



**BUILDING AN EFFECTIVE DATA
ECOSYSTEM TO ADDRESS FORCED
LABOR IN GLOBAL SUPPLY CHAINS**

**TECH
AGAINST
TRAFFICKING**  

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Please note that any mention of specific tools or initiatives are intended to be illustrative and do not constitute endorsement of any kind by Tech Against Trafficking or BSR.

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FOREWORD

Modern slavery is a complex, thriving crime with a foothold in every country. As stated by the International Labour Organization (ILO), forced labor perpetuates cycles of poverty and exploitation and strikes at the heart of human dignity.

Despite robust efforts to design technology solutions to enhance the way business, civil society and governments collect verifiable data for targeted interventions, the pervasive nature of labor exploitation and human trafficking remains largely hidden, and the data landscape is siloed.

The publication of this research is the culmination of almost two years of multi-stakeholder engagement on key principles that would enable a more effective data ecosystem to address forced labor in global supply chains. Tech Against Trafficking, thanks to its members mapped what data is collected and how, why it is important to share it across actors, and what promising examples of technology that help combine data are, including by harnessing the power of AI.

In the coming months, we will focus on implementing action to contribute to the creation of an effective federated data ecosystem over the long term, through three principal outputs as detailed in this report. Our call to action for companies, policy makers and civil society is to review our 7 principles and join our efforts.

The end goal is to contribute to shaping a collective environment where all actors - not just business - engaged with supply chains can allocate more time and resources to designing anti-slavery interventions, rather than data acquisition.

With thanks from the Tech Against Trafficking team.



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EXECUTIVE SUMMARY

Modern slavery is on the rise with over 27 million people in situations of forced labor on any given day, with 86% estimated to be occurring in the private economy. This means forced labor is entrenched in global supply chains and, in part due to increased regulatory pressure from the US and Europe, has led to the development of a “supply chain data ecosystem” in which data flows between governments, policymakers, businesses and civil society organizations to meet demand for specific evidence of forced labor risks.

Despite an increasing amount of collected data about forced labor risks, the value and impact of that data is not being fully realized as the field continues to lack effective actions to prevent, mitigate and remediate actual cases of forced labor. This is in part because data is not being effectively shared between different actors in the supply chain data ecosystem.

Sharing data is not a goal in itself, but if purposefully done it can amplify the impact of anti-slavery policies, reduce the costs and duplication of data collection, and inform effective actions. It can help businesses better focus their resources and engagement efforts, governments target effective policies and enforcement, and civil society support greater impact.

This report, prepared by BSR as Secretariat of Tech Against Trafficking, presents:

- An analysis of the dynamics between actors in the data ecosystem that underpin efforts to address forced labor risks in global supply chains;
- A reflection on why data are or are not being shared; and
- principles that will enable data to be shared at scale, for a more effective data ecosystem.

A Fragmented Supply Chain Data Ecosystem

Our research confirms that the supply chain data ecosystem is fragmented, with significant data siloes between—and within—three universes: the corporate sector, civil society and the public sector.

- The corporate sector is marked by contractually limited data collection and exchanges, and a general presumption against sharing data that could cause reputational damage to a company. Some sharing of risk data occurs between companies, but very little data flows across to or from the public sector or civil society.
- Many civil society organizations (including academia, journalists and non-governmental organizations) have embedded in their operating model the publication of data for the public good, and many actors from the public and private sector rely on these reports to inform their risk management or enforcement efforts. Yet siloes still exist, for example as a result of competitive pressures between NGOs, or academic publications behind paywalls.
- The public sector remains the most opaque, with limited visibility of what data is collected by frontline services such as law enforcement and labor inspectorates, and significant technical data management reducing access to this data from within and outside government. That said, intergovernmental organizations like the International Labor Organization and the International Organization for Migration support multi-lateral efforts to collect, aggregate and share relevant data on forced labor.

The reasons for these silos include some technical limitations (e.g. limited technical or financial resources for digital data management) and legal limitations (e.g. data protection or security rules). But behavioral challenges remain the greatest barrier, and frequently come down to a lack of trust between organizations.

Common arguments such as the fear of legal action, anti-competitive behaviors or confidentiality obligations can often be overcome with the right expertise and motivation. Commercial concerns can also be a strong driver against sharing with third parties, for example deterring suppliers from sharing risk data with their customers, or NGOs and intergovernmental organizations from sharing data for fear of losing influence in a competitive funding market.

Opportunities to Overcome Barriers to Data Sharing

Nevertheless, examples of effective data sharing that overcome these challenges exist. Section 5 describes several examples shared by stakeholders consulted during this project: the RBA-Online, the Modern Slavery Intelligence Network, Stop the Traffik's Traffik Analysis Hub, the ICT-ITC Sustainability Map collaboration, and the Crowdsourcing App for Responsible Production in Africa.

These examples surface common factors worth noting as we look to scale a more effective supply chain data ecosystem, including the creation of a sense of community bound by shared values and objectives, collective ownership and governance of the data-sharing process, the role of a trusted and expert intermediary and a user-friendly interface to upload or access shared data.

Tech Against Trafficking's work with its Accelerator Program suggests existing and emerging technologies may also help overcome some of the barriers to data sharing identified in this report. Although these may also raise other human rights risks, such as risks to privacy, which should be carefully considered before deploying any of these methods.

Promising examples include the use of machine learning models to mass analyze data from public sources or structure unstructured data, or the development of federated data architectures or confidential computing to facilitate multilateral data flows between organizations. Machine learning may also enable privacy preserving techniques such as the automation of de-identification or the generation of synthetic data sets.

Toward A More Effective Supply Chain Data Ecosystem

Looking ahead, we envisage a more effective supply chain data ecosystem built around a federated or decentralized network of relationships where different actors collect and process data in a relatively harmonized manner, and are able to connect with each other directly or via data hubs. As this network of connections grows, and trust builds, more data will flow around the system, at greater scale, and for greater impact.

To achieve this future vision, this report identifies 7 areas for action by all actors involved. These are structured around three key principles to enable data sharing at scale for a more effective data ecosystem: the right data, the right resources, and the right behaviors.

THE RIGHT DATA

Standardize data collection for greater interoperability

Focus on progress and impact, not just risk

THE RIGHT RESOURCES

Invest in data management

Share costs of the data ecosystem equitably

THE RIGHT BEHAVIOR

Reverse presumptions in favor of data-sharing

Build trust in the system

Know your role

To support these recommended actions, Tech Against Trafficking sees opportunities to collaborate with its members and partners identified through this research in three areas:

- 1 Standardized and interoperable data, building on the ILO's forced labor indicators and working in partnership with key standard-setting bodies and leading providers of supply chain risk data to align and build consensus around the most effective qualitative and quantitative datapoints to identify forced labor risk.**
- 2 Cost effective, accessible and scalable technologies for a federated ecosystem that enables organizations, including smaller and less technologically advanced actors, to share data while retaining control and privacy to the extent needed.**
- 3 Further dialogue between the public sector, civil society and the corporate sector on how governments can support a more effective supply chain data ecosystem.**

1. INTRODUCTION

Context

Modern slavery is on the rise with over 27 million people in situations of forced labor on any given day.¹

Modern slavery: An umbrella term used to describe practices that deprive an individual of their liberty and exploit them for personal or commercial gain using threat, violence, coercion, deception, or a combination of these tactics. It includes forced labor, labor trafficking, sex trafficking, and child labor.

Forced labor: Any work or service performed by a person involuntarily and under the threat of penalty.²

Most forced labor is reportedly occurring in the private economy (86%), with state-imposed forced labor accounting for the remaining 14%.³ Forced labor touches virtually all parts of the private economy and no region of the world is spared from its harmful and damaging effects.

Against this backdrop:

- **Governments and policymakers** are increasingly adopting fragmented policies and laws to prevent, detect and address human rights impacts, and forced labor. This includes a trend toward strengthening the regulation of responsible business conduct through three types of laws:
 - General obligations to conduct “due diligence” on human rights impacts (including but not limited to forced labor) related to a company’s own operations and its value chain or business relationships (e.g. French Duty of Vigilance Act, Germany Supply Chain Act, upcoming EU Corporate Sustainability Due Diligence Directive)

1 According to the [International Labour Organisation \(ILO\)'s 2022 Global Estimates of Modern Slavery](#).

2 ILO Forced Labour Convention, 1930 (No.29)

3 According to the [International Labour Organisation \(ILO\)'s 2022 Global Estimates of Modern Slavery](#).

- Reporting obligations to disclose actions taken by a company to address any identified risks of human rights impacts. Many of these laws have focused on the issue of modern slavery (e.g. in the UK, Australia and Canada).
- Bans on the import or export of products made with forced labor, requiring companies to demonstrate adequate due diligence processes to reduce this risk (e.g. US Uyghur Forced Labor Prevention Act, EU proposal for a Regulation Prohibiting Products Made with Forced Labor).
- **Companies** are under increased pressure to understand and take appropriate action to manage the risk that forced labor may be taking place in their complex and global supply chains.
- **Civil society organizations** support various activities, including research and outreach, to identify risks of forced labor, deliver support to victims and scrutinize the effectiveness of company policies and processes to address forced labor risks connected to their activities.

All these actors rely on quality information to make informed decisions and take appropriate actions. This information, or “data”, ranges from evidence of actual forced labor to contextual risk data, for example, the prevalence of migrant labor or other labor violations that might signal a risk of forced labor, to more aggregate forms of insights about risks of forced labor in certain industries or geographies.

The focus on companies identifying risk, and developing risk-based approaches, has led to a high demand from the private sector and some public authorities for technology and data solutions that map or trace products through supply chains or collect reliable data about forced labor risks relating to the actors or geographies connected to a company’s supply chains.

However, many of these technology solutions exist in silos and do not interact with or influence one another, thereby limiting their effectiveness, scalability, and impact.

Problem Statement and Objectives

While it is clear that more data than ever are being collected by companies, governments, civil society organizations and other actors, there is also a consensus that:

1. The value and impact of data is not being fully realized, as the mounting evidence of forced labor is not leading to effective preventive actions in global supply chains.
2. this is, at least in part, because these data are not being shared between different actors

Through a 2023 project workstream, Tech Against Trafficking (via its Secretariat, BSR) sought to address this challenge by looking more closely at the dynamics between actors in the data “ecosystem” that underpins efforts to address forced labor risks in global supply chains.

The result of this analysis provides a detailed understanding of whether and why data are shared (or not) between actors in this ecosystem, and what actions or “ingredients” might enable data shar-

ing at scale. It has also confirmed the benefits of data-sharing between different actors, including amplifying the impact of data, reducing the costs and duplication in data-collection efforts, and more efficiently allocating resources between data collection, analysis and action, freeing up more resources to design and implement effective interventions.

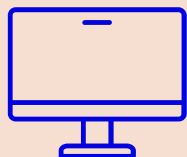
It is important to note, however, that data sharing is not a goal in itself but a key pillar for a stronger data ecosystem, which if done purposefully can facilitate the identification of forced labor, and inform quality decisions to prevent, mitigate and remediate, forced labor in corporate supply chains, for the benefit of those individuals at risk.

To this end, Section 6 of this report contains recommendations for all stakeholders involved and identifies a few areas where Tech Against Trafficking is determined to support further collaborative efforts to build these foundations.

Approach and Limitations

We approached this project by mapping the complexities of the current supply chain data ecosystem through desktop research, consultations and workshops with relevant stakeholders, followed by identifying key ingredients and practical solutions for how to strengthen this data ecosystem. The research was based heavily on qualitative information derived from stakeholder interviews.

The project ran from August to December 2023 and included the following activities:

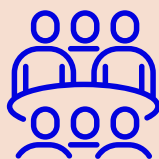


Desktop research on publicly available reports relating to the use and sharing of data by different actors to combat forced labor in global supply chains (see Annex for Bibliography)



Interviews with 10 multinational companies, 6 leading technology-based solution providers, 6 global civil society and intergovernmental organizations.

Interviewees represented forced labor and modern slavery sectoral expertise across Asia-Pacific, Europe and North America.



4 multi-stakeholder convenings, involving businesses, civil society and governments in Asia (Singapore, 20 September), Europe (Brussels and Paris, 18 and 20 October) and North America (California, 19 October)

The Tech Against Trafficking Summit in New York on 16 November included a panel discussion on strengthening the data ecosystem for labor rights

Two limitations are worth noting:

First, this project did not include any consultations with workers, who provide first-hand data on grievances and labor violations. It was a deliberate choice not to focus on this initial stage of data collection from individuals, which raises its own challenges and opportunities⁴, but rather on the data-sharing dynamics between organizations that are custodians of that data (e.g. companies, governments, governmental and non-governmental organizations) and who have the control and agency to decide on how that data gets shared.

Second, the perspective in this report is slanted toward large multinational companies seeking to manage risks in their complex global value chains. However, gathering perspectives of other key actors in the ecosystem (policymakers, civil society) was essential to understand potential opportunities to improve data-sharing.

A priority area looking forward (see Section 6) will be to further engage specific policymakers on concrete opportunities to collaborate on the recommendations in this report.

Finally, any mention of specific tools or initiatives are intended to be illustrative and do not constitute endorsement of any kind by TAT or BSR.

About Tech Against Trafficking and BSR

[Tech Against Trafficking](#) (TAT) is a coalition of leading technology companies collaborating with global experts to help eradicate human trafficking and modern slavery using technology. Founded in 2018, and led by Amazon, Google, Meta and Microsoft, Tech Against Trafficking supports the anti-trafficking field by tapping into these companies' technical expertise, capacity for innovation, and global reach. Together, this group works with anti-trafficking experts to identify and support opportunities to develop and help scale promising technologies. Since 2023, TAT is part of the Global Business Coalition against Human Trafficking (GBCAT) as its flagship technology pillar.

[BSR](#), which acts as the secretariat of GBCAT, is a sustainable business network and consultancy focused on creating a world in which all people can thrive on a healthy planet, by supporting business transformation through insights, advisory services and collaborations. BSR's expertise spans across sustainability topics, and includes deep experience of working with businesses on managing human rights risks, including of forced labor in global value chains.

If you are interested in finding out more about our work related to this report, or Tech Against Trafficking more generally, please visit our website techagainstrafficking.org/.

⁴ See for example [IOM's Report on Using Technology to Recruit and Employ Migrant Workers Responsibly](#) and the [Worker Engagement Supported by Technology \(WEST\) Principles](#)

How To Read This Report

SECTION 2.

The Supply Chain Data Ecosystem

This section describes the type of data ([Section 2.1](#)) and the different actors ([Section 2.2](#)) that make up the data “ecosystem” that underpins efforts to address forced labor risks in global supply chains.

SECTION 3.

Key Elements of An Effective Supply Chain Data Ecosystem

This section identifies three key elements of an effective supply chain data ecosystem, which include full coverage, high-quality and actionable data, and data-sharing.

SECTION 4.

The Current Landscape of Data-Sharing

This section describes the extent to which data is currently shared between actors across the supply chain data ecosystem ([Section 4.1](#)) and explains the barriers, including technical, legal and behavioral challenges, that currently prevent data from being shared to its most beneficial extent ([Section 4.2](#)).

SECTION 5.

Illustrative Examples of Effective Data Sharing

This section describes a few examples of effective data-sharing initiatives from which lessons may be drawn to help promote more data-sharing across the supply chain data ecosystem ([Section 5.1](#)). It also identifies several existing and emerging technologies that could help overcome some of the barriers to data-sharing identified in Section 4 ([Section 5.2](#)).

SECTION 6.

From Principles to Action

This section provides practical recommendations for businesses, governments and civil society actors ([Section 6.1](#)), and an outline of three areas where TAT will be seeking to support collective action ([Section 6.2](#)).

2. THE SUPPLY CHAIN DATA ECOSYSTEM

Key components of the data ecosystem that underpins efforts to address forced labor risks in global supply chain include:

- » The types of data flowing within this ecosystem
- » The different actors that produce, collect, aggregate, analyze, share, or use this data
- » How this data is currently shared (or not) between actors

A **data ecosystem** is a network of organizations, and relationships between organizations that are defined by, or depend on, the flow of data. Data is collected by some actors, and may be processed, aggregated, shared and ultimately used by different actors for varying purposes.

2.1 What Type of Data?

For the purposes of this report, the supply chain data ecosystem comprises any data that enables a company or other actor to identify and act on evidence of actual or potential forced labor occurring in a specific context.

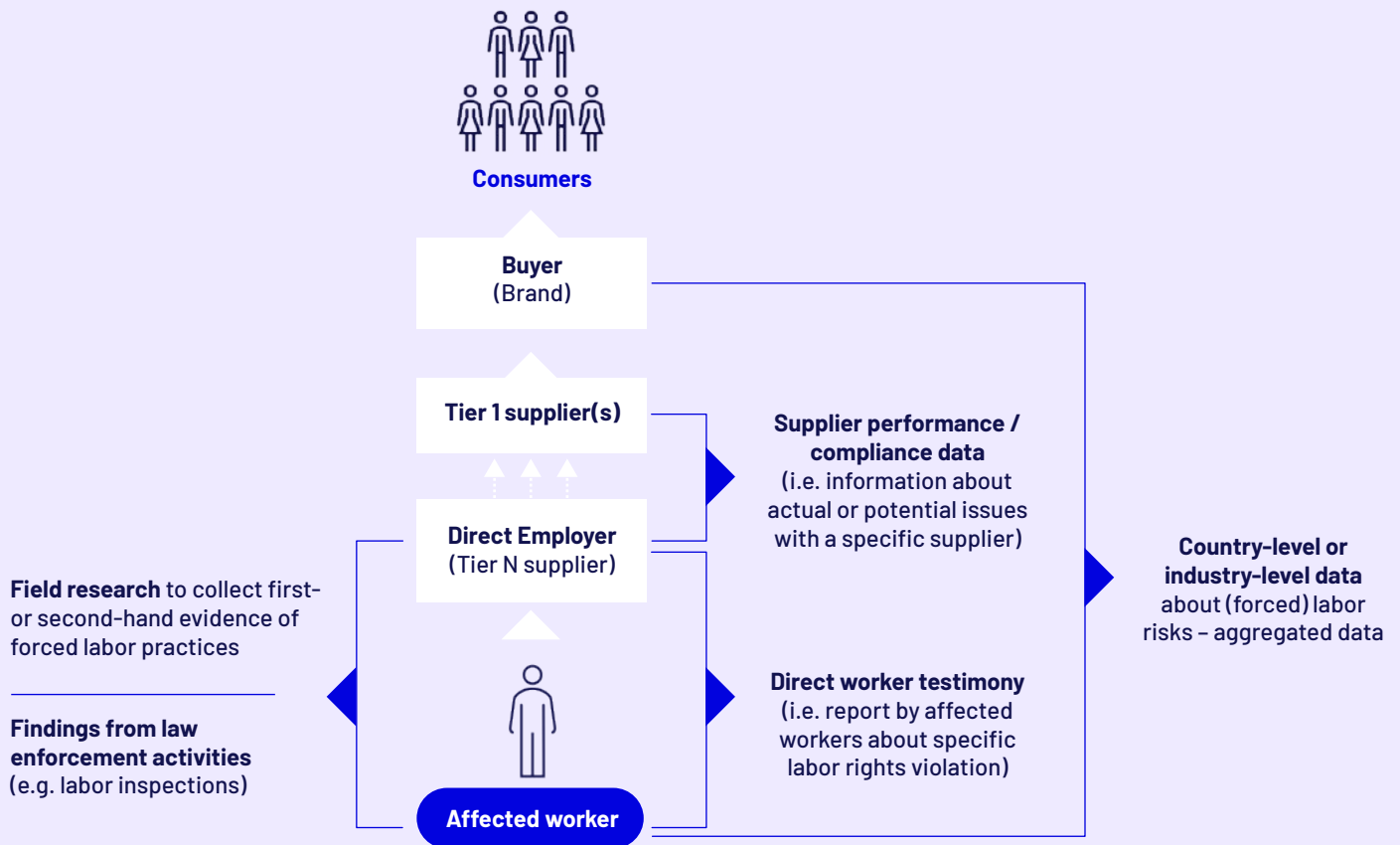
This ranges from evidence of actual forced labor (e.g. an individual worker's testimony) to contextual or "proxy" risk data enabling someone to evaluate the likelihood that forced labor may be occurring, for example the prevalence of migrant labor, corruption, or other labor violations. It includes evidence of "indicators" of forced labor such as those developed [by the ILO](#) (e.g. intimidation and threats, withholding of wages, excessive overtime), or other datapoints (e.g. supplier audits recording the proportion of migrant workers) relied upon to evaluate forced labor risk. It also includes

evidence of unscrupulous or negligent workforce management practices by employers, which could increase risk of forced labor, among other labor violations.

This data also ranges from “tactical” data about specific entities or locations (e.g. a factory, an employer) to more “strategic” insights, for example aggregated datasets that provide information about general patterns or trends of forced labor in certain industries or geographies (e.g. the [ILO’s Global Estimates of Modern Slavery](#) or [Walk Free’s Global Slavery Index](#)).

In this report, the term “data” is used broadly to encompass all forms of relevant information: from pure factual “data” (e.g. facts and figures) to “intelligence” based on data that has been interpreted and evaluated to determine its utility to trigger a specific action (e.g. designating an entity or location as high risk based on aggregation of signals).

FIGURE 1:
Types and Sources of Forced Labor Data



Data are collected through different means, depending on the entity gathering the data and its intended use.

- **Direct worker testimonies:** these may be collected by employers or auditors commissioned by the employer's buyers, or researchers from civil society, through in-person interviews, focus groups, written surveys or via "worker voice" tools that leverage mobile technology to survey workers directly. They may also be received through "hotlines" managed by companies or other actors, or detected through monitoring of social media channels (e.g. Facebook groups and hashtags).
- **Law enforcement activities:** police investigations, labor inspections or other enforcement activities by public authorities may detect situations of forced labor or human trafficking. This data will generally be held in confidential reports but may sometimes be aggregated into publicly available statistics (see Section 2.3 for examples). Data involving trafficking can also be recorded through national referral mechanisms, which governments are under obligations to set up pursuant to international conventions.⁵
- **Field research by civil society:** this may include reference to direct worker testimonies, as well as first or second-hand evidence of forced labor practices, collected by NGOs, international organizations (e.g. International Labor Organization, International Organization for Migration, IOM), or journalists and compiled in public reports or news articles.
- **Supplier performance and compliance data:** as part of supplier risk management practices, companies will verify and evaluate how well suppliers are equipped, through their policies, processes, and management practices, to meet their contractual obligations to respect workers' rights and mitigate risks of forced labor. Such data may be captured through audits, self-assessment questionnaires or other supplier-provided information. It may also be supplemented by publicly available information about allegations against a supplier (e.g. through "adverse media alerts" picked up by third party solutions that automatically scan online news sources for negative references to named entities).
- **Aggregate data:** data from the other sources listed above can be aggregated to provide more general insights into risks of forced labor related to, for example, a specific country or industry. This includes public statistics on forced labor (such as the ILO's [Global Estimates of Modern Slavery](#), Walk Free's [Global Slavery Index](#), or the US Department of Labor's [List of Goods Produced by Child Labor or Forced Labor](#)) or paid-for risk indices such as Verisk Maplecroft's Forced Labor Index (based on aggregated public information about governments' efforts to combat forced labor), or data hubs like the [Counter Trafficking Data Collaborative](#) (which

5 The United Nations' international instruments on national referral mechanisms for victims of human trafficking include: (a) The Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime, 2000; (b) Recommended Principles on Human Rights and Human Trafficking, 2002 (the Office of the United Nations High Commissioner for Human Rights); (c) United Nations Global Plan of Action against Human Trafficking, 2010; (d) Human Trafficking and Forced Labour Exploitation: Guidance for Legislation and Law Enforcement, 2005 (International Labour Organization); (e) International Organization for Migration, Global Initiative to Fight Human Trafficking, London School of Hygiene and Tropical Medicine, Caring for Trafficked Persons: Guidance for Health Providers, Geneva, 2009; (f) United Nations Office on Drugs and Crime, International Framework for Action to Implement the Trafficking in Persons Protocol, New York, 2009

aggregates data from several counter trafficking organizations to generate insights about, for example, higher risk sectors or victim profiles). Many aggregate data providers leverage artificial intelligence (AI) to collect and/or analyze large datasets.

This general description of the types and sources of forced labor data that feed into the supply chain data “ecosystem” begins to illustrate the variety of actors involved. The next section aims to categorize and describe these different actors in more detail.

2.2 Who Are the Actors Involved in this Data Ecosystem?

Within the parameters of the supply chain data ecosystem defined above, this section describes the different actors that participate in this ecosystem, and their respective roles in how data is collected, processed, and used.⁶ The following Section 2.3 unpacks how these different actors share data across the ecosystem.

FIGURE 2:
Actors in The Supply Chain Data Ecosystem



- **Supply chain workers:** Supply chain workers are the primary contributors of the data that feeds the supply chain data ecosystem. Workers provide first-hand data, including actual evidence or indicators, of forced labor and other labor violations. This data may be provided through various channels, such as worker voice tools, audit interviews, ethics hotlines, or via local NGOs, researchers or law enforcement officials. Rarely will supply chain workers retain control or stewardship of this data.

⁶ This analysis draws from the Open Data Institute’s helpful framework for mapping data ecosystems, which distinguishes between data stewards, beneficiaries, contributors, intermediaries, creators (who use data to create things), regulators and policymakers. <https://theodi.org/insights/reports/mapping-data-ecosystems/> Noting that some actors may play multiple roles.

- **Businesses:** businesses—defined for the purpose of this report as any organization that sells products or services for profit—can be both contributors and beneficiaries (or users) of data in the supply chain data ecosystem. They may contribute data they have collected from their own workers, via their suppliers or other sources, and benefit from data they obtain via the ecosystem and rely on to identify risks and inform their decision-making (e.g. take action to mitigate risks in a certain location).

A supply chain is made up of buyers and suppliers, and many businesses will be both. Buyers will typically seek to access data from the ecosystem, to gain visibility of labor rights risks in their supply chains; whereas suppliers will typically be required to collect and contribute data to respond to requests from buyers. Buyers and suppliers may all find themselves compelled to collect and contribute data in response to regulatory requirements (e.g. through regulatory disclosures, in response to law enforcement actions).

In all cases, these businesses will be stewards of the data they collect and/or receive, requiring them to have data governance and management systems in place to enable access to the data, and ensure its privacy and security.

- **Solution providers:** many technology-based solutions have been developed in recent years to support the identification and prevention of forced labor risks in global supply chains. These include several tools that facilitate the collection, processing and analysis of data to inform actions aimed at preventing or mitigating forced labor risks.⁷

Tools aimed at businesses are primarily designed to facilitate supply chain mapping and management, risk identification, and worker engagement. Supply chain mapping and management tools include software to facilitate communication with suppliers, or to map supply chains, including AI-based tools that scrape publicly available data (e.g. customs records) to rapidly and automatically map a company's supply chain.⁸

Risk identification tools include adverse media alert monitoring (to detect allegations relating to specific suppliers), as well as solutions that generate risk profiles for suppliers, location, or sectors based on publicly available or proprietary databases.⁹ Worker engagement tools typically leverage mobile or other technologies that are easily accessible for supply chain workers to gather feedback directly from workers on their working conditions.¹⁰

The providers of these solutions include for profit, and non-profit, organizations. And they generally act as intermediaries and aggregators within the data ecosystem, typically receiving data from other actors (e.g. supply chain workers directly, or leveraging datasets created

7 For a more detailed landscape of technology-based tools to combat trafficking, see previous report co-published by OSCE and TAT: [Leveraging innovation to fight trafficking in human beings: a comprehensive analysis of technology tools \(2020\)](#)

8 See for example [SAP Ariba](#) (general supply chain management) or [Altana](#) and [Sayari](#) (AI-based supply chain mapping).

9 See for example [Verisk Maplecroft](#) or [Sphera](#)

10 See for example [Diginex](#) or [Issara Institute](#)

by others). Technology and data solution companies that rely on data for data analysis to create new outputs such as analysis and insights, or even in the form of products or services, can also be considered data creators.

- **Civil society:** this group includes non-governmental organizations (NGOs), academia, journalists and other experts working on forced labor issues.

NGOs range from local grassroots organizations providing in-person support to workers in, or vulnerable to, forced labor, to international organizations seeking to raise awareness about risks and to drive the actions needed.

This also includes non-profit organizations providing tools or services to support companies in identifying forced labor risks, whether through open databases (e.g. [Open Supply Hub](#)) or publications (e.g. [Walk Free's Global Slavery Index](#)), operating public helplines (e.g. [Unseen UK](#) operates the UK's modern slavery helpline and publishes an annual assessment to share insights from its data) or offering tailored tools or services to help companies assess their specific risks (e.g. using the [Issara Institute's](#) worker voice platform to access insights from specific workers, or [Stop the Traffik's](#) intelligence and analytics services). There is also significant academic interest in the problem of forced labor, generating large volumes of research and publications on both the nature of the risk and solutions.

Civil society actors are primarily contributors of data to the ecosystem, through their published research and reports, although they also benefit from data shared by others that can inform their own work. They also play an important role as stewards, intermediaries and aggregators of data, in their role as trusted and independent sources of information on forced labor risks.

- **Governments and intergovernmental bodies:** Governments (and inter-governmental organizations) are engaged in a range of relevant activities, from designing policies and laws and enforcing them (e.g. police, border control, labor inspectorates), to providing frontline public services (e.g. hospitals, social workers). In these different capacities, governments are significant contributors and stewards of data they collect about forced labor risks through these activities. They are also significant beneficiaries and users of that data, as well as data from other actors, on which they rely to inform policies, laws and enforcement strategies aimed at combatting forced labor.
- **Collective initiatives:** efforts to combat forced labor and other labor violations in global supply chains have also seen the creation of collective initiatives, bringing together multiple stakeholders, either from the same group (e.g. industry associations), or from different groups (e.g. multistakeholder initiatives), to collaborate including through the pooling of data about forced labor risks. When such initiatives exist as organizations in their own right they are also actors in this data ecosystem, as intermediaries and aggregators of data.

3. KEY ELEMENTS OF AN EFFECTIVE SUPPLY CHAIN DATA ECOSYSTEM

An effective data ecosystem is one that:

- » Enables quality data to be captured and to reach relevant actors to inform impactful actions to identify, prevent and mitigate forced labor and
- » Does so in a manner that reduces duplication and redundancies, and equitably shares the costs of collecting and processing the data, thus freeing more resources for data analysis and action.

Our research and insights from stakeholders interviewed as part of this project surfaced 3 key elements to achieve such an effective data ecosystem in relation to forced labor risks in complex global value chains.

1 Full Coverage

An effective supply chain data ecosystem would ensure full coverage and visibility of the forced labor risks in our global supply chains. This would ideally be based on full traceability of supply chain relationships, over which data about forced labor risks could be layered leading to a comprehensive understanding of where the most severe and likely risks are in any company's global supply chain.

Indeed, this is how companies have interpreted requirements (under the UN Guiding Principles on Business and Human Rights and OECD Guidelines, and emerging human rights-related regulations) to take a risk-based approach to preventing and mitigating forced labor risks in their supply chains.

This has led to significant efforts by companies (and solution providers) to "trace" products and supplier relationships from the extraction of raw materials to the end-customer company. The objective is to identify the entities or locations in a company's supply chain, before layering any available "risk" data over such connections to identify those higher risk entities or locations to prioritize for action.

This is a logical approach, but not the only approach. There is significant evidence available on forced labor in activities and locations throughout global value chains. For example, a company sourcing Indian sandstone can expect a high likelihood that quarry workers involved in its extraction have experienced a form of bonded labor. Similarly, companies relying on cobalt in their products can expect a high likelihood that it is connected to child or forced labor.

In such instances, it is highly likely, because of the nature of the products or activities involved, that forced labor is occurring in a part of the company's supply chain. It may therefore be more appropriate (and effective) for a company to prioritize efforts to prevent or mitigate those risks (e.g. through collective action or support to local initiatives), without necessarily being able to fully 'trace' its connection to a specific entity or location at the lowest tiers of the supply chain. Bearing in mind that for certain commodities, supply chains are so dynamic and extended that it may never be possible to achieve full traceability of all entities involved, which cannot be a reason not to act on known risks.

Although useful to identify opportunities for leverage and collaboration, full coverage and understanding of risks in our global supply chains does not necessarily require full traceability of supply chain relationships.

2 Quality, Actionable Data

An effective supply chain data ecosystem is built on quality, actionable data.

First, the data must be accurate, which ideally means that it comes from a reliable source and has been or can be verified (e.g. by cross-checking against other sources).

Second, to enable appropriate action the data should be dynamic, reflecting up to date information. For example, reports about labor exploitation at a certain facility may be out of date after a few months because of remedial actions taken by the employer. This is an area where technology can help facilitate the dynamic collection of data (e.g. "live" worker voice tools) and/or maintenance of dynamically updated datasets (e.g. digital procurement tools enabling "live" supplier risk profiles).

3 Data Sharing

To realize its full value and maximize its impact, quality data should be shared with other actors susceptible to take meaningful action in response. Indeed, it is rare that data considered valuable by one actor do not also present value for others¹¹. For example, evidence of forced labor at a factory will be of value not just to the owner of the factory, but also to its buyers

¹¹ See Open Data Institute report on Understanding the social and economic value of sharing data (which includes a prototype framework to help organizations think about the value the data they hold can yield to them and to society: <https://theodi.org/insights/reports/understanding-the-social-and-economic-value-of-sharing-data-report/>)

seeking to understand risks linked to their products and to local authorities and civil society organizations working to address potentially systemic issues in the area.

In some instances, such as judicial investigations, it may be justified to keep data “closed”. However, in many cases sharing data brings several benefits.

It avoids the duplication of efforts to collect data, reducing the overall costs linked to such efforts, and the unnecessary storage of redundant data. It allows resources to be more effectively dedicated to the analysis of data and acting upon it.

Sharing data can help different actors gain insights into the scale and nature of forced labor risks, and improve the accuracy of insights or fill gaps in knowledge to inform appropriate and timely actions to prevent, mitigate or remedy cases of forced labor. It can also help different actors triangulate multiple data sources to verify their own data, providing a stronger evidentiary basis for their actions.

Sharing data between public, private and civil society sectors can also support the development of coherent and effective policies and regulations.

Seeking the broadest potential impact for data by enabling it to inform multiple actors’ actions is also an important way to pay due credit and respect to the original data subject (e.g. worker who shared their experience) and reduce the burden on victims having to re-tell their stories multiple times. However, it is imperative that any sharing be done in a way that protects the privacy and security of the affected rightsholder (see further below).

Two preconditions exist to sharing supply chain data effectively and appropriately. First, it must be technically possible to share and mutually use the data in effective ways. This implies a level of technical capacity by the actors involved, which implies a level of investment and resources, and data interoperability. Second, it must be legally and ethically possible to share the data. This includes respecting anti-trust rules on the sharing of commercial sensitive information and abiding by strong data privacy principles. We explore these potential challenges in Section 4.2 on current barriers to data-sharing.

These key elements present challenges and opportunities that have been well-documented in several reports.¹² The remainder of this report focuses on the third element, that of sharing of data, and how different actors in the supply chain data ecosystem might be able to exchange about forced labor risks more effectively. Noting, as previously, that sharing data should not be a goal in itself but can, in the right circumstances, enable better informed actions to identify, prevent, mitigate and remediate forced labor in corporate supply chains.

12 See for example [Envisioning an integrated and open labor data ecosystem \(2021\)](#) by WikiRate (commissioned by Humanity United)



4. THE CURRENT LANDSCAPE OF DATA SHARING

This section first describes the fragmented state of data-sharing within the supply chain data ecosystem, and discusses common barriers to data-sharing identified through this project.

4.1 How is Data Currently Shared?

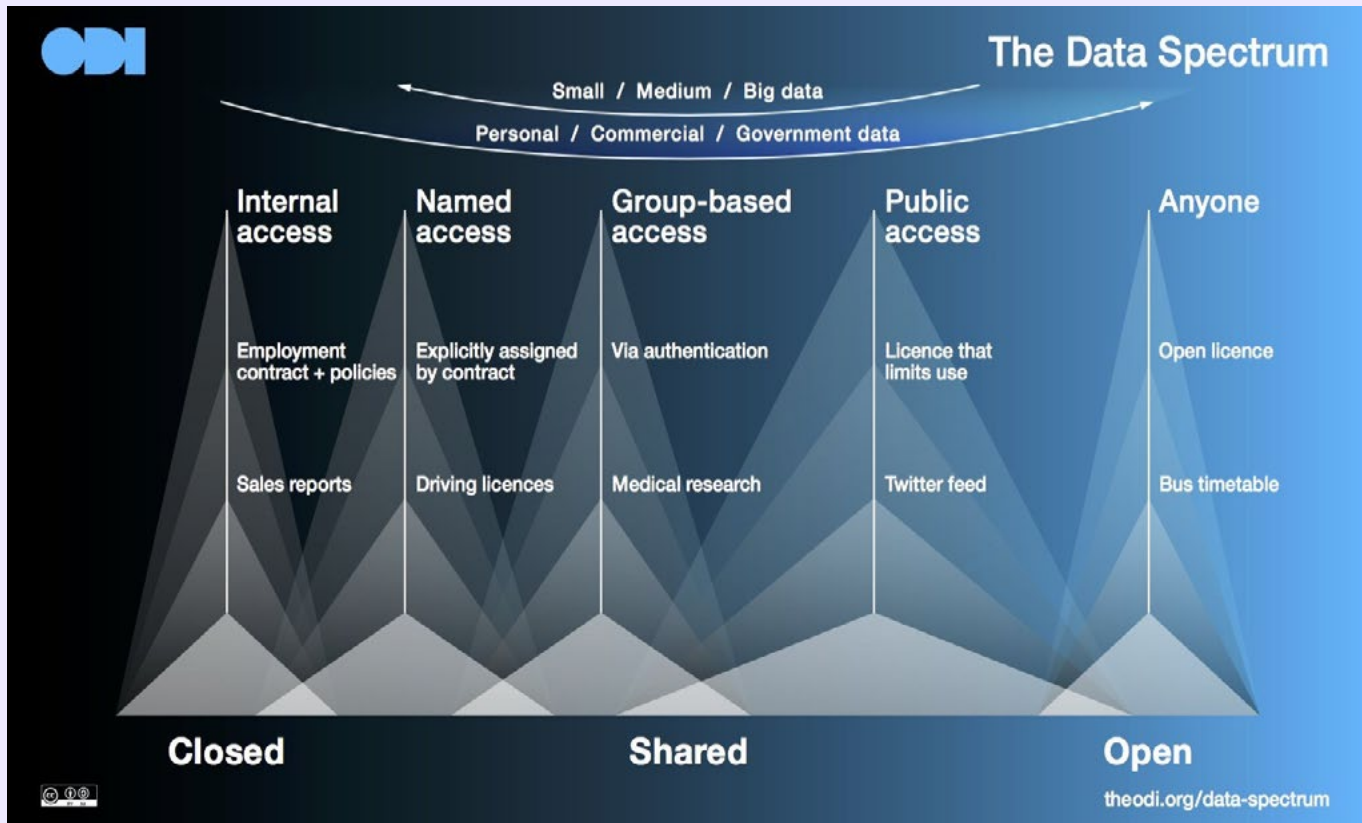
Despite vast amounts of relevant data being generated by a multitude of actors, stakeholders interviewed for this project all agree that a significant proportion of that data is not being shared across other actors.

This section offers a simplified overview of how data currently circulates within the global supply chain data ecosystem, and what “siloes” exist.

First, it is helpful to understand that data may be shared with different degrees of “openness”, as illustrated by the [Open Data Initiative's Data Spectrum](#) (Figure 3 below).

- Data may be retained within an organization (e.g. internal employee surveys)
- Data may be shared between two or more organizations with contractual confidentiality obligations and restrictions on onward sharing (e.g. third-party audit results)
- Data may be shared between multiple organizations through a common platform managed by a third party, and which authenticated organizations can access (e.g. audit-sharing platforms run by the [Responsible Business Alliance](#) and [Sedex](#))
- Data may be made public, but subject to a license that limits its use to certain organizations or purposes
- Data may be made public and fully open for anyone to use for any purpose (e.g. [Open Supply Hub](#) or the [Counter Trafficking Data Collaborative](#))

FIGURE 3:
The Data Spectrum

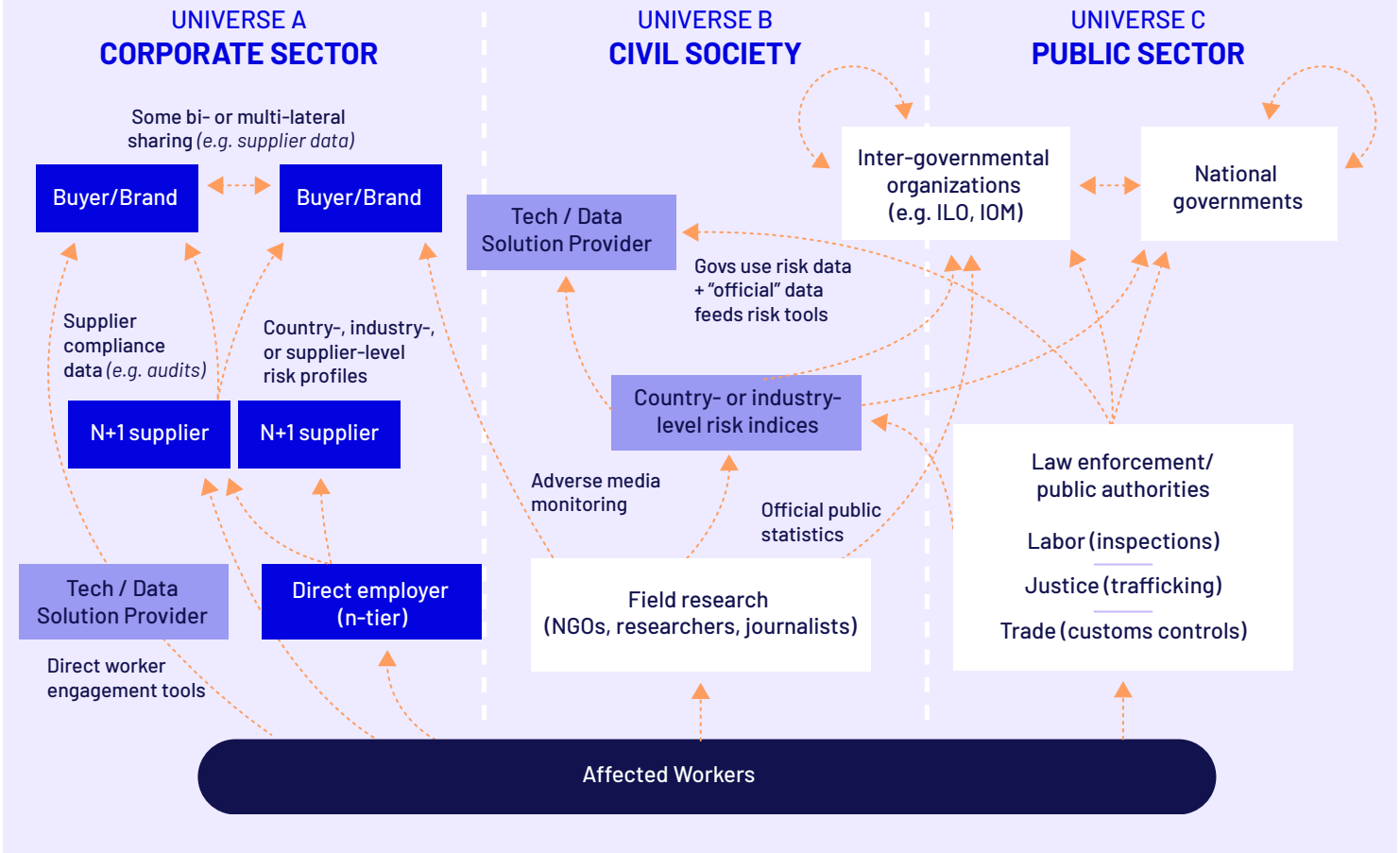


THREE UNIVERSES OF DATA

A simplified analysis of data flows between actors in the supply chain data ecosystem reveals three broad "universes" of data-sharing:

1. Data flows between companies ("corporate sector")
2. Data flows within and between government and policymaking bodies ("public sector")
3. Data flows between other actors making up "civil society", including NGOs, academics, journalists, as well as the general public

FIGURE 4:
Three Universes of Data



UNIVERSE A: CORPORATE SECTOR

Supplier audits, investigations and “worker voice” tools

Most of the company-driven efforts to identify risks of forced labor or other labor exploitation are typically triggered by “buyer” companies seeking to verify that their suppliers (and any goods or services procured through them) are not connected to the use of forced labor. Some employers in high-risk sectors may take voluntary action to detect or address forced labor in their own operations, but it is rare that suppliers proactively or voluntarily share



information with their customers about actual or potential forced labor in their operations (or their own supply chains).

Leveraging their contractual rights or commercial leverage, “buyer” companies request information from their suppliers (e.g. about the profile of their workforce or the policies and processes in place to mitigate risks of exploitation) either directly, or through auditors or investigators, who may also visit the supplier’s premises to obtain additional first-hand evidence about the supplier’s management practices. Audits or investigations will often include interviews with workers, who may share further insights into actual or potential forced labor.

These investigations or audits may incorporate, or be supplemented by, the deployment of direct worker engagement tools such as “worker voice” solutions that use mobile or other easily accessible technologies to survey workers directly and gain more informal insights into their experiences.

These activities will generally be conducted under contractual agreements (between buyer, supplier, third party auditor and/or worker voice solution provider) that ensure any information collected remains confidential between the parties involved and proprietary to the company that paid for the assessment (i.e. generally the “buyer”).

In such a scenario, any data collected about actual or potential forced labor remains “closed” and will not be shared beyond these three or four actors (the “buyer” company, the supplier, the auditor/investigator and the solution provider). In some instances, the “worker voice” solution provider may not even have access to the underlying data collected by the solution.

Sharing Supplier Risk Data

In several sectors, initiatives have been developed to enable data from supplier audits to be shared with multiple “buyer” companies, with the dual aim of mutualizing the costs of conducting audits and increasing the value and impact of that data beyond a single company.¹³ Examples of this include [RBA-Online](#) (by the Responsible Business Alliance), the [Sedex Platform](#), [Better Work](#) and the [Initiative for Compliance and Sustainability’s database](#).

No other evidence was found of companies sharing specific or aggregate data about forced labor risks linked to their operations (e.g. risks identified through grievance mechanisms or internal reporting processes) with third parties.

General Supplier Risk Management Data

Companies with large global supply chains will generally audit or investigate a subset of their suppliers, leveraging general risk data (e.g. country and sector risk) to identify and prioritize those relatively higher-risk suppliers they should audit or investigate further.

¹³ Value and impact of data is increased by informing preventive, mitigatory or remedial measures by more “buyers”, and increasing their leverage towards a supplier or other relevant stakeholders (e.g. local government) through collective action. See Section 3 above for more insights into the value of data-sharing between companies.

Such general data typically includes aggregated country-level and industry-level risks, based on publicly available or proprietary databases such as those described in Section 2.1 above, as well as publicly available information about any allegations or compliance risks involving the supplier or a related entity (e.g. from NGO reports, news articles, legal cases or sanctions lists).

Individual companies may access this data about their suppliers through a mix of their own desktop research and third-party vendor solutions. Indeed, there is a growing menu of integrated supplier risk management tools and platforms that combine all these data inputs into user-friendly and dynamic supplier risk profiles.

Sharing Data with Civil Society Organizations

Companies share data publicly in their sustainability reports, which are aimed primarily at explaining to investors and civil society organizations how the company is managing its impacts on people (including any forced labor risks). Beyond that, companies tend to be reactive in what data they share: an NGO or media organization raises a question in relation to a fact or allegation, and the company responds, often with relatively limited specific information about the facts in question.¹⁴

In some cases, companies might share data more proactively with an NGO they have an established relationship with, or to seek their support in implementing preventive or remedial measures. Yet, it remains rare for companies to proactively share specific data about forced labor risks in their own operations or supply chains with civil society organizations.

Solution Providers and Collective Initiatives

Solution providers or initiatives that collect or process forced labor risk data as part of their services to companies generally focus their efforts on making that data available for the benefit of their customers or member companies.

Few invest in enabling some of that data to be shared with other parties. For example, the [Initiative for Compliance and Sustainability](#) (which provides an audit-sharing platform for brands and retailers) shares aggregated data from audits with the ILO, to support the ILO's efforts to understand and build a global picture of forced labor risks.

¹⁴ Since 2005, the Business & Human Rights Resource Centre has invited companies to respond to allegations of misconduct raised by civil society, and [published](#) these exchanges.

UNIVERSE B: CIVIL SOCIETY

Civil society represents a very wide and varied range of actors, encompassing everyone that is not government or business.

For the purposes of this report, we focus on actors involved in activities to address forced labor linked to the private economy, including:

- non-governmental organizations focused on addressing forced labor
- academics conducting research on forced labor
- journalists investigating specific or general stories about forced labor



Non-Governmental Organizations

Many NGOs have embedded in their operating model the need to share insights from their work publicly to raise awareness and/or effect changes in behavior. However, published data is often aggregated, or anonymizes its sources. The lead time to publish these reports also means the data is less specifically actionable than instantly shared data.

Nevertheless, many corporate and public actors rely heavily on public reports by NGOs to identify geographical areas or industry sectors where risks of forced labor are high. For example, the [US Department of Labor's List of Goods Produced by Child Labor or Forced Labor](#) is understood to be largely based on NGO reports. NGO reports are also a primary source of data for non-profit or for-profit providers of aggregate data on forced labor risks.

NGOs also share specific allegations directly with law enforcement authorities, to trigger enforcement action against companies. For example, the [US CBP](#) explicitly states that it “depends on non-governmental organizations around the world to provide critical information and details for forced labor allegations”.

Transparentem offers an interesting variant of [NGO-to-company data interaction](#), based on the conditional sharing of risk data specific to a company. The organization investigates specific instances of human rights abuses (including forced labor) at worksites around the world, and traces these back to specific companies that currently or recently sourced from the investigated worksites. It then shares this data with the identified companies, providing them with time to commit to and carry out remediation, failing which they publish the findings.

Bi-lateral sharing of data between NGOs remains more ad hoc than might be expected, with similar barriers observed to data-sharing between companies (see further in Section 4.2). Interviews also

revealed some desire to integrate more data from NGOs into emerging data “solutions” being developed for private companies, but again, some barriers (including technical capacity, see further in Section 4.2) still prevent this at scale.

Academics and Journalists

Sharing the data they collect for the public good is also an inherent objective of the work of academics and journalists, so many research papers and articles are published by these actors. While many of these publications include relatively broad insights into forced labor risks aimed at raising awareness of general risks and patterns in certain sectors or locations, some can include very specific data aimed at triggering actions by businesses and other actors on specific risks of forced labor.

For example, the [New York Times’ expose on child labor in the United States](#) and British media’s coverage of [Operation Fort in the United Kingdom](#) both included specific data that led to targeted action. The Australian Strategic Policy Institute’s [Uyghurs for Sale report \(2020\)](#), which included relatively specific allegations of forced labor in factories linked to 82 global brands, was an important trigger for the increased scrutiny of global supply chains into Xinjiang, China.

Such publications by academia and journalists play a vital role in general awareness-raising and advocacy efforts – as they will often shape public knowledge on the subject.

However, a significant volume of academic research is published via proprietary publications only accessible behind paywalls, thus limiting their availability and use by other actors, especially those with constrained resources. This also affects certain media sources (such as the above-mentioned New York Times article).

UNIVERSE C: PUBLIC SECTOR

Evidence of actual or potential forced labor may be collected through various frontline public services or enforcement activities, including police investigations, labor inspections, trafficking “hotlines”, border authorities, and health services. However, the public sector is not the most mature in sharing its data, either within or between government agencies, or with other actors like businesses or civil society organizations.

Further, it is unfortunately true that countries where the risks of forced labor are perceived



to be relatively higher (e.g. in Southeast Asia¹⁵) tend to be countries where resources available to collect and share data about forced labor risks (e.g. by labor inspectorates) are more limited and thus limited data is available.¹⁶

Sharing Within Government

These different frontline activities are often managed by separate departments, with their own mandates, budgets, and accountability mechanisms, which can limit the sharing of data within or between government agencies. For example, addressing forced labor is often the responsibility of labor departments, whereas human trafficking falls to justice departments and illegal migration to ministries of interior. An effective strategy to combat forced labor requires a holistic approach that combines insights into these different issues (while respecting any justified ethical walls). Yet few countries take a coordinated approach to their management of these different types of forced labor-relevant data.

It is also unclear to what extent first-hand data collected by public services or authorities is shared with policymakers and legislators to inform executive and legislative priorities, as well as enforcement activities. For example, the U.S. Customs Border Protection Agency [describes](#) its approach to enforcing the import bans on products produced with forced labor as “[relying] on multiple Partner Government Agencies for the information and resources required to investigate allegations of forced labor”, as well as “[depending] on non-government organizations around the world to provide critical information and details for forced labor allegations”. Yet whether and how different U.S. government agencies share data about forced labor risks (domestic and international) remains unclear.

Despite many governments’ stated commitments to improved public data management and analytics (see for example France’s [DataLab](#) initiative) the perception among stakeholders interviewed as part of this project is that significant progress remains to be made on this front.

Sharing Between Governments

As part of this project, very limited insights were obtained into any cooperation between governments that might include bilateral data-sharing concerning forced labor risks. The next paragraphs describe how some governments share data publicly, or through work with inter-governmental organizations such as the ILO or the IOM.

¹⁵ As reported by the ILO in its [2022 Global Estimates of Modern Slavery](#)

¹⁶ That said, the revelations in early 2023 about child labor in the U.S. (see reference above to [New York Times article](#) in February 2023) were a wake-up call for countries perceived as relatively lower risk, and have increased the scrutiny of forced labor risks in the U.S. and other “Global North” countries (e.g. reported abuses of seasonal farmworkers in the US and UK). So government data about domestic risks of forced labor is likely to be lacking also in more developed countries perceived to be less exposed.

Sharing Outside Government

Some governments make certain statistics from law enforcement activities publicly available, although these tend to be more focused on trafficking offences and trade restrictions (e.g. blocking imports) than domestic labor inspections.

For example:

- [Europol](#) publishes reports on results of coordinated law enforcement action against human trafficking for labor exploitation
- [U.S. Customs and Border Protection](#) publishes statistics on shipments stopped for forced labor enforcement action
- [Australia's Interdepartmental Committee on Human Trafficking and Slavery](#) publishes a report on human trafficking and other modern slavery offences, including statistics on the yearly number of suspected human trafficking, slavery and slavery-like offences reported to the Australia Federal Police
- The EU proposal for a [Regulation Prohibiting Products Made with Forced Labor](#) includes plans to publish information about enforcement decisions.

However, most of the data collected and held by governments, particularly in relation to domestic forced labor risks (or related trafficking), is not shared beyond government agencies. One civil society stakeholder interviewed as part of this project pointed to national referral mechanisms¹⁷ as an example of a valuable source of human trafficking-related data that is rarely shared with stakeholders outside government, despite being intended to enable coordination in strategic partnership with civil society organizations, the private sector, and other relevant actors.

Data shared by governments may also lack transparency about the methodologies used to collect or analyze the data or be biased by political agendas.

Finally, some of the data published by governments is not based on government-held data, but rather on data from other sources (such as NGO reports), and this is not always made clear. For example, the US Department of Labor's List of Goods Produced by Child Labor or Forced Labor is described as being a list of goods and their source countries that the Bureau of International Labor Affairs (ILAB) has reason to believe are produced by child labor or forced labor. ILAB states that it encourages and reviews submissions by national governments, international organizations, businesses and corporations, trade and workers' organizations, NGOs, academia, and the public, from which one can infer those are relevant sources of data for this list.

By comparison, the EU's approach to "public databases" intended to support companies' efforts to manage risks in their supply chains is more explicitly based on external sources. The EU's legislative

¹⁷ See footnote [4] above for references to international conventions governing national referral mechanisms.

proposal for a [Regulation Prohibiting Products Made with Forced Labor](#) includes plans for a public database that will include “indicative” and “non-exhaustive” information about high-risk sectors and geographies, and which is expected to resemble the list of conflict-affected and high-risk areas developed by external experts (under mandate from the EU) to support business’ compliance with the EU Conflict Minerals Regulation . If so, this database is likely to be a compendium of existing public resources on geographical and sectoral risks of forced labor rather than based on any own data held by EU member states.

Sharing Via Inter-Governmental Organizations

A significant amount of data is collected, aggregated and shared publicly by inter-governmental organizations working with the support of national governments. In particular, the International Labour Organization (ILO) is a tripartite UN organization bringing together governments, employers, and workers to set labor standards and develop policies and programs to promote decent work, and the International Organization for Migration (IOM) is the leading UN organization promoting humane and orderly migration (as part of which it supports efforts to combat human trafficking).

The ILO has dedicated significant efforts to support the standardization of data collection on labor violations.¹⁸ As part of these efforts, ILO is also seeking to engage with governments to adopt this standardized approach to facilitate data collection and analysis to inform decision-making.

Building on this standardization, the ILO maintains a public database ([ILOSTAT](#)) which compiles international data on labor-related topics, including forced labor. The data is derived from household survey datasets compiled by national statistical offices (processed and harmonized by ILO experts), automated data collection (from online data repositories), and the annual ILOSTAT questionnaire (an important source of information for countries with limited dissemination platforms and non-household survey data).

The [ILO’s Global Estimates of Modern Slavery](#) are similarly based on nationally representative household surveys jointly conducted by ILO and Walk Free¹⁹, as well as the [Counter Trafficking Data Collaborative](#) (CTDC) anonymized case dataset on victims of trafficking collected by IOM and its partners in the process of providing protection and assistance services to trafficked persons.

The IOM conducts and supports research and data production designed to guide and inform migration policy and practice. The IOM publishes various reports on migration data, which draw on data collected and shared by government agencies (e.g. for administrative procedures such as decisions on work permits and visas) as well as other sources. Further, its CTDC initiative serves as a global data hub on human trafficking, publishing harmonized data from counter-trafficking

¹⁸ The [ILO’s Decent Work Indicators](#) outline a methodology to guide data collection, by focusing on certain standardized indicators.

¹⁹ Note that Walk Free serves as the Secretariat for the [Bali Process’ Government and Business Forum](#), thus straddling the line between NGO and IGO.

organizations around the world. The CTDC makes publicly available global victim of trafficking dataset, global synthetic dataset, and global victim-perpetrator synthetic dataset. The data comes from a variety of sources, particularly from contributing organizations, case management services, and counter-trafficking hotline logs.

THREE SILOED UNIVERSES

The current landscape of data-sharing described above illustrates that the supply chain data ecosystem is fragmented and siloed, with some bilateral dataflows within each universe, and between actors whose interests align (e.g. buyer/supplier, or NGO/law enforcement), and some multilateral data-sharing via intermediary organizations like the ILO or the IOM, or mission-driven initiatives like the CTDC or Traffik Analysis Hub. However, many data flows are ad hoc and one-way, with limited institutional or reciprocal data-sharing.

Siloes are not inherently bad, and may even be justified, but as we explained in Section 3 above, an effective supply chain data ecosystem—that unlocks the full potential of data while reducing the cost and burden of data-collection and processing—would benefit from more data-sharing within and between each of these universes.

4.2 Current Barriers to Data Sharing

There are various reasons for the silos and limits to data-sharing described in the previous section. This is a non-exhaustive overview.

TECHNICAL BARRIERS

Some barriers are technical. Digital data management systems require technical capabilities, underpinned by financial and human resources, which not all organizations have.

Many large companies, and third-party solution providers looking to service these companies, are investing heavily in advanced technological solutions to collect, process and access relevant data on risks (including forced labor) in their supply chains.

However, smaller-sized companies and civil society organizations often lack the human and financial resources to develop and/or maintain such advanced data management systems. Information is still often collected manually and recorded in unstructured formats like word documents or PDF reports.

Despite progress made by certain government agencies, many labor ministries (or other relevant agencies) are still lacking the data infrastructure and resources to enable the cleaning, sorting, and sharing of government-held data both internally and with external partners.

DATA INTEROPERABILITY AND STANDARDIZATION

The interoperability of data is an important enabler of sharing of data between actors. If the recipient cannot easily interpret the data or integrate it with its other available information and existing processes, the value of the data will be limited.

Full interoperability between databases requires clear and common definitions, which is not easy to achieve in relation to a topic as complex as forced labor. Forced labor is rarely an observable fact like unsafe or unsanitary working conditions, and often requires a nuanced picture to understand whether multiple observations (such as a high proportion of migrant workers and excessive overtime) may signal evidence thereof. The ILO's development of eleven [indicators](#) of forced labor, based on the most common signs or "clues" that point to the possible existence of forced labor (as defined in the [ILO Forced Labour Convention, 1930 \(No. 29\)](#)), has been an important step toward such standardization and harmonization of our understanding of what constitutes forced labor, and what factual datapoints to look for.

However, there remains significant variability in how data to identify risks of forced labor is collected. For example, it is well recognized that contract workers are at a higher risk of forced labor via debt bondage and deception, yet not all audit templates collect data on the proportion of directly employed and contracted workers in the same way.

This challenge is compounded by the fact that forced labor and human trafficking are covered by different international conventions and institutional mandates, and thus generate separate approaches to data collection and management efforts, despite being strongly interconnected risks.

For data to be interoperable, it needs to be in a standardized format that makes it easy for the recipient to receive and use the data. If the recipient is a machine (e.g. that extracts relevant data and integrates it into a company's existing supply chain risk management system), the machine readability of the data will be important. This requires standardized formats and protocols for data-sharing; and API connections are critical to facilitate smooth data exchange and integration into different systems. If the recipient is a human (e.g. tasked with evaluating the strength of evidence of forced labor risk), it will be important for the information to be presented in a clear and quickly accessible way (e.g. not buried in a 300 page report).

LEGAL BARRIERS

Some legal barriers exist. These are most frequently raised by businesses and their legal advisors, but in practice can often be surmounted.

First, the fear of legal action (and potential liability) may prevent a business from sharing any information that could be used to bring claims or allegations of forced labor impacts linked to their activities. Reluctance is greatest towards civil society organizations and public authorities, but in some companies can extend to any sharing of potentially incriminating information that could find its way into the "wrong" hands. This concern has become more acute for companies in scope

of legislations such as the US Uyghur Forced Labor Prevention Act, placing them at risk of having goods withheld at the border if suspected of being connected to forced labor.

Second, companies frequently raise concerns about violating anti-trust or competition rules if they share information about their supply chains with competitors. However, examples of data-sharing practices and technological solutions in Section 5 below demonstrate that such concerns can be overcome. Therefore, like data privacy concerns described further below, this is more of a perceived barrier than an actual one.

Third, companies and other organizations (including NGOs) may be restricted from sharing data because of contractual obligations with other actors that require them to keep data confidential, or only use it for specific purposes that do not include sharing it externally. For example, organizations that provide “worker voice” tools are generally bound to keep any data collected for the benefit of the mandating company confidential and are restricted from sharing any insights obtained with anyone else.

DATA PRIVACY AND SECURITY

Data privacy or data protection laws may restrict the extent to which an organization can share data it holds with third parties. These limitations usually focus on data that contains personally identifiable information, i.e. information connected to a specific individual that can be used to uncover their identity. Once properly anonymized and/or aggregated, there are much fewer legal restrictions on organizations’ ability to share data.

However, there are questions about the extent to which legal frameworks on data privacy offer sufficient protection for victims of forced labor, and respecting data subjects’ right to privacy from a broader human rights perspective requires organizations to go beyond legal compliance for example by being transparent with individuals about how and why their data may be anonymized, aggregated and/or shared with third parties.

In relation to forced labor risk, such limitations would therefore primarily affect data that contains information connected to individuals, such as individual testimonies through worker voice surveys or audit interviews. While the identity of the victim will be important to enable any remedial action, in the initial context of identifying and evaluating risks of forced labor in a company’s supply chain, the identity of individuals will not be relevant and organizations should be able to share relevant data without revealing any personally identifiable information. The UK’s ICO notes that the issue often lies in organizations’ perceived risk of getting it wrong rather than the reality of data protection laws, which do not prevent data sharing as long as it is done in a fair and proportionate way.²⁰

²⁰ In its [Data sharing code of practice \(2020\)](#), UK’s Information Commissioner’s Office (ICO) seeks to clear up misconceptions about data sharing and barriers to sharing. This includes misconceptions that data protection laws prevent data sharing. “This is mistaken. Data protection law does not prevent data sharing, as long as you approach it in a fair and proportionate way.” (page 13)

That said, protecting workers' privacy and security is fundamental, and while it shouldn't be used as a pretext not to share data, and may sometimes need to be balanced against the potential positive impacts that sharing data can have in terms of tackling forced labor, compromises may need to be made to enable effective actions to tackle forced labor risks, any potential infringement on this fundamental human right should be carefully considered.

Navigating the legal barriers linked to data privacy and data security laws can be a complex exercise, and finding legally appropriate ways to share data, while often possible, requires a high level of expertise and experience. Such capabilities can be difficult to find, particularly in civil society, and are frequently reliant on individual rather than institutional knowledge, weakening the ability to develop long-term data-sharing and collaboration arrangements.

Finally, data protection or security rules (resulting from applicable laws, or institutional policies to which organizations may be contractually committed) can prevent the use of certain platforms or cloud hosting services. For example, some organizations are not permitted to send their data to servers based in certain jurisdictions.

COMMERCIAL SENSITIVITIES

In some cases, concerns such as competition or confidentiality will be based on commercial rather than strictly legal restrictions. In other words, no law or contract prevents an organization from sharing information with another organization but it is nevertheless reluctant to do so for reasons of commercial sensitivity, such as a fear of revealing commercially valuable insights into its business model (e.g. sources of supply or partner relationships).

This happens often between companies in the private sector, although some sectors and geographies are more affected by these dynamics than others. For example, technology and automotive companies demonstrate particular sensitivity to such arguments, based on intellectual property concerns that competitors may be able to understand how to replicate their technology or products if they know who their specific suppliers are.

The food and agriculture, or fashion and footwear, sectors appear more comfortable with sharing their supplier relationships, not just with each other, but publicly. This may be shown on their website²¹ or via public input to open platforms like [Open Supply Hub](#). Stakeholders from these sectors reported that this was not always the case, but that in recent years companies have adjusted to new expectations on supply chain transparency, including as a result of NGO pressure (e.g. [Clean Clothes Campaign](#), Fashion Transparency Index) or media / public pressure (e.g. the [2019 Operation Fort revelations in the UK](#) are what compelled food and agriculture brands to establish the [Modern Slavery Intelligence Network](#), as to which see further below).

21 See for example, Tesco's [published](#) list of tier 1 food and grocery non-food suppliers with palm oil, soy, and beef in their supply chain

Competition concerns are not exclusive to the private sector and NGOs. UN agencies experience similar dynamics linked to the preservation of funding or influence in a highly competitive market, which may hold them back from sharing valuable data perceived as a competitive advantage. One stakeholder remarked on the unfortunate fragmentation of investment across a multitude of “solutions” to address supply chain risks, which then need to sustain themselves, and may in turn contribute to the creation rather than consolidation of data siloes.

The fear of losing business is also a strong deterrent against proactively sharing data with third parties. Even where the risk of any successful legal action is low, the incentive to share data may be limited by the risk of reputational harm if information linking their activities to forced labor were to be made public. This could lead to drops in sales from loss of consumer trust or customer contracts.

A supplier interviewed as part of this project explained that well-intentioned “zero tolerance” policies by customers (e.g. public statements that they will not “tolerate” any forced labor in their supply chains) can in effect disincentivize suppliers from sharing with their customers any evidence or signals of forced labor in their own operations or supply chains, for fear of losing their business. Such deterrents are compounded by the lack of a level playing field for companies to disclose and share risk data. See Section 5.1 for examples of initiatives trying to reverse this dynamic so that supplier transparency is rewarded rather than punished.

5. EFFECTIVE DATA SHARING: ILLUSTRATIVE EXAMPLES

5.1 Examples of Effective Data Sharing

During this project, stakeholders shared practical examples of effective data-sharing. In this section, we analyze some of these examples to identify any factors or lessons that might be replicated or scaled to enable more effective data-sharing in other parts of the supply chain data ecosystem.

Open Supply Hub

Open Supply Hub (OS Hub) is an accessible, collaborative, supply chain mapping platform, used and populated by stakeholders across sectors and supply chains. It provides open access to global supply chain data, including where production facilities are located and the ecosystem surrounding a facility. OS Hub is an expansion of the successful approach of the Open Apparel Registry (OAR), which had mapped over 90,000 facilities in the apparel sector in just 3.5 years (2019-2022). Driven by demand from users to expand this approach, OS Hub launched in November 2022 with the goal of mapping retail supply chains more broadly. Currently, the OS Hub has 220,000+ factories mapped, 3,000+ monthly active users, and 650+ data contributors.

What Type Of Data Is Shared and How?

Organizations are free to add facility data to the OS Hub platform. Data shared by organizations include (but is not limited to) the facility name and address, type of facility, type of processing, parent company and number of workers. OS Hub processes the data using a statistical model to identify which facilities already exist in the tool, and each facility is assigned a unique ID within the database. The resulting data provides a common registry of reliable data for users to access freely under an open data license.

What Makes This Model of Data-Sharing Effective?

OS Hub's open data model and platform provide a user-friendly single place where anyone can share and access supply chain data. Reliable data is ensured as all data contributed to the platform is cleaned, deduplicated and standardized by OS Hub. The platform facilitates global collaboration as the user-generated dataset gives visibility into which organizations are connected to which facilities, accelerating collaborative action.

OS Hub overcomes key challenges including the lack of standardization of facility data and ease of collaboration between actors across the supply chain data ecosystem.

The following factors contribute to the platform's effectiveness:

- Free open access to global supply chain data. It transforms messy, inconsistent data into structured datasets, made freely available to all stakeholders under an open data license.
- The assignment of one universal ID for each facility makes it easy for users to connect their data across systems, contributing to interoperability and making data sharing easier for their buyers/suppliers.
- Ease of use by stakeholders in uploading and finding data within the platform.
- Transparency by OS Hub on how the data is processed to ensure completeness and accuracy build trust among users.

The Responsible Business Alliance Online Sustainability Data Management System (RBA-Online)

The Responsible Business Alliance (RBA) is a nonprofit membership organization comprising over 230 international electronics, retail, auto, and toy companies. The [RBA-Online platform](#) was created to help RBA members and their suppliers manage and share sustainability data, by streamlining the collection of data from suppliers while protecting their control over, and the confidentiality of, their data.

What Type Of Data Is Shared and How?

Through the RBA-online platform, suppliers are able to share with multiple buyers self-declared information about their compliance with the RBA Code of Conduct, and the results of third party audits. Insights from audits are also aggregated by the RBA, and integrated in a geographic risk assessment tool made available to members.

Access to the platform and the data is restricted to registered members and suppliers. Members can request access to information about their suppliers, and each supplier controls which RBA members (ie. customers) it agrees to share its data with.

What Makes This Model of Data-Sharing Effective?

The RBA-Online platform is effective in reducing the cost to both suppliers and buyers of collecting and sharing data about a supplier's compliance with its buyers' expectations. By enabling suppliers to share data with multiple buyers, it avoids the need for buyers with shared suppliers to find each other, and agree to share data, thus overcoming barriers linked to confidentiality, competition, or commercial sensitivities. Further, it enables buyers who share suppliers to take collective action to support preventive or remedial actions by their suppliers.

The following factors contribute to the platform's effectiveness:

- It preserves the confidentiality of buyer-supplier relationships vis-à-vis other members
- Suppliers are incentivized to share by the lessened burden of responding to multiple customer requests and ease of sharing through the RBA platform, while retaining control and agency over their data
- Standardized data inputs (e.g. self-assessment questionnaires, audit templates) lower the burden of data collection on suppliers and facilitate the comparability of data for members
- The data-sharing platform is managed by a competent and trusted intermediary (the RBA)
- The cost of the data-sharing platform is equitably shared with buyers paying more than suppliers²²
- The membership model (and sectoral focus) fosters trust between companies around shared values and commitments, as well as creating some competitive pressure on buyers and suppliers to engage
- The data-sharing platform is integrated within a broader suite of tools for RBA members, which lowers the barrier to participation

²² RBA [membership cost](#) (for buyers) ranges from \$35,000 to \$45,000 per year, with a \$5,000 one-time application fee for new members, while cost to suppliers is \$250 a year per facility.

Modern Slavery Intelligence Network

The Modern Slavery Intelligence Network (MSIN) is a non-profit collaboration in the UK food and agriculture sector that has developed a proactive intelligence-sharing mechanism to detect, prevent and disrupt modern slavery and labor exploitation activity within the UK. The MSIN is supported by the NGO and independent international charity, STOP THE TRAFFIK (STT), who provides a secure platform via which information is shared along with expert analysis and guidance on prevention and remediation.

Corporate members include UK-based food retailers (e.g. M&S, Tesco) and financial services companies. The network receives inputs from various NGOs, as well as law enforcement (e.g. Interpol, UK National Crime Agency).

What Type of Data Is Shared and How?

Members and contributing partners share information relating to incidents or suspected incidents of modern slavery or worker exploitation in the UK. Members send data to STT who then analyze and enrich the data using its own tools and resources (e.g. drawing on additional data from STT's Traffik Analysis Hub, as to which see further below) before generating a briefing for the benefit of relevant members. These briefings can be tactical (e.g. about a specific supplier) or strategic (i.e. more generally informative about the risk of modern slavery in a particular area).

Where appropriate, information gathered through MSIN may also be shared with law enforcement.

What Makes This Model of Data-Sharing Effective?

Two aspects of MSIN stand out. First, it brings together insights from the private sector, civil society and law enforcement (who do not often share insights directly with each other) to enable actions by actors across these sectors – including law enforcement. Second, it transforms these shared insights “raw” data into actionable intelligence through STT's intermediation and analytical expertise.

The following factors contribute to the platform's effectiveness:

- It preserves the confidentiality of the source of information and identity of any individuals.
- The design of the MSIN mechanism was the result of strong collaboration between members' internal experts on human rights, ethical trading, legal, data protection, privacy and IT security, which helped secure internal buy-in and support.
- The enrichment of the data obtained through MSIN and STT's separate Traffik Analysis Hub and STT's expert analysis enriches the output data members received into actionable intelligence.

- Involvement of Stop the Traffik creates legitimacy and trust that data shared will be used appropriately and for positive impact.
- The public scrutiny and shared pressure experienced by members at the time of the [Operation Fort](#) revelations triggered the creation of MSIN with strong public commitments by its members. This has created a strong incentive for members to continue to support MSIN.
- MSIN benefits from visible support from former Independent Anti-Slavery Commissioner (Dame Sara Thornton DBE QPM) and key agencies of the UK government.

Traffik Analysis Hub (Stop the Traffik)

The [Traffik Analysis Hub](#) is a not-for-profit organization that is part of the Stop the Traffik Group. It provides a platform that enables the sharing and joint analysis of data for the purpose of combatting human trafficking. All types of organizations can participate including businesses, governments, law enforcement, academic institutions, and NGOs.

What Type of Data Is Shared and How?

Authenticated partners can upload a variety of data such as incident reports, GDELT migrant data, and survivor narratives (with personally identifiable information removed). In addition, instructed open-sources of data is ingested at scale - including thousands of publicly available newsfeeds. The data is then sorted and processed using AI, machine learning and natural language processing (IBM Watson). Once structured, the data is aggregated into a common data "lake" to produce data visualizations and other analytical outputs that are accessible to all members.

What Makes This Model of Data-Sharing Effective?

Traffik Analysis Hub enables participants to pool data assets and supports joint analysis of large data sets and generate new insights into patterns and hotspots of trafficking incidents.

The following factors contribute to the platform's effectiveness:

- Shared ownership and governance model builds trust between participants
- Stop the Traffik acts as a trusted and expert intermediary, in terms of both data management and anti-trafficking expertise
- Leverages artificial intelligence to clean and structure data from multiple sources and enable the interoperability of data for use by different participants

ICS and ITC Sustainability Map

Initiative for Compliance and Sustainability (ICS) and the International Trade Centre (ITC, joint agency of the World Trade Organization and the United Nations) have partnered to enable suppliers around the world to promote their sustainable practices via the sustainability map platform, combining data collected by ICS about suppliers through the ICS audit process with additional information uploaded by the factories themselves.

What Type of Data Is Shared and How?

The sustainability map platform enables factories to make public their relationship to leading brands and the date and type of ICS audit or other certifications they have undergone. The partnership between ICS and ITC means as soon as a factory agrees to join the ITC sustainability map platform (at the request of an ICS member with whom they do business), ICS automatically shares information it has available about the date and type of ICS audits the factory has undergone. The factory may also choose to share information about any corrective action plans.

What Makes This Model of Data-Sharing Effective?

This initiative encourages buyers and suppliers to publicly share information about suppliers' sustainability performance, and in particular aims to connect smaller suppliers to the digital sustainability data ecosystem and promote their responsible practices. It is also effective in generating "public good" value from audit data shared within the ICS network for the benefit of actors beyond ICS members.

The following factors contribute to the platform's effectiveness:

- The involvement of the ITC provides the initiative with a heightened level of legitimacy and builds trust with participating suppliers / factories.
- The ITC's mission shifts the focus of the data towards promoting positive performance, rather than identifying risk.
- In turn, the ICS network – and shared audits and remediation actions it generates – is grounded in clear ownership and governance of the network, and any data-sharing, by the brands.
- Brands who participate in the ICS network must commit to declare their first-tier production suppliers and to conduct a minimum number of audits of these suppliers, which ensures progressive increase in coverage of members' supply chains over time.

The Crowdsourcing App for Responsible Production in Africa (CARPA)

CARPA²³ is an open platform developed based on crowd-sourcing principles that allow workers and local communities to report incidents or concerns to mining companies and local NGOs, with the aim to promote due diligence and responsible production. CARPA is currently deployed in the Sub-Saharan African region, specifically in Democratic Republic of the Congo, Mali, and South Africa. CARPA aims to give all participants equal visibility when attempting to address incidents that may occur due to business activity, as well as allow for the promotion of initiatives that are intended to improve the lives of affected stakeholders in Africa. CARPA is funded by the Dutch Research Council (NWO) and the University of Amsterdam.

What Type of Data Is Shared and How?

Through a web-based (and soon smartphone-based) application, workers and local communities can submit reports of incidents relating to mining activities in the region (e.g. health and safety, working conditions, workplace fatalities, corruption). The platform also enables the sharing of information about any remediation and correction actions taken by local NGOs or companies in response to the incidents reported.²⁴

Any person can submit a report via the platform, which is reviewed by local NGOs, and anonymized to remove reporter's personal details before being shared with the participating companies. The platform allows for forum-style dialogue amongst NGOs and companies to respond and engage directly with mineworkers in real-time.

What Makes This Model of Data-Sharing Effective?

CARPA effectively enables the collection of real-time empirical evidence of workplace incidents for use by businesses and local NGOs and creates a platform for greater transparency and dialogue between stakeholders.

The following factors contribute to the platform's effectiveness:

- A strongly participative development approach with local stakeholders, including NGO and company staff, local government officials, and local community representatives.
- Real-time feedback loop provided to workers to build trust that incidents reported will be actioned by companies and/or local NGOs

²³ Further details of this initiative can be found on the [website](#) of the Dutch Research Council (NWO) and in the following report Bwana, R. M., Baart, A., de Boer, V., Lenfant, F., Morisho, N., Westermann-Behaylo, M., & Worring, M. (2020): [Developing a crowdsourcing application for responsible production in Africa](#). In WebSci 2020: 12th ACM Conference on Web Science Companion (pp. 48-53). Association for Computing Machinery.

²⁴ Future plans also include data integration and visualization methods to identify patterns of business impacts over time, and to provide ongoing public access to this data, including a mapping function pinpointing impact locations.

- Role of local NGOs as trusted intermediaries and stewards of the shared reports
- Gap in availability of accurate data about working conditions in local mines prompted this collaborative effort

COMMON SUCCESS FACTORS

These examples of data-sharing are not exhaustive, or perfect, but they surface common factors contributing to their effectiveness, which are worth noting as we look to scale a more effective data ecosystem to combat forced labor in supply chains. These include:

- the creation of a sense of community bound by shared values and objectives
- shared ownership and governance of the data-sharing process, with strong agency for contributors
- the role of a trusted and expert intermediary to act as custodian of shared data, and contribute its own expertise for example to filter or enhance the data before it is shared
- user-friendly interface and platform to upload or access shared data

5.2 Technological Opportunities to Overcome Data Sharing Challenges

Tech Against Trafficking's work to date has focused on supporting technological solutions aimed at identifying and preventing human trafficking and empowering survivors.²⁵ Learnings and outputs from this experience and the expertise developed through the Tech Against Trafficking Accelerator Program suggest existing and emerging technologies may also help overcome some of the barriers to data sharing identified in this report.

Note that some of these methods may raise other human rights risks, such as risks to privacy or non-discrimination. Before deploying any of these methods, such potential impacts should be assessed and addressed.

Large-scale data scraping: several third-party solution providers (e.g. Altana, Sayari) are already deploying machine learning models to mass analyze data from publicly available sources, such as government trade registries or adverse media alerts. Such models are also becoming very effective at "reconciling" similar data, for example about the location or identity of a supplier. Such capabilities can circumvent the need for actors to proactively share data, provided their data is publicly "discoverable" by such tools.

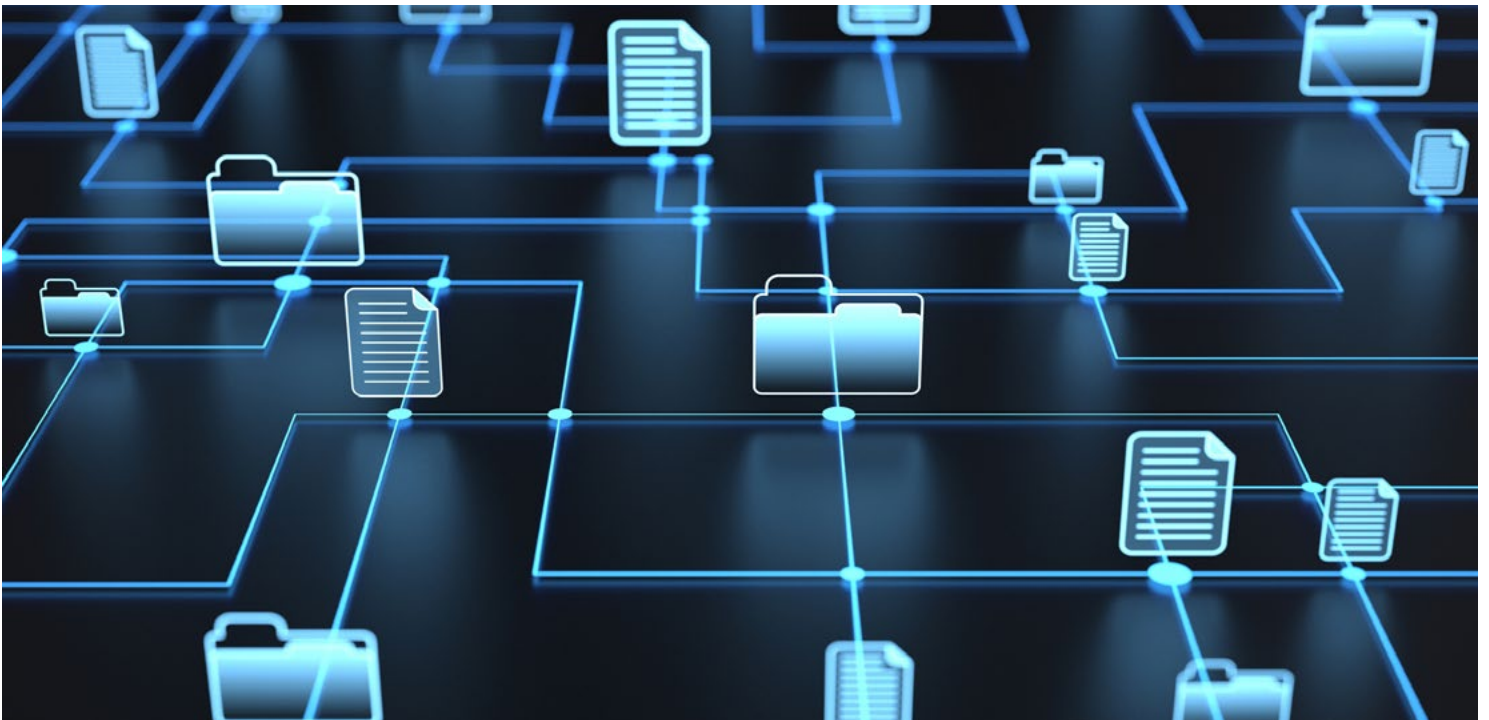
²⁵ Technological solutions supported by Tech Against Trafficking's accelerator program to date include mobile apps that help identify victims of sex trafficking; satellite imagery that tracks down fishing vessels carrying victims of forced labor; and web scraping tools that aggregate child abuse images to help law enforcement track down children in need of help. (Source: <https://techagainstrafficking.org/>)

Automating data collection: AI may be able to support the collection of standardized and structured data from data subjects, be they workers or suppliers. This might include leveraging the powers of conversational automation to effectively engage with, and collect information from, more workers and suppliers. The sophistication of such methods is expected to increase with advances in generative AI.

Structuring, analyzing and processing data: the significant advances in generative AI, and large language models, are quickly democratizing access to tools and services that can help make sense of unstructured data. For example, AI models can be trained to extract relevant supplier compliance information from unstructured notes manually taken by a human auditor. Such technologies may also be used to:

- make connections between disparate datasets and data records, even in different data formats
- convert data into a specific standard format
- detect patterns, clusters, trends, etc. in data, and help explain such insights via other means
- Answer questions about large-scale collections of documents, reports, etc., both via conversations and newly generated reports

They can also be deployed to automatically anonymize or de-identify data containing personal information.



Federated architectures: key concepts associated with federated networks²⁶ offer interesting avenues to explore how we might enable the flow of data between multiple contributors while preserving a level of anonymity and/or control for each contributor. In some cases, a federated network may include a centralized component that enables users to share some data with a wider group of users and/or into a common data pool accessible by all users.

For example, Altana, an AI-powered supply chain compliance risk mapping solution, generates a single and common “graph” of supplier relationships (determined based on its automated analysis of publicly available records), on top of which clients can overlay their own private data, e.g. about their supplier relationships. Altana can then anonymize that data and integrate it to enhance the accuracy or completeness of its common “graph” for the benefit of all users.

Federated systems are also being leveraged to train AI models on data that is processed at the source or “edge” and does not leave the device it is originally stored on (e.g. a person’s phone or laptop). Such methods enable collaborative sharing of the value of data without needing to transfer the data.

Federated database architectures are also being explored as part of the Gaia-X initiative, which seeks to enable and promote the creation of [federated data spaces](#) by providing software code, architecture specifications and compliance instruments needed to set up federated systems. This initiative deliberately aims to “overcome legal and technical barriers to data sharing by combining the necessary tools and infrastructures and addressing issues of trust by way of common rules”.²⁷ Catena-X provides another example of such a federated data space developed for the automotive industry to share data about its value chains, including in relation to the [carbon footprint](#) of products.

These systems can provide effective ways to:

1. overcome confidentiality, privacy or competition concerns, by enabling contributors to share the substantive value of their data while preserving the anonymity of its source;
2. build multilateral trust in the system, through robust governance processes and rules that ensure users understand and control the parameters within which their data is shared, as a substitute for the lack of bilateral trust between participants.

²⁶ No single agreed-upon definition of a federated network exists but they generally represent “decentralized” architectures composed of a multitude of “nodes” between which data can flow without a centralized server. Distinctions between federated, distributed and decentralized networks go beyond the scope of this report but may matter in practice.

²⁷ EU Commission [Staff Working Document on Common European Data Spaces](#) (2022) 45 – Feb 2022

Confidential computing: this computing technology enables encrypted data to be processed in memory while lowering the risk of exposing it to the rest of the system, thereby reducing the likelihood that sensitive data will be compromised. In addition, it provides a higher degree of control and transparency for users in multi-tenant environments where data can be isolated from other privileged portions of the system stack.

A joint project between Intel, R3 and Hope for Justice provides an example of how such technology can be leveraged to build a [private data exchange to support anti-trafficking efforts](#). This data exchange enables different organizations to confidentially pool data related to individual cases of trafficking. After data is uploaded, the application aggregates and analyzes it, then notifies appropriate agencies when relevant data matches are uncovered.

Private set intersection: this cryptographic technique enables two parties holding overlapping datasets to compare encrypted versions of these datasets to determine the intersection, i.e. what they have in common. This could be used, for example, to narrow down the scope of common suppliers between two companies and agree to a narrow exchange of data relating to those suppliers, without revealing any more supplier relationships than strictly necessary.

Privacy-preserving mechanisms: these mechanisms deploy various techniques to “sanitize” data in a way that preserves the underlying data subject’s privacy, for example by generalizing or suppressing certain values. One mechanism uses machine learning to generate ‘synthetic’ datasets that represent the statistical properties of a sensitive dataset, without revealing any actual or potentially identifiable personal information about individuals. This can enable the sharing of insightful data from individual cases of forced labor, while preserving the privacy of individuals involved. See the [Tech Against Trafficking Accelerator Program](#) for examples of such technologies applied to human trafficking data with the Counter Trafficking Data Collaborative.

6. FROM PRINCIPLES TO ACTIONS

This project has confirmed that there are technical, legal and behavioral factors that will always lead to decentralization of data, so the objective of a single centralized open data ecosystem is unrealistic, even if it was desirable.

A more realistic future vision for an effective supply chain data ecosystem is federated data spaces where different actors collect and process data in a relatively harmonized manner and are able to connect with each other directly or via data hubs or intermediaries where data sharing occurs in more or less extensive ways. As this network of connections grows, and trust builds, more data will flow around the system, at greater scale, and for greater impact.

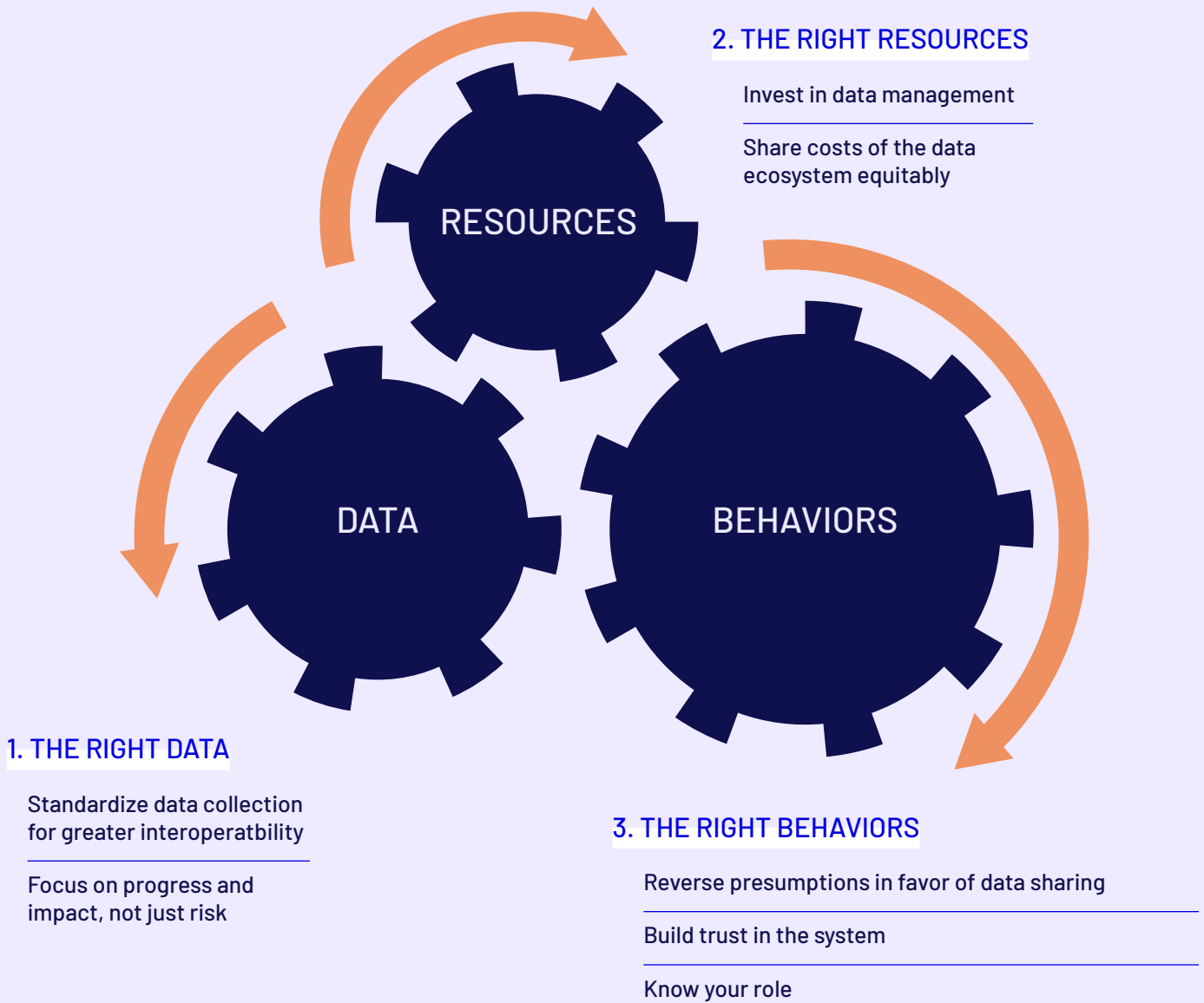
The following sections set out, based on the insights from this project:

1. practical recommendations addressed to the various actors involved in the supply chain data ecosystem to achieve better data sharing and a more effective data ecosystem over the long term
2. three areas in which Tech Against Trafficking intends to drive further action in collaboration with relevant stakeholders, including those already engaged through this project.

6.1 Recommendations to Businesses, Policymakers and Civil Society Organizations

Based on this project's findings on the current siloed state of data sharing, and barriers and enablers that exist for effective data sharing, we have identified 7 areas where principled actions by different actors can help build a more effective data ecosystem to address forced labor in global supply chains.

FIGURE 5:
Principles for Effective Data Sharing



1. THE RIGHT DATA

Standardize Data Collection for Greater Interoperability

All actors that collect data related to instances of forced labor should seek greater alignment and harmonization in the way such data is collected. This means building on the ILO's forced labor indicators to define common criteria, including questions and metrics, to evaluate the risk of forced labor in practice. This will also require clearer definition, and agreement, on how the concepts of modern slavery, forced labor and human trafficking intersect.

Such efforts should involve leading providers of audit or other assessment standards and services, as well as the growing list of "worker voice" tools, to ensure any standardization is adopted as widely as possible and easily integrated into existing enterprise risk management systems. They should also involve other frontline organizations (such as police border forces, or civil society organizations) tasked with identifying cases of forced labor, and who grapple with the same challenges to detect and report indications of forced labor.

Governments should support such efforts by framing relevant policies and regulations in ways that incentivize the collection of harmonized data. Initiatives such as the EU's plans for a public database to support compliance with the proposed EU Regulation on banning products made with forced labor (and similar initiatives in the United States, Australia, and New Zealand) should be opportunities to promote standardized criteria for identifying forced labor risks.

See [Section 6.2](#) below on how Tech Against Trafficking and BSR intends to support collaborative action on this recommendation.

Focus on Progress and Impact, Not Just Risk

The data ecosystem currently focuses on identifying risks of forced labor, which is understandable given that's the focus of current global standards and emerging regulations requiring risk-based due diligence of supply chains, as well as banning products suspected of being linked to forced labor.

The focus on risk too often leads businesses and solution providers to conflate the evaluation of risks of forced labor (and its adverse impacts on affected workers' human rights) with risks to the business that would result from a connection to forced labor. The objectives, and mitigation strategies, are very different. This approach may have the unintended consequence of worsening the harm to individuals, for example by leading companies to withdraw business

where it perceives risks are too high.²⁸ An effective supply chain data ecosystem should enable an understanding of the latter risks, i.e. of impacts of forced labor on affected workers.

With that in mind, an effective data ecosystem should not only surface risks but also progress and where practices are improving in global supply chains. Those who contribute data to the ecosystem (such as civil society organizations, auditors, or other actors engaging directly with workers) should balance their focus on violations and non-compliance with an effort to understand and report on improvements. In conducting due diligence on suppliers and other partners, companies should seek dynamic risk data that captures the “direction” of risk, taking into account positive signals of progress, as well as risks.

Similar dynamics affect governments’ willingness to share data that could deter foreign investment and trade. Strategies to encourage governments to share data more openly (as recommended below), should also focus on indicators of progress, not just risk.

2. THE RIGHT RESOURCES

Invest in Data Management

It is a precondition to an effective data ecosystem that data is “fit” for sharing. This starts with determining what valuable data your organization holds, for its use, and potential use by others in the supply chain data ecosystem.

In this context, organizations need to invest appropriate technical and human resources to ensure they can collate, clean, and organize (potentially also analyze and/or aggregate) their data in such a way that it can be easily exported to others, or is easily “discoverable” if it can be made public.

Many companies are doing this as part of general strategies to digitalize their business and to capture financial value in their data, but few are focusing these efforts on unlocking the potential impact of their data for human rights risk management objectives.

Governments, many of whom are publicly committing to strengthen their data management practices, have a critical opportunity to identify and disclose what relevant data they hold across agencies (e.g. labor inspection findings, migration data) and make that data more easily accessible to external stakeholders. Such efforts should include consulting with businesses and civil society organizations to understand what data would be valuable to access (e.g. more customs data to increase the accuracy of automated supply chain mapping solutions).

Governments should also support SMEs in accessing the financial and technical resources to enhance their data management practices, so they can in turn connect and contribute to the global supply chain data ecosystem. This should include supporting capacity-building efforts where appropriate, with the support of third parties, including other governments and the private sector.

²⁸ In January 2024, the Federation of German Industries (BDI) [released](#) the results of a survey of around 400 companies on the German Supply Chain Due Diligence Act (LkSG). According to the survey, 14% of respondents said they are leaving high-risk countries, 24% are trying to reduce their number of suppliers, 24% are avoiding suppliers that are difficult to check, 39% are avoiding risky suppliers.

Recognizing that some governments will be more technically and financially constrained than others to take these actions, governments with more resources and more developed data practices should also encourage and support other governments to improve their data practices.²⁹ This could be through trade agreements, ILO discussions, or participation in initiatives like Alliance 8.7 or the Bali Process (which include specific commitments to leverage technology to combat forced labor and human trafficking³⁰). The resourcing and technical expertise needed to enable more data sharing by governments and other actors present in sourcing countries should be given due attention in public policy dialogues.

Share Costs of the Data Ecosystem Equitably

Collecting and sharing data has human, technical, and financial costs, which well-resourced companies and government agencies have more power to do, compared to smaller NGOs or companies, exploited workers and members of the public.

This means the type of data being collected and shared is driven by the interests of those more powerful actors in the data ecosystem, and valuable data may be left untapped.

Governments should invest more in their data management but also support smaller actors in connecting to the supply chain data ecosystem, e.g. by supporting technical capacity building so smaller enterprises can participate in data-sharing initiatives such as Open Supply Hub or the ITC's sustainability map. In particular, governments and international organizations committed to supporting efforts to combat forced labor and trafficking should support more investment in technology and data management for less technically equipped (or financially resourced) actors in source countries, including companies, civil society organizations, and governments.

Technologically advanced companies should look for ways to support governments, smaller companies, and civil society organizations with the digitalization needed to improve their data management, for the ultimate benefit of other actors in the ecosystem, including themselves. In some cases, this may mean supporting training on basic data management skills such as collecting and analyzing data in spreadsheets.

Private companies should support business models for more “open” collaborative solutions, e.g. paying for a solution shouldn't exclude the possibility that some of the data “generated” is shared for the public good.

29 Noting that several governments participating in [Alliance 8.7](#) are committed to improving their data collection and management systems related to forced labor risk. See for example [Fiji's](#) efforts to develop a paperless labor inspection system or [Argentina's](#) plans to produce statistical data on human trafficking and forced labor.

30 The Bali Process' 2023 Ministerial Statement included a commitment by participating Ministers to “enhance the capabilities of law enforcement authorities to leverage technology to combat people smuggling, human trafficking, and related transnational crimes”, “strengthen cooperation through facilitation of policy dialogue, information-sharing, and capacity building” and “continue collaboration with the private sector, with particular emphasis on digital technology”. (Source: <https://www.foreignminister.gov.au/minister/penny-wong/media-release/bali-process-eighth-ministerial-conference-co-chairs-statement>, 11 February 2023)

3. THE RIGHT BEHAVIORS

Reverse Presumptions in Favor of Data Sharing

Too often, organizations default to a position of not sharing unless they are compelled or convinced to do so. All actors should seek to reverse this presumption, by articulating and embedding in their organizations the business case for why sharing data may be valuable to their objectives.

In practice, this will likely require organizations to reverse their legal counsel's burden of proof to demonstrate that data cannot be shared (i.e. presume that it can be shared unless proven otherwise). This recommendation has strong synergies with the wider corporate culture change towards more transparency that is needed to meet the expectations of emerging human rights due diligence and reporting laws such as the EU's Corporate Sustainability Reporting and Due Diligence Directives.

For civil society organizations and solution providers (be they for profit or not), this means asking whether their business model or mission statement and objectives, can accommodate or should be revised to promote a more open model whereby one actor can share (more of) the data that is held, for greater impact. This may start with funders and investors, who should make some form of data sharing for the public good a more common condition of funding. Private companies should also support business models for more "open" data solutions: paying for a solution should not exclude the possibility that some of the data collected or generated be shared as a common public good.

Build Trust in the System

The lack of trust between actors as to how shared data might be used, and the fear that it may be used against them, was a recurring theme among interviewed stakeholders, especially from the private sector and civil society.

Trust and data sharing will be difficult to foster between organizations whose interests and roles are opposed (e.g. law enforcement and companies at risk of non-compliance, or companies and judicially active NGOs). But more trust could be built, and in turn, more data shared, if:

- Companies openly recognize when forced labor is likely to take place somewhere in their supply chain and focus their due diligence and reporting efforts on finding it and taking appropriate actions when they do, rather than trying to disprove that the risk exists.
- Governments adopt policies and laws that reward transparency by companies about forced labor risks in their operations or supply chains, provided this is combined with demonstratable commitments and actions to prevent and mitigate these risks.

Business stakeholders interviewed a part of this project shared that the effect of the US's import ban on products suspected of being made with forced labor was to drive companies to divert

their supply chains away from high-risk locations, rather than engage with suppliers to mitigate risks and improve conditions on the ground. Laws that punish admission by a company that forced labor takes place, or is likely to take place, in their supply chains are counterproductive and are unlikely to address the root causes of exploitation and modern slavery.

- Governments lead by example, by proactively sharing valuable data they hold with trusted partners. While it is true that government data may be highly sensitive, as explained in the preceding section of this report, there are data privacy-compliant ways to share the substantive value of data with other stakeholders.
- All actors adopt more nuanced approaches to “zero-tolerance” statements. Strong commitment to preventing forced labor is important, but interviewed stakeholders reported that “zero-tolerance” positions can dissuade certain actors from being forthcoming with information about forced labor risks in their operations or supply chains, out of fear of commercial, reputational, or legal consequences. For example, a supplier might fear losing their customer’s business, or a company might fear legal action or adverse media from an NGO. Strong commitments to prevent forced labor should be paired with a commitment to engage with and support any supplier, partner, or other stakeholder who proactively shares evidence of forced labor risk with the intent to enable collaboration in addressing the issue.
- All actors seek to demonstrate reciprocity. Any actor receiving valuable data from the ecosystem should reciprocate by sharing valuable data in return.

This could include disclosing what actions they have taken that were enabled by the data that was shared with them, to demonstrate the value of sharing such data with them. This is particularly relevant for companies and governments relying on data produced by NGOs, for whom evidence of impact is an important incentive to collect and share data and engage in trusting and collaborative relationships.

Emerging due diligence and reporting regulations such as the EU CSRD and CSDDD require companies to meaningfully engage with “affected stakeholders” (or organizations representing their interests). This will require a step change in how companies engage with NGOs and other civil society organizations to inform their due diligence. Companies and civil society organizations should put trust, reciprocity, and data-sharing at the core of these new relationships.

Know Your Role

Distrust and frustration among actors in the supply chain data ecosystem are often the result of misaligned expectations as to what other actors should or should not be doing.

As outlined at the beginning of this report, each actor has a role within the ecosystem and should take responsibility for what is expected of that role, without overstepping into roles best played by other actors, or shifting their responsibilities to other actors. For instance, businesses and solution providers should not seek to replace the important role of grassroots organizations in collecting and interpreting data through direct engagement with workers and local communities.

Rather than developing separate mechanisms, it may be more effective to seek ways to support those activities and to lower the costs and burden of making that data more easily accessible to more stakeholders.

Relatedly, the importance of context in interpreting raw data to convert it into actionable intelligence means such interpretation is likely to be more effective when done “close” to where the data has been collected. For example, data about potential child labor needs to be understood against local legal, social, and cultural norms. If the goal is to enable better decision-making and actions, it may be more effective to share insights and intelligence (i.e. interpreted data) rather than raw data, provided that any interpretation or aggregation has been done by qualified actors.

6.2 Looking Ahead: Collaboration Opportunities

Considering the principles and recommendations set out in the previous section, Tech Against Trafficking is of the view that an effective federated supply chain data ecosystem will require:

1

Standardized and interoperable data on potential and actual forced labor

2

Scalable, cost-effective, and accessible technologies that enable a federated ecosystem of purposeful data flow between organizations, including smaller and less technologically advanced actors

3

Further dialogue between the public sector and corporate sector (as well as civil society) to identify how governments can better support an effective supply chain data ecosystem

1 Standardized and Interoperable Data

Policies, practices, and systems to collect and gather forced labor risk management data are generally not aligned across the ecosystem. Many seek to align with the ILO's forced labor indicators, but there remains a significant diversity of interpretations and data collection protocols that undermine the ease with which data collected by different parties can be shared and aggregated.

Tech Against Trafficking wishes to support the standardization of forced labor risk data, building on the ILO's forced labor indicators and working in partnership with key standard-setting bodies like the ILO and the IOM, and leading providers of supply chain risk data (e.g. supplier audit services, worker voice tools). Such standardization efforts should aim for alignment and consensus among actors across the supply chain data ecosystem on qualitative and quantitative data points to seek when looking to identify forced labor risk. For example, drawing on the experience of actors involved in collecting data to identify actual cases of forced labor (e.g. auditors, police officers, labor inspectors) to define practical questions, and quantitative or qualitative responses, that are most useful to identify evidence of forced labor.

2 Scalable Technologies for a Federated Ecosystem

Many initiatives are already exploring ways in which some of the legal and/or behavioral barriers to data-sharing (e.g. linked to confidentiality, competition, or privacy concerns) can be overcome through more "federated" or decentralized data spaces, where different actors can share some of their data, and contribute its value to the broader ecosystem while retaining control of potentially sensitive elements.

A future supply chain data ecosystem based on such federated data spaces will require a scalable model for such data architecture that is affordable and accessible beyond large multinational companies and their supply chain risk management solution providers.

Tech Against Trafficking hopes to leverage its network of technology experts committed to demonstrating how technology can help anti-trafficking and forced labor efforts to advance efforts to understand how more federated data spaces could be enabled across the supply chain data ecosystem. This should also consider how more purposeful data flows can be enabled end-to-end, from raw data collection from frontline workers to various forms of data sharing between corporates and other organizations.

3 Public Sector Dialogue

This project reaffirmed the significant siloes (or one-way data flows) between the public sector and the rest of the supply chain data ecosystem, and the need for better mutual understanding between governments and businesses as to what data is available to identify risks of forced labor and inform effective prevention and mitigation strategies.

Tech Against Trafficking wishes to build on its engagement with policymakers in the preparation of this report, and the multi-stakeholder discussions at its November 2023 Summit, to foster more dialogue between governments, civil society, and the corporate sector on how governments can support a more effective supply chain data ecosystem.

Areas of focus for discussion could include:

- facilitating the greater visibility of, and access to, government-held data
- designing policies and laws that promote transparency and data sharing
- developing public databases that meet the needs and expectations of the broader data ecosystem



Tech Against Trafficking (TAT) is a coalition of technology companies collaborating with global experts to help eradicate human trafficking using technology. For more information, please visit techagainstrafficking.org

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BUILDING AN EFFECTIVE DATA ECOSYSTEM TO ADDRESS FORCED LABOR IN GLOBAL SUPPLY CHAINS

Executive Summary

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