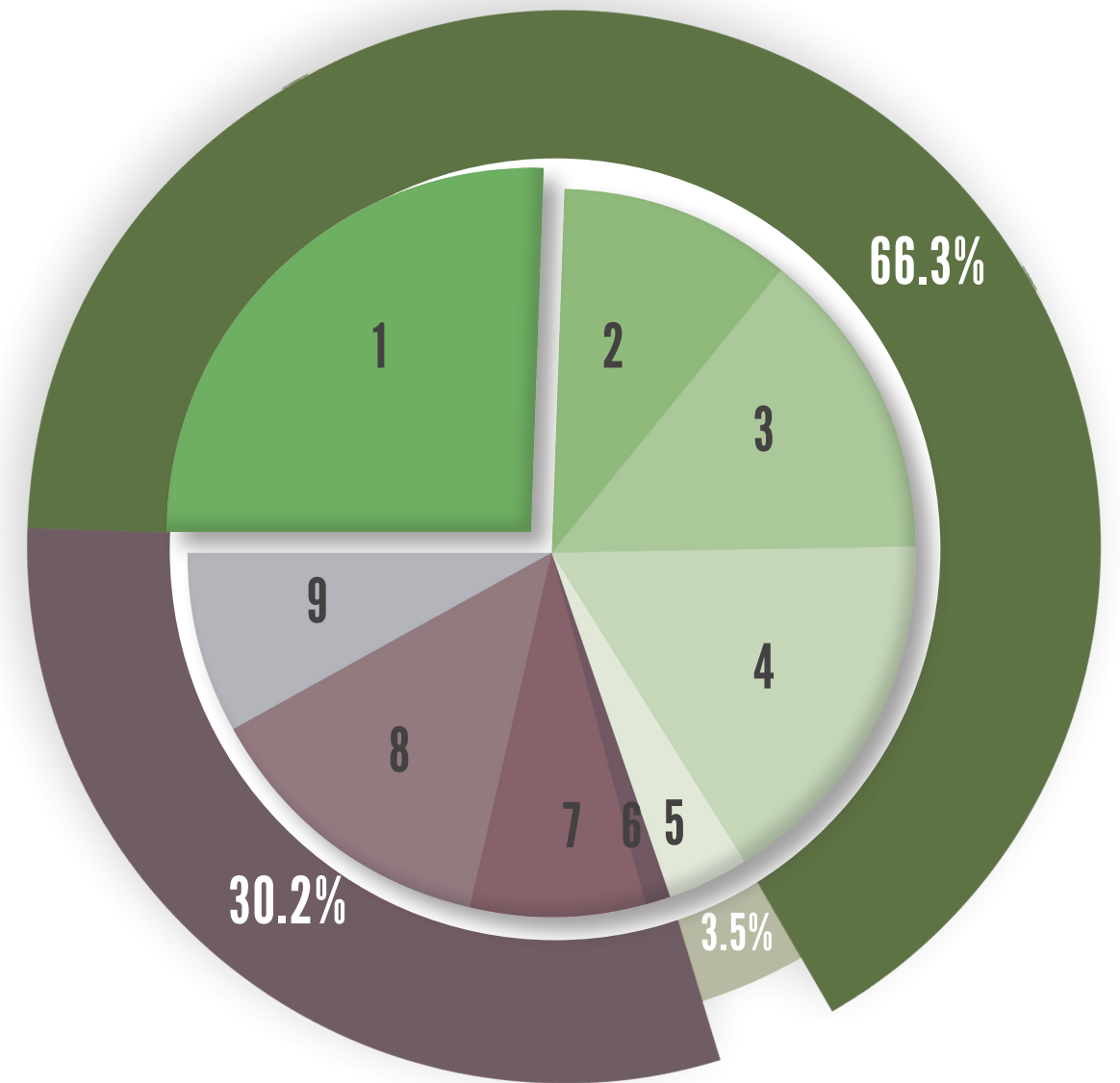
Figure CH2-13. It's all for people by people. Which People?
(Source: Claudia Larsen 2022)

3 THE CASE OF BRAZIL



Figure CH3-01. View of the Amazon River from an airplane, dense tropical forest, reflection in the water. Source: Adobe Stock 316429341

Land Uses and Occupation in Brazil



PROTECTED AND PRESERVED AREA (66.3%)

AGRICULTURE & LIVESTOCK (30.2%)

1. Areas for the Preservation of Vegetation in The Rural World no Vehicles
2. Integral Conservation Units
3. Indigenous Lands
4. Native Vegetation in Vacant and Unregistered Lands
5. Infrastructure and Others
6. Planted Forests
7. Crops
8. Planted Pastures
9. Native Pastures

Figure CH3-02. Land uses and occupation in Brazil. Adapted from (Embrapa, n.d.)



3.1 - CONTINENTAL BRAZIL

The Federative Republic of Brazil is the largest country in both Latin and South America, with an area of 8.515.767 Km² (fifth largest in the world) and has the sixth-largest population globally with 214,581,555 people (IBGE, 2022). Due to over a century of mass immigration from around the world, Brazil is one of the most ethically and multiculturally nations in the world. (Philander, 2012). It is also the largest country to have Portuguese as the official language.

Brazil is home to 60% of the Amazon rainforest, the world's largest tropical rainforest, with an extension of 5,500,000 km², an area more extensive than the EU and more than half of the United States (Rainforest Foundation Norway, n.d.). The Amazon basin has the world's largest river, the highest biodiversity of any ecosystem, and the biggest population of indigenous forest peoples, some living in voluntary isolation. (Mongabay, 2020)

The Brazilian Amazon has been in the spotlight for a few years as the climate crisis

advances and forest conservation is on the top of the Environmental Agenda. These are facts. And throughout this investigation, my efforts have been to gain clarity on the subject and step back to widen my perspective.

The truth is, I was not able to answer most of my questions. The amount of conflicting information only endorses the theory that the truth varies depending on the interest, mostly economic. In a world heading towards starvation of resources, co-dependency values are becoming overridden by individual interests, at whatever cost, even human.

This only enforces the need for transparency and the use of technology for traceability in the timber industry. A system immune to tampering, hacking, and bribery.

The amount of resources found in Brazil makes it a target for genuine international markets, as well as criminal activities. Everyone is after the money, including those in government. The well-known 'car-wash

operation’ led by Brazilian Federal Police a few years ago, started to shed a light on the profound and deep-rooted corruption mechanism installed in the country. And the Brazilian people started to wake up to the true and absurd depth of looting, both monetary and ecological schemes, happening in the country.

The reality is, whatever you decide to believe, you will find enough information to support it. One of the things I constantly find myself doing during this thesis is trying to position myself in other people’s realities, and change my perspective. From the victims of modern slavery to the president of a country. Figure CH3-04 illustrates that reaching the perfect balance is a great responsibility for governments. Ensuring the well-being of the rural poor and indigenous peoples, supporting the interests of the industry, and fulfilling the demands from foreign governments, and requirements from the aid community. (Butler, 2019) If corruption and conflict of interest is

added to this scenario, a sense of helplessness starts to sink in. Hence the importance of education and critical thinking.

On the specific topic of land tenure, some studies show that the rising and accelerated rate of deforestation suggests that the closing of forests as untouchable parks and reserves has not deterred perpetrators nor improved the quality of living or economic opportunities for the rural poor. (Butler, 2019). “In 2019, 770, 148 hectares of the Amazon rainforest was cleared, of which 474,974 were in protected territories (conservation areas and indigenous lands) and of this area, just 2,122 ha had been authorized for deforestation”. (Leitão, Hoare,



Uehara, & Farhan, 2021)

Others suggest that land privatization boosts illegal logging, using legal permits, and laundering operations as shown in the previous chapter. (See figure CH2-7). In another article, research shows that 200,00 hectares of logging were accounted for in ten municipalities, five of them in Mato Grosso, two in Amazonas, and the others in Roraima, Acre, and Para. Of which,

78% were reported to be on privately owned land. (Ennes, 2021)

Also, there is a misconception that all indigenous communities want to carry on their primitive way of living, isolated from civilization, technology, and healthcare. To explore their land sustainably, make a decent living, and not be vulnerable to perpetrators, including those in command of forced labour.

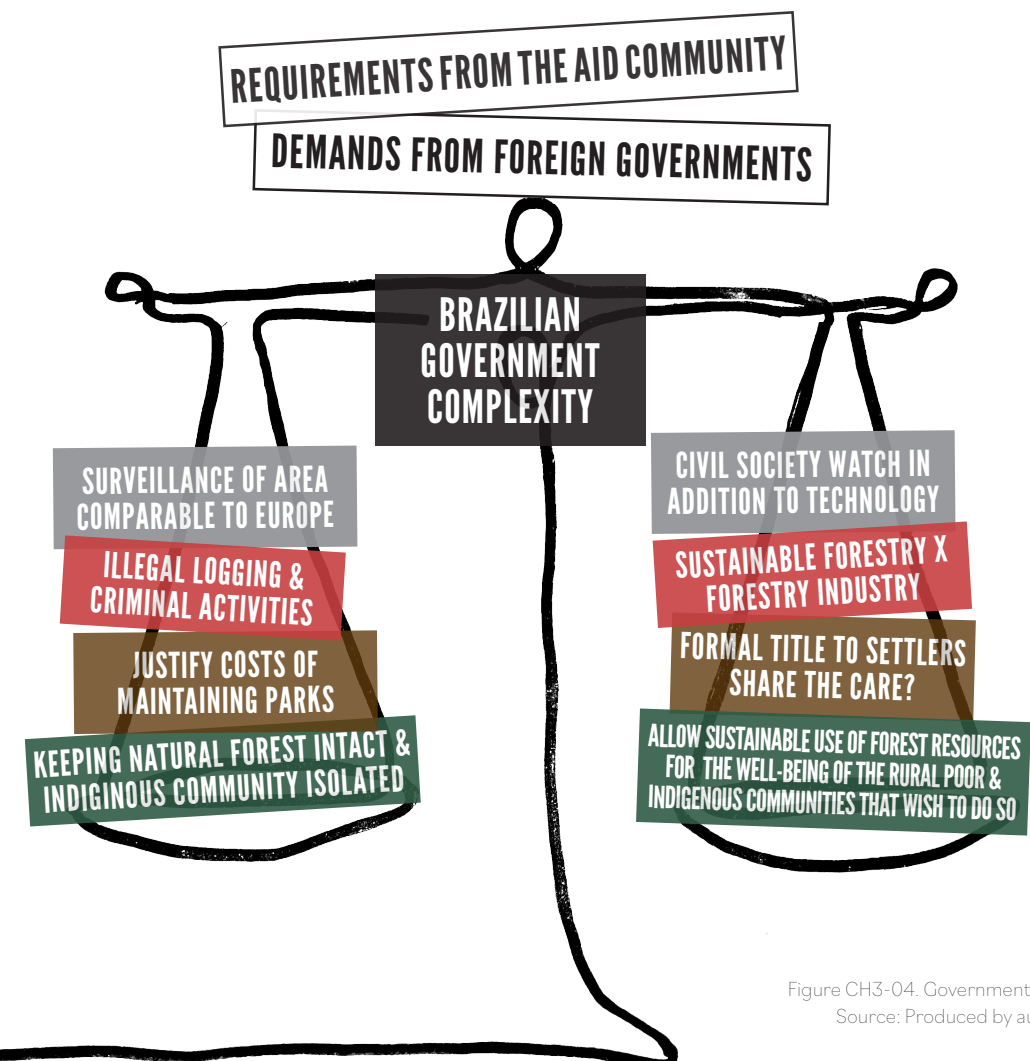


Figure CH3-04. Government duty
Source: Produced by author

3.2 - TREES GROWING MONEY

Figure CH3-05. Trees Growing Money
Source: Produced by author

High profits
drive illegal logging making use
of forced labour

DEGRADATION

HUMAN
RIGHTS
ABUSE

Perpetuates
the Modern
Slavery
Cycle

COERCION

ILLEGAL LOGGING

FORCED LABOUR

contamination



3.3. FIGHTING FORCED LABOUR IN FORESTRY

When it comes to combating forced labour, Brazil has been identified as one of the most progressive countries. However, despite all progress made, strengthening of policies and instruments are still required to eradicate such fundamental labour and severe human rights violations. (T.M. Costa, 2009).

In Forestry, this issue becomes even harder to identify and punish through severe law enforcement as such illegalities usually take place in remote areas. Furthermore, exploited victims rarely denounce such activities and seek authorities to report abuse as they are afraid to be held accountable for environmental crimes – even though is out of necessity. (Repórter Brazil, 2018)

Exploited workers in rural areas in Brazil are largely men aged between 15 and 40, with low levels of education – of which around 20% have never attended school. (Vuong,

2013). This profile encompasses workers cutting down native vegetation, raising cattle, planting, and harvesting crops, and those involved in the production of vegetable coal.

The violation of their human rights includes high-risk duties without proper equipment, degrading working conditions, mistreatment and violence, inadequate remuneration and unfair compensation, restriction of freedom, and degrading accommodation. (See Figure CH3-06)

“SLAVE LABOUR [IN BRAZIL] IS OFTEN ASSOCIATED WITH ILLEGAL LOGGING. AFRAID OF BEING HELD ACCOUNTABLE FOR ENVIRONMENTAL CRIMES, EXPLOITED VICTIMS RARELY SEEK AUTHORITIES TO REPORT ABUSE. “THEY KNOW THEY ARE INVOLVED IN CRIMINAL ACTIVITY, EVEN THOUGH IT IS OUT OF NECESSITY. SO, IT’S A SECTOR WHERE THERE ARE VIRTUALLY NO COMPLAINTS,” AN AUDITOR REVEALS.”
(REPÓRTER BRAZIL, 2018, P.5)

Characteristics



Figure CH3-06. Forced Labour Characteristics
Source: Produced by author

3.4 - NATIONAL EFFORTS

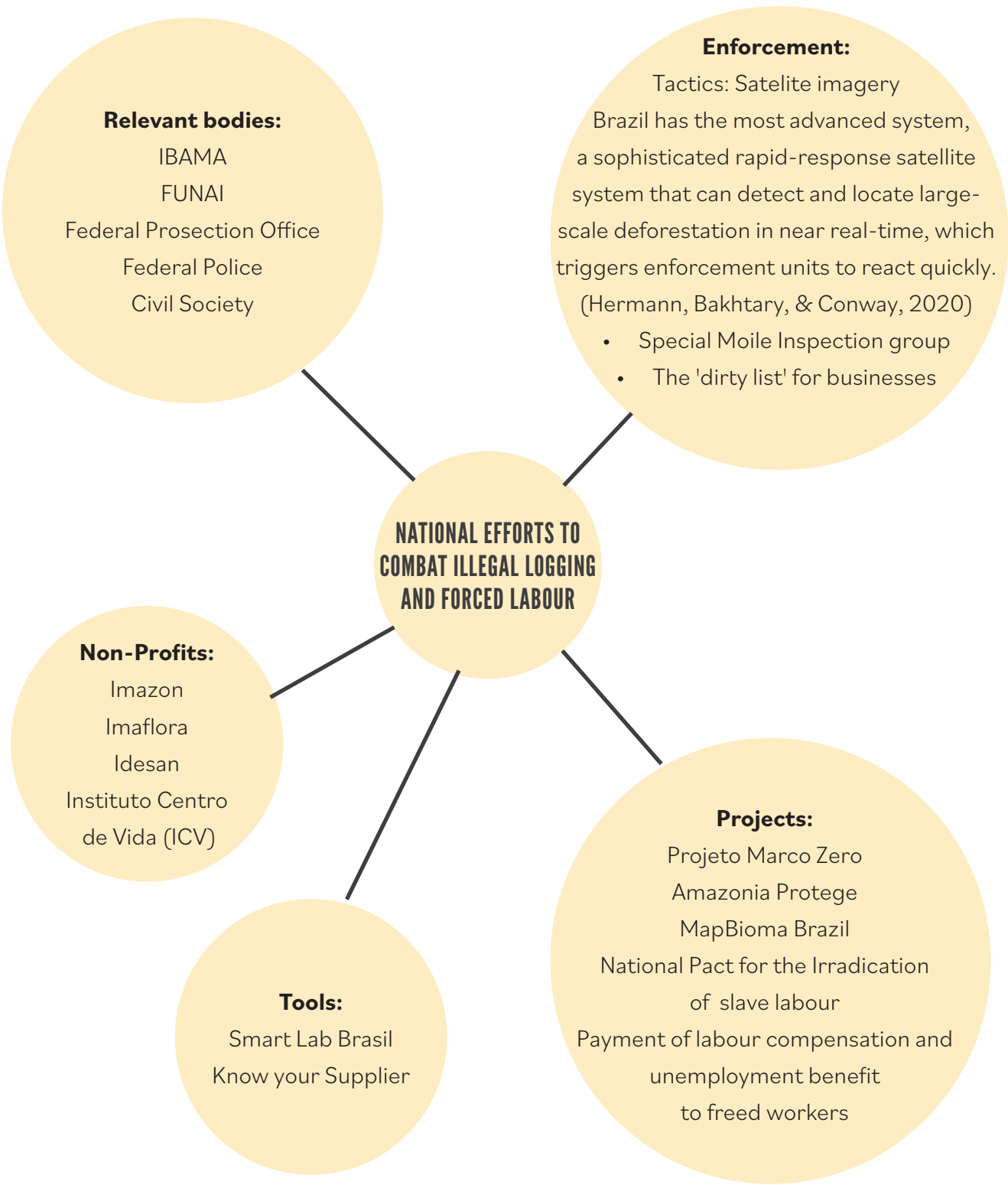


Figure CH3-07. National Efforts
Source: Produced by author

3.5 - INTERNATIONAL EFFORTS

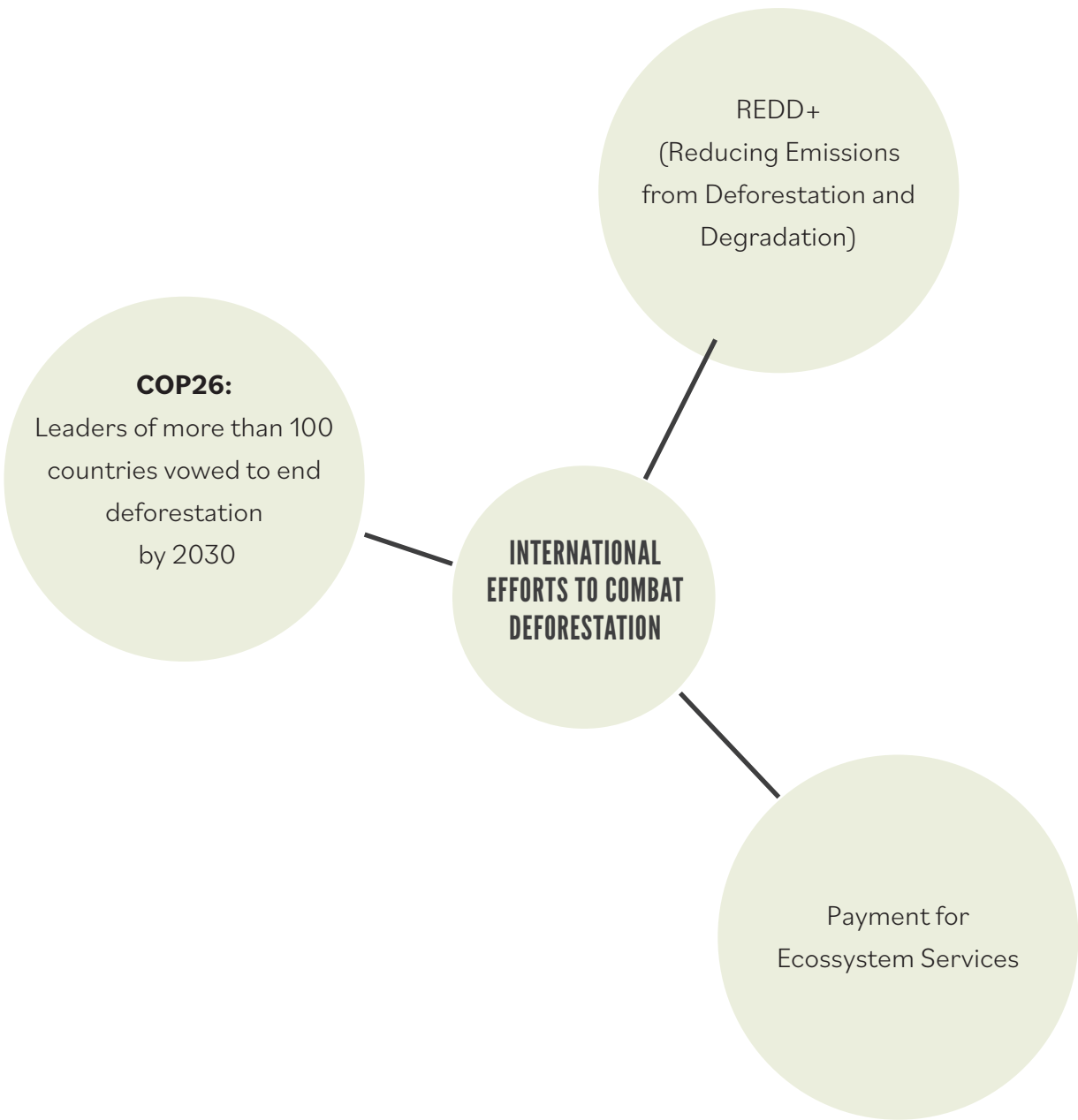


Figure CH3-08. International Efforts
Source: Produced by author

3.6. HOW ARE WE, THE PEOPLE, KEEPING INFORMED?

As a Brazilian is it heart-breaking to see how polarization in politics and disinformation both in the mainstream and social media are impacting the country and its people – to be fair a phenomenon not exclusive to Brazil.

There is no longer space for a healthy debate where all sides are heard and respected. It feels that to express an opinion, like in football games, you must first buy a ticket declaring which side you are on, and ‘run for your life if you find yourself in the wrong crowd.

To win global wars, such as forced labour within the built environment, we must all collaborate and seek the facts, the truth, and take care of each other. Social media has given people the opportunity to voice their opinions which is a positive advancement in democracy, however, it seems many are taking this privilege lightly, and often sharing information without checking the source. This is dangerous and, in various instances,

contributes to a culture of hatred, instead of one of collaboration and education. (See Figures CH3-09-12).

Mainstream media’s modus operandi seems to have also shifted and is often not bringing facts, reporting the reality, but setting opinion trends influenced by political or economic reasons.

People are confused, not sure what to believe, and in most instances generate a sense of helplessness and anxiety, as opposed to activism.



54.4K RETWEETS
2019
[FIGURE CH3-09]
Emmanuel Macron, President of France Twitter Post. Aug 22, 2019.



Amazon rain forest afire.
[FIGURE CH3-10]
Image for sale in Alamy Website. Amazon rain forest afire. Photographer: Loren McIntyre (1917-2003)

PHOTOGRAPH TAKEN PRIOR TO 2003



96.2K RETWEETS
2019
[FIGURE CH3-11]
Cristiano Ronaldo, Portuguese Footballer Twitter Post. Aug 22, 2019.



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Collection: AFP
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Licence type: Rights-managed
Release info: Not released. More information
Source: AFP
Barcode: AGENCIA RBS
Object name: Mvd6510573
Max file size: 4256 x 2832 px (36.03 x 23.98 cm) - 300 dpi - 3 MB
[FIGURE CH3-12]
Image for sale in Getty Images Website. BRAZIL-FIRE-TAIM Photographer: Lauro Alves 27 March 2013

PHOTOGRAPH TAKEN IN 2013 IN SOUTHERNMOST STATE OF THE COUNTRY

4 WHY ARE WE BUILDING WITH WOOD?

DEFINITIONS:

Carbon sink: "an area of forest that is large enough to absorb large amounts of carbon dioxide from the earth's atmosphere and therefore to reduce the effect of global warming". (Cambridge Dictionary, 2022)

Circular economy: "The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended." (European Parliament, 2022)

Sustainable forest management: The aim of sustainable forest management (SFM) is to ensure that forests supply goods and services to meet both present-day and future needs and contribute to the sustainable development of communities. (FAO, n.d.)

Biophilic Design: translates to "love of life" or "love of living things". (Wilson, 1986).

"WOOD IS THE ONLY SUSTAINABLE STRUCTURAL MATERIAL THAT GROWS WORLDWIDE WHICH CAN ENABLE A SUBSTANTIAL DECARBONISATION OF THE BUILT ENVIRONMENT BASED ON EXISTING BUSINESS MODELS AND PROVEN TECHNOLOGY; PROVIDING VAST CARBON SINKS IN OUR RURAL AREAS AND CARBON STORES IN OUR CITIES".

TIME FOR TIMBER MANIFESTO (CEI-BOIS & MILESTONE, N.D., P.3)

4.1 - WHY ARE WE BUILDING WITH WOOD?

With **2/3 of the world population expected to live in urban centres by 2050** (UN, 2018), there is a high demand for new buildings as well as renovation of existing ones. **If we are to reach net-zero by 2050, the construction industry must decarbonize.**

Currently, the sector is responsible for approximately 40% of the energy-related Co² emissions globally (UNEP, 2020), being the two main sources:

1. operational - heating, cooling, and power.

2. embodied emissions in materials - the extraction, processing, and energy-intensive manufacturing.

Wood is progressively taking ground within the industry for its naturally renewable qualities. As it sequesters carbon as trees grow in forests, stores carbon in harvested

wood products drives sustainable forest management, and contributes to a circular economy, as wood products can be recycled, reused, and recovered for low-carbon energy at end-of-life. (CEI-Bois & Milestone, n.d.)

Another important aspect is the **interior quality of spaces, considering we spend an estimated 90% of our time indoors.**

Therefore, bringing nature into buildings, through the use of natural materials such as wood, has proven to have a positive impact on their inhabitants. (Stopka & Lerner, 2016)

In office buildings, for example, the use of exposed timber has been linked to many positive outcomes in people's well-being, from the reduction of stress to productivity boost, and thus reduction of sick leave.

This concept is not new, biologist Edward O. Wilson introduced it in his book

Biophilia - which translates to “love of life” or “love of living things”. (Wilson, 1986).

Translating these concepts into the design, it addresses human connections with nature, through water, light, green plants, and natural materials.

Standing from this perspective, it is only logical to think that the increased use of wood in the built environment is an effective way of reducing emissions from the two main sources listed above, whilst promoting connection with nature and well-being for those in the urban centres.

All these attributes of using timber in projects have generated a material market shift, and high demands from the forestry industry, boosted by investments as described in the previous chapter. **The high profit in the sector attracts criminal**

activities, such as illegal logging, which creates unfair competition with law-abiding businesses and has 50% of its production reliant on forced labour.

(See Figure CH4-02)

It is important to note that producing timber through Sustainable Forestry Management, does not equal to the preservation of Natural Forests, as most of the forestry industry makes use of monoculture plantations. Therefore, **biodiversity loss is still a reality.** This leads us to the main thesis question: **Does the holistic sustainable perspective of building with timber match the reality?** And additionally: **Is the industry ready to supply all the promoted demand in a sustainable way?**

4.2. BUILDING WITH TIMBER MIND-MAP

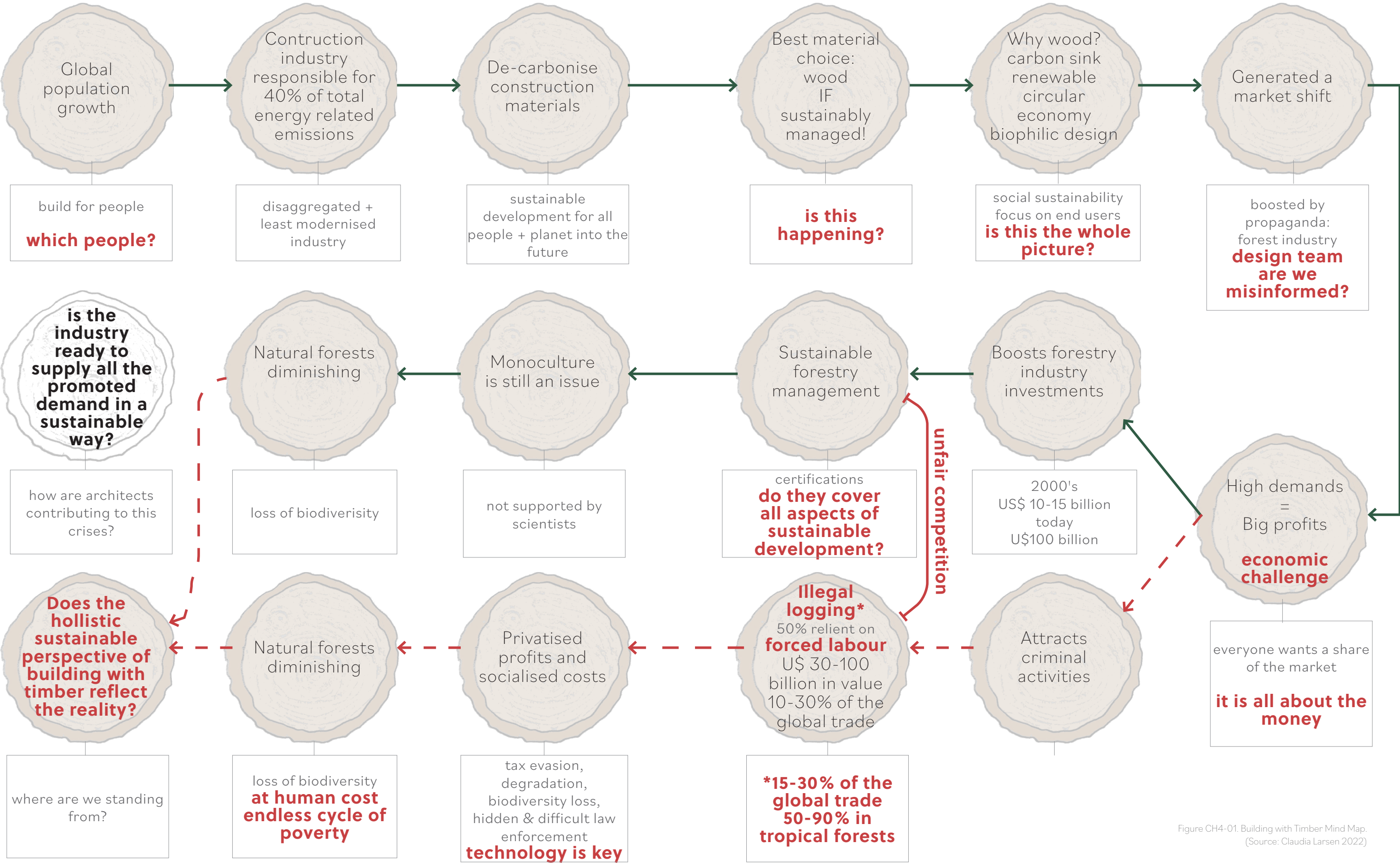


Figure CH4-01. Building with Timber Mind Map.
(Source: Claudia Larsen 2022)

4.3 - WHY ARE WE BUILDING WITH TIMBER: THE INDUSTRY'S MANIFESTO

Figure CH4-02. Why are we building with timber?
(Source: Claudia Larsen 2022)



Good for health and well being

Contributes to a Circular economy as wood products can be reused, recycled and recovered for low-carbon energy

IT'S DURABLE

Stores carbon in harvested wood products

FAST AND EFFICIENT TO BUILD WITH

STRUCTURALLY STRONG

Drives Sustainable forest management leading to greater growth

SEQUESTERS CARBON IN FORESTS AS TREES GROW

Naturally beautiful

4.4 - TIMBER MARKETING: IS IT ABOUT THE PLANET?

Figure CH4-03. Timber Marketing: Is it about the Planet?
(Source: Claudia Larsen 2022)

19/04/2022, 19:43

Hundreds of Companies Promised to Help Save Forests. Did They? - The New York Times

The New York Times

https://www.nytimes.com/2021/12/02/climate/companies-net-zero-deforestation.html

HINDSIGHT

Hundreds of Companies Promised to Help Save Forests. Did They?

Cargill, Nestle, Carrefour and others pledged to reach net-zero deforestation in their supply chains by 2020.

ECOLOGIST

INFORMED BY NATURE.

Home > News

Forestry sector 'failing' to combat forced labour

Brendan Montague | 13th November 2019

MONGABAY

NEWS & INSPIRATION FROM NATURE'S FRONTLINE

NGOs say FSC label offers little protection for forests, Indigenous people

by Malavika Vyawahare on 26 October 2021

THOMSON REUTERS FOUNDATION NEWS

Slaves to deforestation: Labor abuses fuel Brazil's Amazon destruction

by Fabio Teixeira | @ffctt | Thomson Reuters Foundation

Monday, 23 August 2021 12:00 GMT

CN Construction News

150 YEARS

Vietnam's timber legality program not making a dent in risky wood imports

By Carolyn Caven on 3 February 2022

34 MAR 2022 | BY GREG PITCHER

Supply chain warned Russian timber imports 'could be illegal'

The West Australian

FEDERAL ELECTION 2022

ELECTION FACT CHECKER: Is Labor's Medicare campaign fact or fiction?

Federal Election | Anthony Albanese | Australia | Environment | Federal Politics | Scott Morrison

Federal election 2022: Scott Morrison pledges major funding boost for forestry industry

Kimberley Cairns | The West Australian

Wed, 13 April 2022 2:30PM | Comments

THE SCOTSMAN

News you can trust since 1817

Pressure increasing on fragile forests - Stuart Goodall

I have written before about the huge reliance the UK has on imported timber – after China it is the second largest net importer of wood products in the world.

By Stuart Goodall

Thursday, 19th April 2022, 7:00 am

THE SCOTSMAN

News you can trust since 1817

News > Opinion > Columnists

Zero carbon house shows it's time for timber - Stuart Goodall

When I visited the Zero Carbon House in Glasgow during COP26, I was reminded of the phrase 'a picture is worth a thousand words'.

By Stuart Goodall

Thursday, 9th December 2021, 7:00 am

theconstructionindex

theconstructionindex

Retaining walls. Reinforced soil structures. Solution-led design, supply and installation.

Timber industry launches marketing campaign

1 Sep 20 Timber producers are on a publicity drive in an attempt to drum up business from the construction industry.

The 'Wood CO2s less' campaign hopes to increase awareness of timber's environmental credentials and of how using wood from sustainably managed forests can help reduce carbon emissions.

British Woodworking Federation launches Build it Better with Wood campaign

THE WALL STREET JOURNAL.

THE FUTURE OF EVERYTHING | CITIES & REAL ESTATE

Wooden Skyscrapers Are on the Rise

Architects and builders turn to 'mass timber'—an engineered wood product similar in strength to concrete and steel—to build multistory buildings

Wood for Good

Reuse, Repair, Recycle, Replant, Repeat.

GOOD FOR THE ENVIRONMENT

Wood reduces CO2 and can help us fight climate change

WOOD CO2s LESS

Wood CO2s less

Building

FOCUS

Explainer: how to increase the use of timber

By Carl Brown | 6 April 2022

THE NEW YORKER

NEW YORKER FAVORITES

Truman Capote's Co-Conspirators

The Hockey Sister

The Case Against the Trauma Plot

The White

ONWARD AND UPWARD WITH THE ARTS

APRIL 25 & MAY 2, 2022 ISSUE

TRANSFORMING TREES INTO SKYSCRAPERS

In Scandinavia, ecologically minded architects are building towers with pillars of pine and spruce.

By Rebecca Mead

April 18, 2022

Confor

Menu

Time for Timber: global wood manifesto launched

27 October 2021

An international wood manifesto making the case for a much greater use of wood in both construction and renovation has been launched ahead of the global environmental summit COP26 in Glasgow.

5 NOW WHAT?

"WE NEED LEADERS NOT IN LOVE WITH MONEY BUT IN LOVE WITH JUSTICE. NOT IN LOVE WITH PUBLICITY BUT IN LOVE WITH HUMANITY".

-MARTIN LUTHER KING JR. (JR. ET AL., 2005, P.287)

5.1 - A MATTER OF PERSPECTIVE - FINAL REFLECTIONS

It is easy to feel overwhelmed by the amount of information and nature of this investigation. **It is crucial to understand that the perspective we design from, will have an impact on all those involved from the design team, and supply chain collaborators, to end-users.** We must not give up. Make use of the available tools and help develop others. (See Sections 5.5 & 5.6 and Appendix A)

Building with timber has great potential, however, we must understand the industry's current limitations and push for modernization ensuring we are not contributing to this crisis.

HINDSIGHT
Hundreds of Companies Promised to Help Save Forests. Did They?
Cargill, Nestle, Carrefour and others pledged to reach net-zero deforestation in their supply chains by 2020.

ECOLOGIST
INFORMED BY NATURE.

Forestry sector 'failing' to combat forced labour

THE SCOTSMAN
News you can trust since 1817

Pressure increasing on fragile forests - Stuart Goodall

have written before about the huge reliance the UK has on imported timber. It is the second largest net importer of wood products in the world.

By Stuart Goodall
Wednesday, 19th April 2022, 7:00 am

MONGABAY
NEWS & INSPIRATION FROM NATURE'S FRONTLINE

THE SCOTSMAN
News you can trust since 1817

Vietnam's timber legality program not making a dent in risky wood imports

by Carolyn Cowan on 2 February 2022

THOMSON REUTERS FOUNDATION NEWS

Slaves to deforestation: Labor abuses fuel Brazil's Amazon destruction

by Fabio Teixeira | @ffctt | Thomson Reuters Foundation
Monday, 23 August 2021 12:00 GMT

Supply chain warned Russian timber imports could be illegal'

Construction News

NGOs say FSC label offers little protection for forests, Indigenous people

by Malavika Vyawahare on 26 October 2021

Zero carbon house shows it's time for timber - Stuart Goodall

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By Rebecca Mead
April 18, 2022

5.2 - MANIFESTO



5.3 - WRITTEN MANIFESTO - A CALL FOR ETHICAL DESIGN

Some call it human evolution, the survival of the fittest, I call it loss of humanity.

Architecture has marked important transitions in human history, from nomadic hunter-gatherers moving from temporary shelter to temporary shelter, to settled farmers, to the birth of the first civilizations.

Architecture has always been considered a **noble profession**, and the architect too often **compared to the creator of the universe**, as if seated on a throne.

A master evolving with the advancement of technology, **expressing one's own desire on someone else's property**. A sign of status.

Standing still from a specific point of view, where the world they build, looks simply perfect.

The fittest of society will have access to the master and they too will share the glory.

Fast forward time, **evolution has made us live longer and there are more of us.**

There is now a **realization that resources are finite** and that we might not be making the best use of them. Proving us **not** to be good **stewards of our home**, our planet.

We **gather to discuss**, understanding that is **no longer possible to ignore that part of society** from whom we **haven't shared** our discoveries, **our evolution**.

We have taken so much from our lands and theirs that **the planet is starting to cry out**.

Our own survival now depends on changing our ways, by sharing; knowledge, resources, love.

Finding ways to take less and produce more, look at everyone's needs. But are we?

From stone to timber, our built environment is tainted with the blood of those who cannot advocate for themselves.

And our **evolution** just seems to have **changed the media we use to tell a different story from the same point of view.**

'Green buildings' and the right choice of materials do not account for the people extracting and processing them, and nor do we, the architects.

The certifications help us clear our conscious that we are doing right by the planet, and in some aspects we really are, but again, **we are not looking at the full picture** nor from the opposite perspective.

Take timber, the material of the moment, renewable, efficient, beautiful, all true. Truly remarkable pieces of architecture, showcasing the advancement of technology and collaboration between specialties.

Improving the quality of life of those inhabiting the space. Seems like we have found our formula for sustainable development. At what cost might I ask? Seems like a dream, too good to be true.

And it is. The matter of fact is that even though we have evolved, **our industry is still disaggregated and is the least modernized,**

which allows us to put a blind eye on who is producing all this timber and how, **almost like not my problem. Is it not?**

Well, it is, and the truth is **we are failing**. Failing **to provide the same level of dignity** throughout the construction process. As if without the material we could really do anything.

Because there is so much demand, everyone has their eyes on the prize. Those who have care for the planet and people. And also, those who care solely for their pockets.

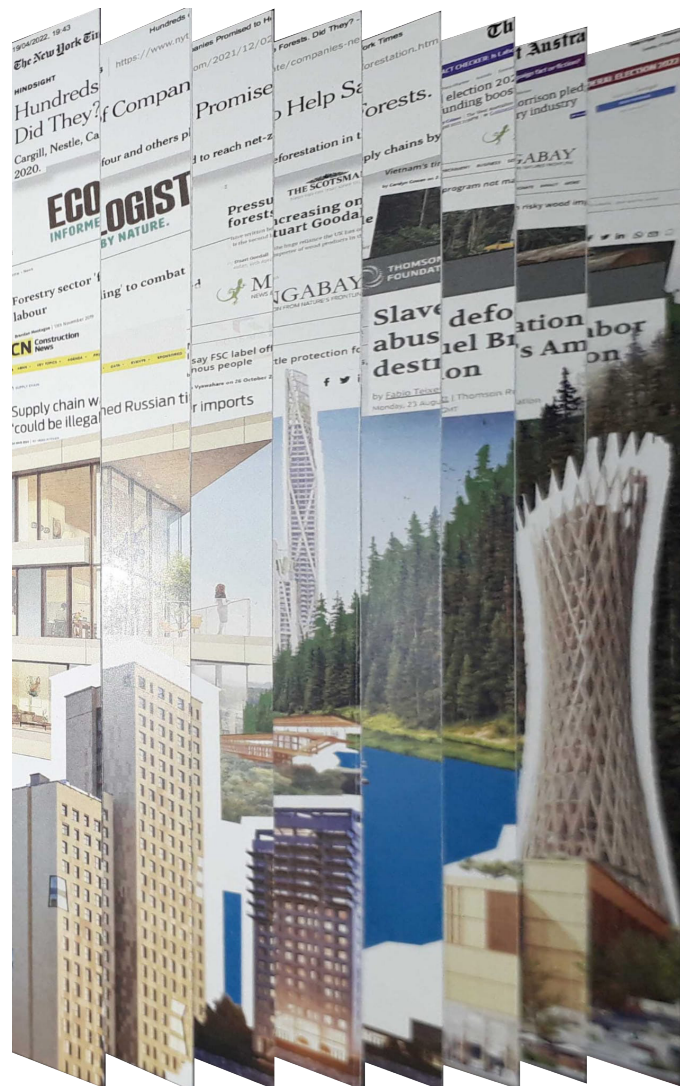
And the **sustainable built environment** we so proudly propagate **is being built at the cost of human blood, degraded environments, and endless cycles of poverty.**

We must change our point of view, we must take responsibility for our choices, and we must bring humanity into our designs. It is no longer acceptable to build for humans at the cost of humans. Development can only be sustainable if available to all.

Join the movement of ethical design now!

5.4 - WHERE DO WE STAND?

Being Promoted

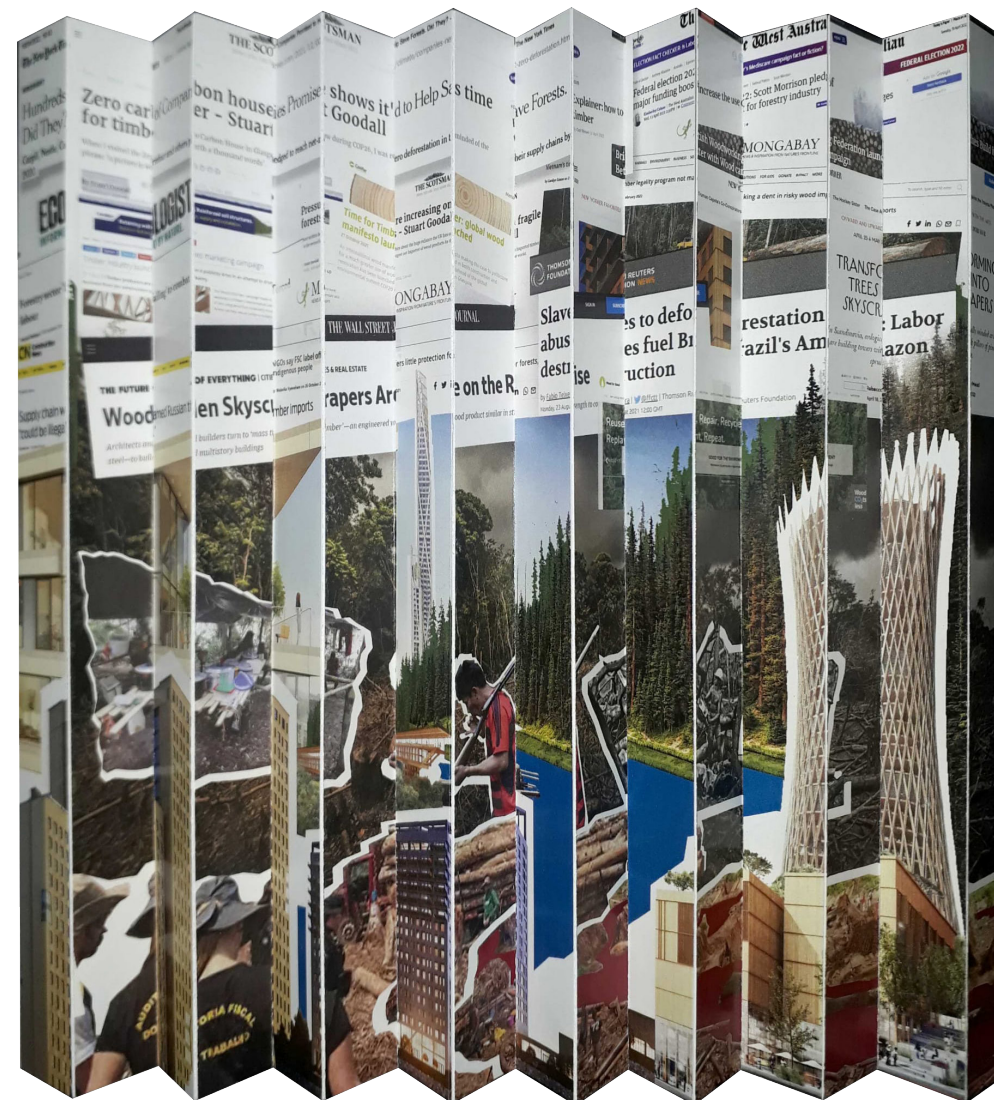


ASSEMBLY & OPERATION

AWARENESS

A HOLISTIC VIEW USE OF TIMBER THE BUILT

Supply Chain with safe &



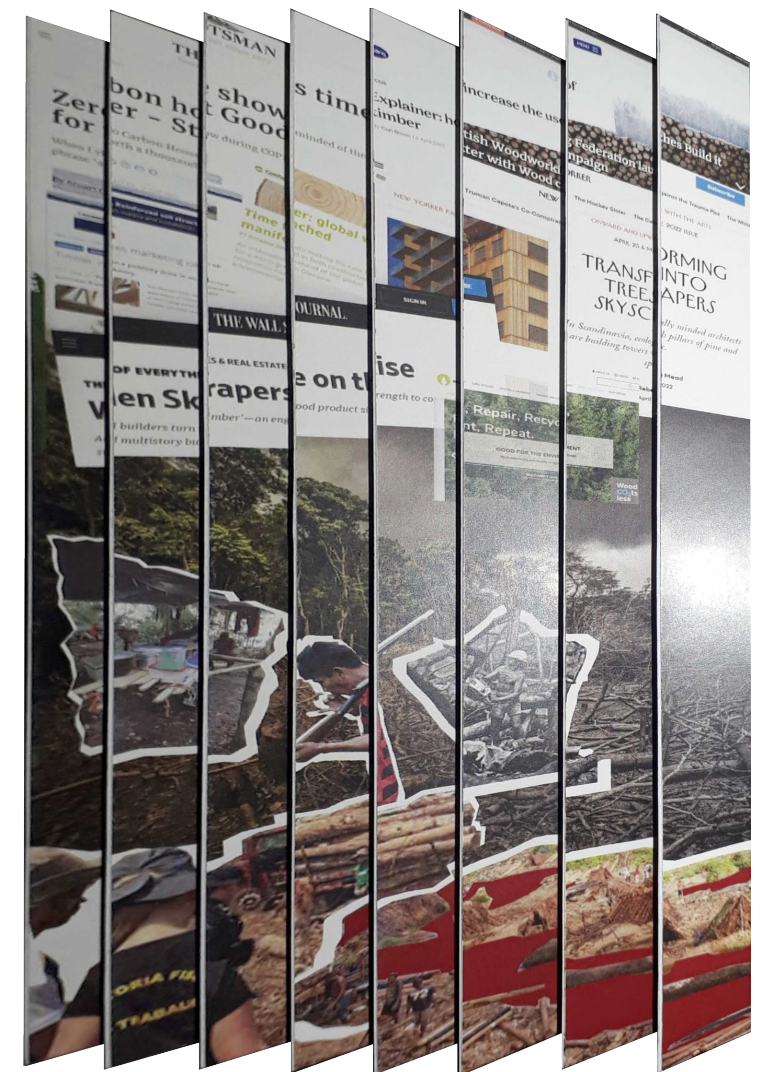
FOR A RESILIENT
— WITHIN
ENVIRONMENT

equitable labour practices

"SLAVERY IS PERCEIVED AS THE DISTANT PAST
AND CLIMATE CHANGE IN THE 'DISTANT FUTURE',
BUT BOTH ARE HAPPENING RIGHT NOW".

-SHANNON HOBBS (O'CONNELL, FLEURY, MACKIE, & WITT, 2021, P.15)

The reality for a large proportion
of the extraction process



MATERIAL EXTRACTION

Figure CH5-02. Where do we stand?
(Source: Claudia Larsen 2022)

5.5 - BUILDING WITH TIMBER DESIGNER ROADMAP (TO BE READ IN COONJUNCTION WITH 5.6)

Understanding the impact of building with timber is the first step toward implementing ethical criteria into the design. It is important to look beyond the current discourse and demand accountability and transparency from suppliers and professionals involved in the construction process. Based on the Building with Timber Mind-Map (Figure CH4-02), this Roadmap proposes the use of existing tools at the different stages towards preventing illegal logging, forced labour, and associated criminal activities within the timber supply chain. It also encourages further understanding of the current practices of Sustainable Forestry Management and its association with monoculture plantations and biodiversity loss.

Furthermore, encourages the development of new tools collaboratively. This

is a ‘global work-in progress’ that must be incorporated into every architectural practice and education program if we are to end this crisis soon. See below a suggested list of tools associated with Figure CH5-04 and illustrated in Figure CH05-03. Additional useful tools can be found in Appendix A.

1. Figure INT-2 - Delimitation Diagram Sustainability in Building with Timber (p.13)
2. Design for Freedom Materials Tracking Schedule
3. Sample Specification – Ethical Design Requirements
4. Design for Freedom Supplier Outreach Letter & Questionnaire
5. Design for Freedom Report
6. A Call for Ethical Design Manifesto (p. 72-73)



Figure CH5-03. DFF Toolkit
Adapted from Grace Farms Foundation, 2022.

5.6 - BUILDING WITH TIMBER DESIGNER ROADMAP DIAGRAM

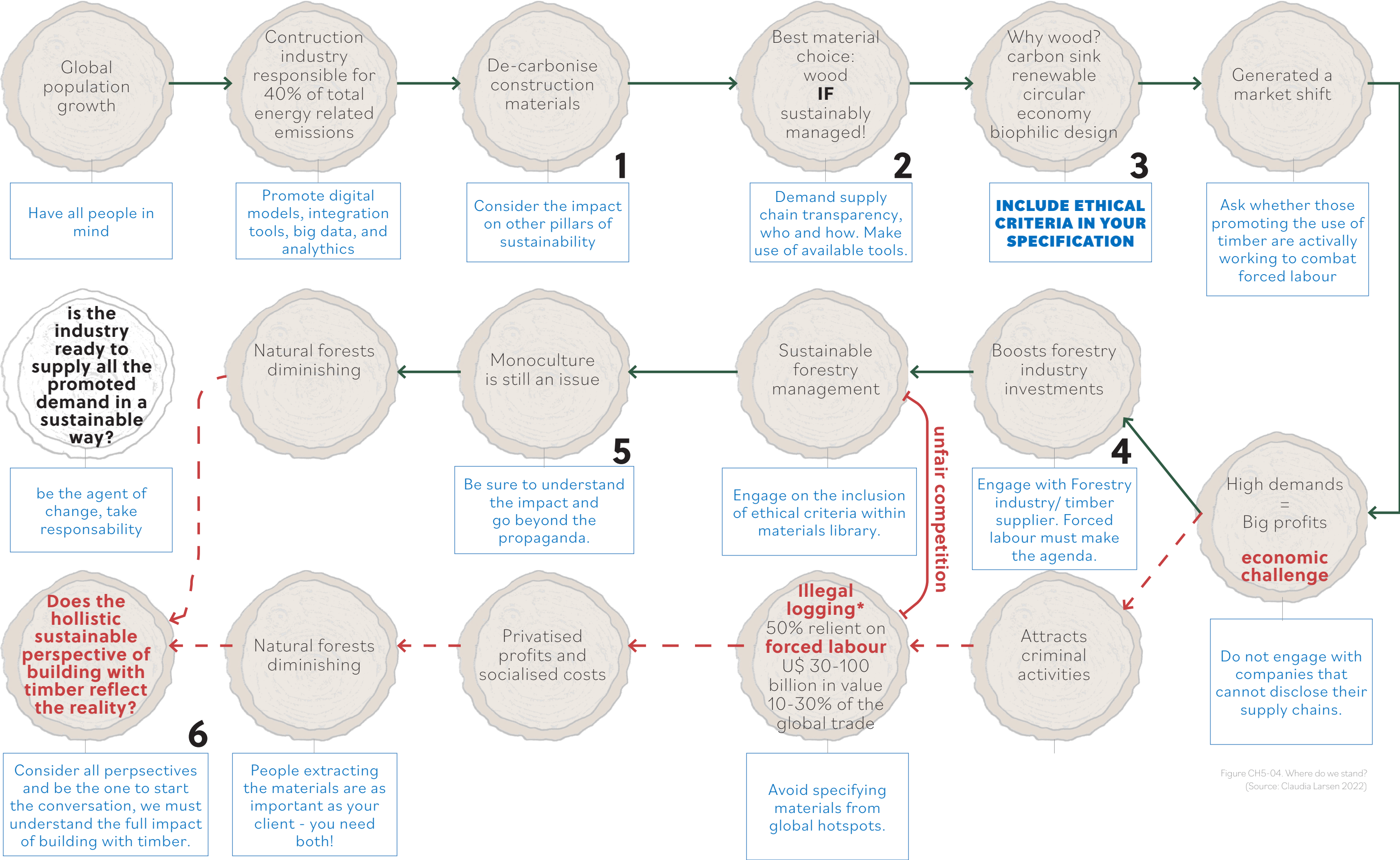


Figure CH5-04. Where do we stand?
(Source: Claudia Larsen 2022)

DISCUSSION SUMMARY

The process of this research has been a turning point in my career and an eye-opener as a world citizen. During the investigation, I had this constant image in mind where I was pulling an endless chain out of a box, and each link revealed a deeper crisis than the previous. Like removing filter layers from a photograph, new perspectives hidden in plain sight emerged.

It is absolutely infuriating that amid the 21st century there are more people in slavery than at any other time in history - being a large proportion within the built environment materials supply chains. How have we managed to get away with subsidizing responsibility for this long?

Having a new understanding of the profound and extensive impact of my decisions as part of a design team, weighed on me. Worlds apart, yet so co-dependent. Same industry, completely different realities. The level of inequality is shocking.

Furthermore, I started from the premise that building with timber is in fact ecologically sustainable and economically viable. However, encountered an even bigger issue: Illegal logging. A fertile ground for all sorts of crime - including forced labour. Ranked the most profitable of environmental crimes, and the third most profitable transnational crime, only behind counterfeiting and drug dealing.

The more I learned, the more contradictory it all seemed to me. How can we be endorsing timber promoting campaigns when the forestry industry is clearly struggling to supply all the demand sustainably?

At COP26, leaders of more than 100 countries vowed to end deforestation by 2030, and let's imagine we are there. What does it look like? More plantations? That might alleviate the issue of modern slavery substantially, but what about biodiversity loss? Isn't that one of the main concerns about tropical forests' devastation?

Although the sense of helplessness and frustration are still present, another of activism and hope emerge when learning what is being done by professionals around the globe. People, that like me, believe that together we do have enough agency to fight this massive crisis. Feasible proposals, such as the inclusion of ethical criteria in design projects are already available. The technology has already been developed; we need to make use of it.

Transparency is the key to releasing people from endless cycles of poverty within our supply chains and providing the same level of dignity to all. We must change the perspective we are designing from. Having the correct knowledge and tools are an important start to releasing the great sustainable potential building with timber has. Currently, the holistic sustainable perception of building with timber does not seem to reflect the reality, but it can. It starts with you and me. Join this movement now!



Figure DC-01. Discussion. (Source: Claudia Larsen 2022)

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CHAPTER 2

Figure CH2-1. Who influences the building supply chain? Source: Produced by the author based on (Grace Farms Foundation, 2020, p. 53)

Figure CH2-2. Line impact. Source: Produced by author.

Figure CH2-3. Forced labour. Adapted from: Ripper, J. R. (n.d.). Burned Para [Photograph]. Imagens Humanas. <https://>

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Figure CH2-4. Blood timber. Source: Adapted from (Grace Farms Foundation, 2020)

Figure CH2-5. At-risk sawn timber. Source: Adapted from (Grace Farms Foundation, 2022)

Figure CH2-6. Blood timber flow. Source: Adapted from Black wood dependency - Main bilateral flows of illegal timber map (Nelleman, C; INTERPOL Environmental Crime Programme, 2012)

Figure CH2-7. Illegal logging and log laundering. Source: Adapted from (Nellemann, 2014, p.65)

Figure CH2-8. Violence in the Forest. Source: Adapted from Pimentel, M. (2019, March 13). Arara indigenous chief Tatji Arara [Photograph]. Scientific American. <https://www.scientificamerican.com/article/environmental-activists-have-higher-death-rates-than-some-soldiers/>

Figure CH2-9. Certifications. Source: Produced by author

Figure CH2-10. Company Disclosure by indicator. Source: Adapted from (KnowTheChain, 2019)

Figure CH2-11. Adapted from: SIGA. (n.d.). HoHo Vienna [Photograph]. Siga Swiss. https://www.siga.swiss/se_sv/projekt/hoho-wien#gallery-d041350c-fae2-4bf9-9591-93babf8667b2-1

Figure CH2-11. G20 Countries Map + The flow of timber in a Global Context. Source: Produced by the author based on (Walk Free Foundation, 2018) & (Nelleman, C; INTERPOL Environmental Crime Programme, 2012)

Figure CH2-12. G20 Countries Map + The flow of timber in a Global Context. Source: Produced by the author based on (Walk Free Foundation, 2018) & (Nelleman, C; INTERPOL Environmental Crime Programme, 2012)

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CHAPTER 3			
Figure CH3-01. Anna1111986. (n.d.). View of the Amazon River from an airplane, dense tropical forest, reflection in the water. [Photograph]. Adobe Stock. https://stock.adobe.com/se/images/view-of-the-amazon-river-from-an-airplane-dense-tropical-forest-reflection-in-the-water/316429341?prev_url=detail	Source: Produced by author	Figure CH3-09. Emmanuel Macron, President of France Twitter Post. Aug 22, 2019. Source: #ActForTheAmazon. (2019, August 22). [Tweet]. Twitter. https://twitter.com/emmanuelmacron/status/1164617008962527232?lang=en	Images Website. Source: Alves, L. (2013, March 27). BRAZIL-FIRE-TAIM [Photograph]. Getty Images. https://www.gettyimages.com/detail/news-photo/aerial-view-of-the-taim-ecological-station-on-fire-in-rio-news-photo/164815750?adppopup=true
Figure CH3-02. Land uses and occupation in Brazil. Adapted from: Embrapa. (n.d.). Sintese - Portal Embrapa. Portal Embrapa. Retrieved 5 March 2022, from https://www.embrapa.br/car/sintese	Figure CH3-10. Image for sale on Alamy Website. Source: McIntyre, L. (n.d.). Amazon rain forest afire. [Photograph]. Alamy. https://www.alamy.com/stock-photo-amazon-rain-forest-afire-30695050.html?mid=41152&siteID=MRu_ISar6sQ-xzbiZRQ9yfZd8gwcDelhsw&utm_source=LS&utm_medium=affiliate&utm_content=US	Figure CH3-11. Cristiano Ronaldo, Portuguese Footballer Twitter Post. Aug 22, 2019. Source: Ronaldo, C. (2019, August 22). #prayforamazonia [Tweet]. Twitter. https://twitter.com/cristiano/status/1164588606436106240?lang=en	Freedom. https://www.designforfreedom.org/home/design-for-freedom-toolkit/ Figure CH5-04. Building with Timber Designer Roadmap Diagram (Source: Claudia Larsen 2022)
Figure CH3-04. Government duty. Source: Produced by author.			DISCUSSION Figure DC-01. Discussion. (Source: Claudia Larsen 2022)
Figure CH3-05. Trees Growing Money. Source: Produced by author.			CHAPTER 4 Figure CH4-01. Building with Timber Mind Map. (Source: Claudia Larsen 2022) Figure CH4-02. Why are we building with timber? (Source: Claudia Larsen 2022) Figure CH4-03. Timber Marketing: Is it about the Planet? (Source: Claudia Larsen 2022)
Figure CH3-06. Forced Labour Characteristics. Source: Produced by author.			CHAPTER 5 Figure CH5-01. Manifesto. (Source: Claudia Larsen 2022) Figure CH5-02. Where do we stand? (Source: Claudia Larsen 2022) Figure CH5-03. Figure CH5-03. DFF Toolkit. Adapted from Grace Farms Foundation. (2020, October). Design for Freedom Toolkit [Illustration]. Design for
Figure CH3-07. National Efforts. Source: Produced by author			
Figure CH3-08. International Efforts.	Figure CH3 -12. Image for sale on Getty		

APPENDIX A- USEFUL TOOLS

Organization	Tool	Link
ACAMS	Modern Slavery Certification	https://www.acams.org/en/membership/acams-membership-for-individuals#join-1cbf4a9e
Alliance 8.7	Global Partnership committed to achieving Target 8.7 of the 2030 Sustainable Development Goals.	https://www.alliance87.org/action-groups/#supply-chains
Bluenumber	Timber Traceability Platform	https://bluenumber.org/japan/timber-traceability-platform-natures-barcode/
Forest Legality Initiative	Provides tools and resources to improve transparency and accountability in forest-related supply chains, and informs policy and purchasing decisions through data and analysis	https://forestlegality.org/
Forest Maps - FAO of The United Nations	Global Forest Resources Assessments	https://www.fao.org/forest-resources-assessment/fra-2020/maps/en/
FRDM	Website – supply chain transparency	https://www.frdm.co/
Freedom Collaborative	Anti-trafficking platform	https://freedomcollaborative.org/
Global Fund to End Modern Slavery	Website	https://www.gfems.org/
Global Initiative	Against Transnational Organized Crime	https://globalinitiative.net/
Global Witness	Challenging abuses of power to protect human rights and secure the future of our planet	https://www.globalwitness.org/en/
Grace Farms Foundation	Design for Freedom Report	https://www.designforfreedom.org/the-movement/

Grace Farms Foundation	Design for Freedom Toolkit	https://www.designforfreedom.org/home/design-for-freedom-toolkit/
ILAB	Comply Chains	https://www.dol.gov/ilab/complychain/
Know the Chain	A resource for companies and investors to address forced labour in global supply chains.	https://knowthechain.org/
Made in a free world	Website	https://madeinafreeworld.org/
MapBiomass Brasil	Collaborative network formed by NGOs, universities, and technology start-ups	https://mapbiomas.org/en/project
Rights Lab – University of Nottingham	Slavery-Free Cities Index	https://www.nottingham.ac.uk/research/beacons-of-excellence/rights-lab/index.aspx
Slavery footprint	How many slaves work for you?	https://slaveryfootprint.org/
SmartLab Brasil	Observatory for the Eradication of Slave Labour and Trafficking in Persons	https://smartlabbr.org/trabalhodecente
Surveillance to identify illegal practices	An online platform that provides data and tools for monitoring forests	https://www.globalforestwatch.org/
UN Global Compact	Collaboration and Innovation Platform	https://www.unglobalcompact.org/
United Nations	Sustainable Development Goals Website	https://sdgs.un.org/goals
Verité	Provides the knowledge and tools to eliminate the most serious labour and human rights abuses in global supply chains.	https://www.verite.org/about/



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