

# Checking the Chain: Achieving Sustainable and Traceable Global Supply Chains Through Coordinated G20 Action

*Adina Spertus-Melhus and Linn von Engelbrechten*

## Abstract

The expansion of globalized production and trade in the last half century has brought tremendous benefits to consumers and producers around the world. However, the true costs of production are often externalized; early stages of these globalized supply chains are notorious for their prevalence of unsafe working conditions, environmentally unsustainable practices, and even forced labour. Despite a number of international agreements aiming to maintain certain worldwide standards, the achievement of fair supply chains on a global level still faces major hurdles. Namely, the problem of how to monitor and track whether such commitments are adhered to. In this policy brief, we contribute to making fair global supply chains a reality through a vision of effective and coordinated due diligence legislation complemented by robust supply chain traceability. To achieve this goal, we focus on two main issues: 1. Promoting the establishment of binding supply chain due diligence legislation on a national level while ensuring international alignment and 2. Promoting the coherent use and development of modern traceability technology, namely blockchain.

## Challenge

Since after the Second World War, the world has seen an explosion of globalized production and trade systems, with the value of international exports having quadrupled in the past 40 years alone.<sup>1</sup> These developments have brought tremendous benefits to consumers and producers around the world. International trade has contributed to global increases in GDP per capita and productivity; meanwhile, access to cheaper goods like cell phones helps raise peoples' standard of living.<sup>2</sup>

However, the true costs are often externalized; early stages of these globalized supply chains are notorious for their prevalence of unsafe working conditions, environmentally unsustainable extraction and production processes, and even forced labour. It's estimated that on a given day, 16 million individuals are forced into labour in the private economy around the world, and that more than one in 1000 children are subject to such conditions.<sup>3</sup> Consumers in the developed world frequently purchase goods produced under conditions that would not satisfy the labour or environmental standards of their home countries.<sup>3, 4</sup>

A number of international agreements have been drafted and adopted which raise the global standards for responsible production processes. Many supply chain risks are directly addressed by the UN Sustainable Development Goals (e.g. target 8.7 to eradicate modern slavery).<sup>3</sup> Achieving the national commitments to the Paris Climate Agreement also necessitates that environmental standards within supply chains be met. Additionally, there are internationally recognized instruments outlining standards for the responsible operation of multinational enterprises (MNEs), such as the OECD Guidelines for MNEs, the ILO Tripartite Declaration of

Principles concerning MNEs and Social Policy, and the UN Guiding Principles on Business and Human Rights.<sup>5</sup>

However, the goal of fair supply chains on a global level still faces major challenges. Only certain countries have signed the above-mentioned agreements and even in the framework of these agreements, the problem remains of how to monitor and track whether commitments are adhered to. This challenge is driven in part by the increased complexity of globalized supply chains over recent decades. As the number of borders and hands a typical product passes through on its production journey – from raw materials to assembly to sale – has grown, the practices employed to track and trace the movement of materials along global supply chains have not kept pace with their complexity.<sup>Fehler! Textmarke nicht definiert.</sup> This information gap raises the risk of persistent labour and environmental standard violations going unnoticed further up the supply chain; the lack of information not only hinders the private sector's ability to conduct proper due diligence, but also constrains government and watchdog attempts to conduct proper oversight.

Improved traceability mechanisms could help overcome these problems while supporting the goals of international agreements, national legislation, and the private sector alike. For example, clear records of good provenance can help regulators accurately account for carbon emissions and verify the use of certified-sustainable inputs (e.g. FSC-certified wood), supporting the goals of the Paris Climate Agreement. Robust traceability systems would also help businesses better meet new accountability standards being introduced through national legislation, such as the French Duty of Vigilance Law<sup>6</sup> and the Dutch Child Labour Due Diligence Law<sup>7</sup>.

Expanded traceability systems will also help producers and suppliers be more resilient in a changing global environment. As the world witnessed in early 2020 with the unfolding of the Covid-19 pandemic, international supply chains that prioritize efficiency over resiliency are ill-prepared for disruptions caused by black swan events. Such disruptions will become an increasingly common reality of life and trade in the coming decades due to climate change-driven environmental disruptions, such as hurricanes and heatwaves.<sup>8</sup>

Supply chain traceability systems can help businesses become more resilient by being better able to manage diversified supply streams and respond to disruptions. For example, Sourcemap, a company that helps businesses trace and verify their supply chains, introduced a feature for their users at the end of March 2020 that maps out their supply chain over a Covid-19 global risk heat map measuring the level of outbreak by country (Figure 1).<sup>9</sup> Such traceability tools will become increasingly essential as global trade adapts to more frequent disruptions.

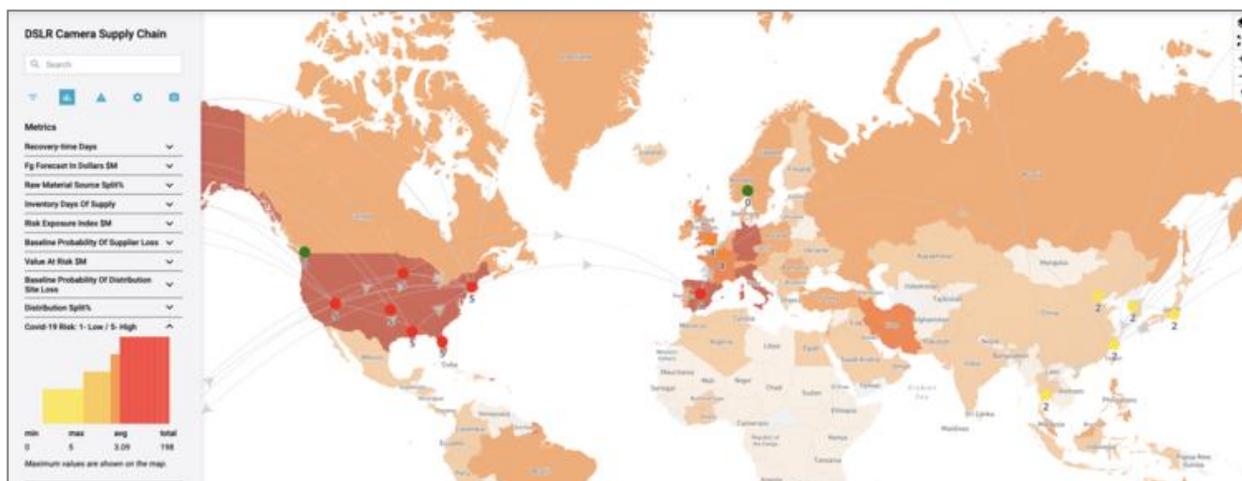


Figure 1: A supply chain risk map based on Covid-19 infection rates (from March 2020).<sup>9</sup>

Clearly, supply chain traceability is needed both to ensure labour and environmental standards *and* to improve resilience to climate change and other disruptions. We identify two fields of action for G20 countries to focus on in order to make supply chain sustainability and traceability a global reality:

1. Promote the establishment of binding supply chain due diligence legislation on a national level while ensuring international alignment, and
2. Promote the coherent use and development of modern traceability technology, namely blockchain

## Proposal

### 1. Promote the establishment of binding legislation on a national level while ensuring international alignment

As a leading forum on issues of international economic cooperation, with members accounting for nearly 80% of international trade globally<sup>10</sup>, the G20 is ideally positioned to take a leading role in promoting a broadened global adoption of supply chain responsibility and due diligence practices. Given the criss-crossed paths of globalized production chains, the spillover effects of member states' leadership could have a tremendous impact on business practices in non-member countries as well.

Such recommendations are not without precedent – the 2018 G20 Labour and Employment Ministerial Declaration called for “due diligence and transparency in global supply chains,” promoted through private sector engagement and commitment to existing principles and guidelines. Commitments to responsible business practices are already included in a number of bilateral and regional trade agreements (e.g. EU association agreements and the Trans-Pacific Partnership). The leading international standards in this area are the UN Guiding Principles on Business and Human Rights, the ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, and the OECD Guidelines for Multinational Enterprises (OECD MNE Guidelines). The latter is further supplemented by the 2018 OECD Due Diligence Guidance

for Responsible Business Conduct (OECD Due Diligence Guidance).<sup>Fehler! Textmarke nicht definiert.</sup> All G20 members have committed to at least two, and most to all three, of these international instruments (Figure 2).<sup>11, 12</sup>

	AR	AU	BR	CA	CN	FR	GE	IN	ID	IT	JP	KR	MX	RU	SA	TR	UK	US	ZA
OECD MNE Guidelines	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
UN Business & HR Principles	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ILO MNE Declaration	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Figure 2: Adapted from “G20 country engagement under international sustainability standards.”<sup>Fehler! Textmarke nicht definiert.</sup>

The existing international commitments to a common set of due diligence guidelines for multinational companies are an important step towards fair and accountable global supply chains. These guidelines might have the character of “soft law” and put the onus on businesses to conduct proper due diligence, but they lack a robust system for external verification. On a de facto voluntary basis, not all companies do or will adhere to the standards put forward in these guidelines, as proven by human rights violations on production sites around the world.<sup>3, 13</sup> A study by the European Commission<sup>14</sup>, too, confirms that on a voluntary basis only one out of three businesses in the EU undertakes due diligence with regard to human rights and environmental impacts. A survey of German companies also finds that less than one in three companies currently fulfil the human right due diligence standards Germany has set itself.<sup>15</sup>

While there are currently limited possibilities to take legal action against companies not conducting sufficient due diligence, the OECD has worked towards stricter enforcement. With the 2000 revision of the OECD MNE guidelines, the most comprehensive international framework on fair supply chains to date, the issue of dealing with violations was addressed by making it mandatory for member countries to set up National Contact Points (NCPs). As of 2017, NCPs were established in 48 countries. A core duty of the NCPs is to handle grievances against companies that allegedly violated the Guideline’s standards. These bodies, though an important improvement within the OECD framework, neither include non-OECD countries nor can they provide legally binding decisions. Further, it is criticised that actual remedies are rare and decisions not always transparent.<sup>16</sup>

Therefore, it is essential to ensure the adherence to agreed-upon guidelines, not only by voluntary commitments, but legally binding legislation on the national or multinational level. In addition to ensuring the adherence to international guidelines, binding legislation is beneficial for companies, as they provide legal certainty. Seventy percent of companies surveyed by the European Commission agreed that binding legislation – in this case on the EU level – would be beneficial to them, as they would provide legal certainty.<sup>14</sup>

Specifically,

- **We encourage all G20 members to establish individual national legislation on legally enforceable due diligence requirements**

Some countries have already implemented pioneering national legislation that goes further than commitment to international guidelines and put legal requirements on businesses. After the game changing California Transparency in Supply Chains Acts

(CTSCA) of 2010, France followed in 2017 with the much stricter Duty of Vigilance Law<sup>6</sup> and the Netherlands in 2019 with the Child Labour Due Diligence Law<sup>7</sup>.

When other countries follow France and the Netherlands' lead, this will have several benefits. Most directly, with proper implementation, such legislation can promote stronger risk management and traceability systems by companies with domestic headquarters. Fehler! Textmarke nicht definiert. More indirectly, individual laws by pioneering countries can encourage the adoption of such laws in other countries as well. Moreover, G20 countries that have such legislation in place can use their leverage. Lastly, we encourage the G20 to promote an open conversation with countries that do not yet have the means to enact or enforce such robust laws, in order to ensure fruitful cooperation when actors in more regulated supply chains fall under their territory.

- **We encourage the G20 to promote international alignment of national due diligence legislation by establishing a working group**

While increasing domestic regulation, international alignment remains essential. This is to avoid an uncoordinated mix of regulations differing across countries, which would make it difficult for internationally operating businesses to navigate and fulfil their differing national obligations. Moreover, uncoordinated legislation might lead to unequal competitive positions and push companies to move headquarters to those countries with the least strict regulation. This could in turn incentivize a race to the bottom in some countries, especially those with relatively weak economies. A G20 working group on this issue can ensure a level playing field for businesses in regard to promoting binding legislation for fair and sustainable supply chains. The working group should work towards ensuring alignment of national legislations with one another and with other global agreements such as the aforementioned OECD guidelines and international law.

## **2. Promote the coherent use and development of modern traceability technology, namely blockchain**

Despite the importance of legislation, its ability to diminish supply chain misconduct is limited by the quality of the traceability systems employed. The tools and frameworks available to perform supply-chain due diligence have not kept pace with the increased complexity of modern global supply chains. Fehler! Textmarke nicht definiert. One key problem is lagging digitization of supply chains; many product records are kept in paper form, which are not only prone to error, but also easy to forge.<sup>17,18,16</sup> Governments are failing in this regard as well; as of 2019, the UNECE evaluated its region's efforts to implement "cross-border paperless trade" systems (i.e. systems based on digital records and communication) as "relatively incomplete," with less than a 50% implementation rate.<sup>19</sup>

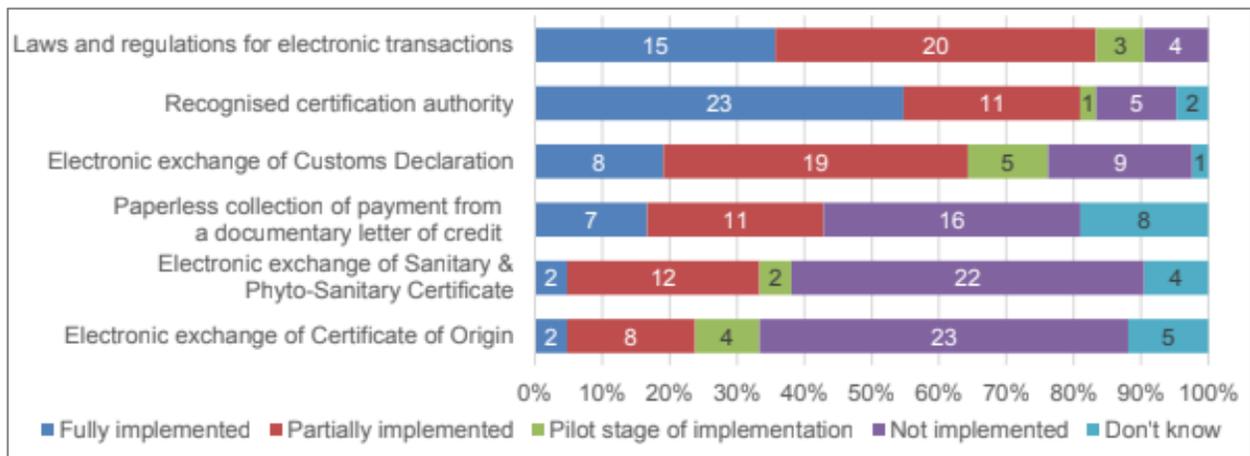


Figure 3: “Implementation of ‘cross-border paperless trade’ measures in UNECE economies.” Data from United Nations Global Survey on Digital and Sustainable Trade Facilitation, 2019. <sup>19</sup>

However, the growing field of distributed ledger technology, most notably blockchain, has the potential to help enable rigorous and reliable supply chain traceability. Blockchain is a digital record-keeping system that is shared across a distributed “peer-to-peer” network. Any time a new piece of information is added to the record, the transaction is logged for all network users. In effect, this makes the blockchain a tamper-proof, or *immutable*, record of transactions.<sup>20</sup>

In many ways, blockchain is ideally suited for tracing complex global supply chains. By logging every instance in which a material changes hands or undergoes a production process in the blockchain, supply chain managers and regulators can trace the complete chain of custody of a product back to the original source. The immutability of blockchain dramatically decreases the potential for supply chain fraud. Additionally, its decentralised nature could help expand its accessibility to a largely disjointed network of international actors along the supply chain. <sup>16, 18, 20</sup> Nonetheless, the digitization of traceability systems through blockchain does pose a challenge considering the fact that in some cases first mile (i.e. early in the supply chain) actors may lack internet access and/or literacy skills. As such, any blockchain-based traceability system should be designed in such a way to include these actors in the tracing process, especially considering that some of the worst violations take place earlier in the supply chain.<sup>21</sup> However, a well-designed blockchain system could potentially overcome this challenge; this was demonstrated by a pilot study in which fishermen (previously verified by a local NGO) recorded tuna catches by texting a simple SMS that was logged in the blockchain (see Figure 4).<sup>17</sup>

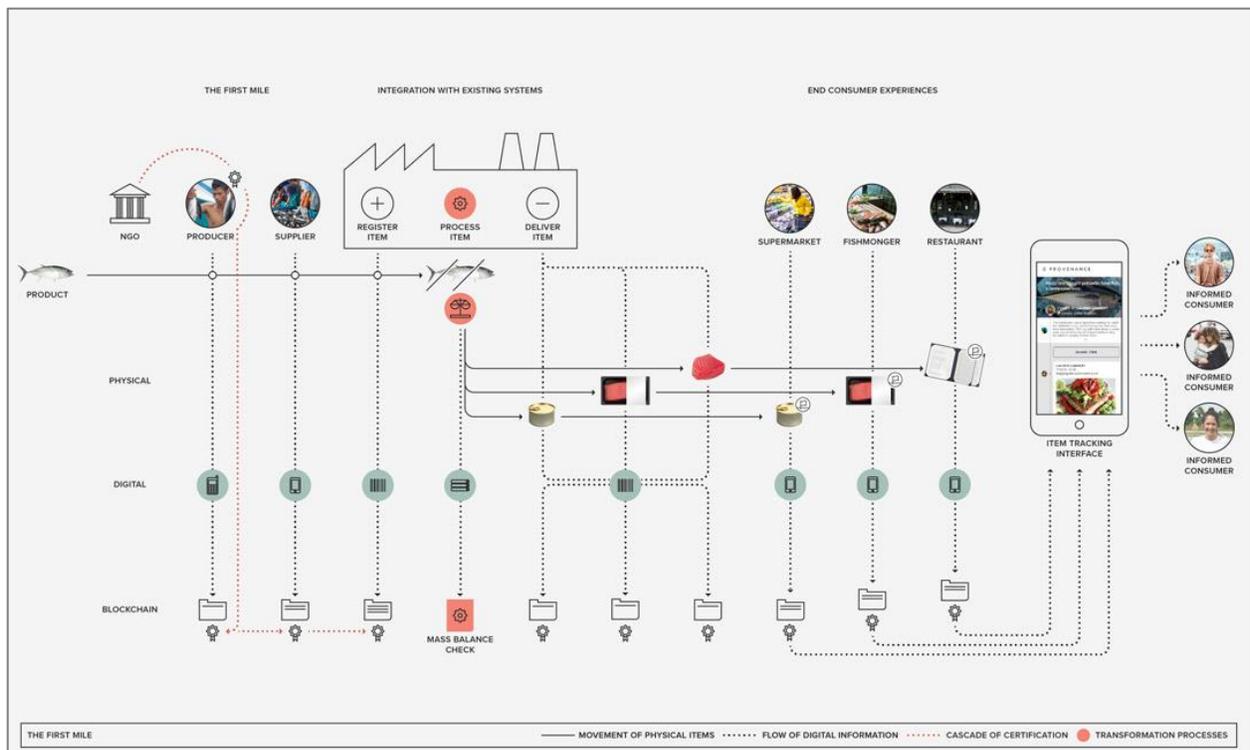


Figure 4: Traceability framework utilized in Provenance's 2016 blockchain pilot study "From shore to plate: Tracking tuna on the blockchain." The model illustrates both the movement of product (tuna) and the flow of information along the blockchain.<sup>17</sup>

The use of blockchains to enable supply chain traceability is becoming a mainstream idea. A growing number of companies, like Provenance and IBM Food Trust, are offering services in this field. This blossoming of blockchain traceability services is partially a response to a rising demand from supply chain managers, who are increasingly evaluating supply chains for sustainability and reliability.<sup>16</sup> Organizations dealing with standards and regulations in international trade, such as the WTO, OECD, and ISO, have also begun to engage with the emerging potential for blockchain in global commerce.<sup>22, 23, 24</sup> Most notably, the OECD Centre on Responsible Business Conduct recently published a report on the role of blockchain in responsible supply chains, providing recommendations for governments and businesses in alignment with the OECD MNE Guidelines.<sup>25</sup> Whether or not blockchain proves to dominate the traceability sector, it is already becoming a key player in global supply chains. Thus, the G20—representing 80% of international global-trade—*should closely monitor and engage with developments in this sector*. This is necessary not just for the promotion of supply chain traceability, but for achieving the buttressing goal of global digital interoperability.

Global trade runs on a patchwork of proprietary and governmental digital systems; to track information across supply chains, it's vital that these systems be able to communicate with one another. International interoperability of digital trade platforms has long been a conversation on the global trade agenda. Back in 2005, the UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) was already exploring international standards for national single-window systems for trade facilitation<sup>26</sup> and international trade organizations continue to work towards this goal to this day.<sup>19, 27, 28</sup> While blockchain has the potential to streamline interoperability in

international trade, its emerging deployment nonetheless requires international governance to establish relevant standards for interoperability.<sup>29</sup>

One problem in international trade that such interoperability standards could help overcome is high costs associated with excessive computation. When blockchains aren't designed to easily communicate with one another from the beginning, this leads to higher computing costs, especially accounting for the high complexity of global supply chains.<sup>25</sup> Other regulatory concerns that have been raised include inconsistent national legal recognition of blockchain-based information<sup>30</sup>, and conflicts between supply chain agents' personal information and certain data privacy regulations like GDPR.<sup>25</sup> International interoperability would help alleviate the inefficiencies of these patchwork arrangements.

Challenges like these are beginning to be addressed by the International Organization for Standardization's new technical committee on standards for blockchain and distributed ledger technologies (ISO/TC 307).<sup>24</sup> Most G20 member states are represented on this committee, amongst a total of 57 participating and observing members.<sup>i</sup> Hence, through coordinated efforts, *G20 members have the opportunity to work with ISO/TC 307 to promote standards discussions that will support the long-term goals of supply chain traceability through blockchain.*

Considering the emergence of blockchain as an increasingly relevant topic both for international trade, and supply chain traceability more specifically, we recommend the following:

- **The G20 Digital Economy Ministerial Meeting should actively explore blockchain as a means to promote supply chain traceability.** As part of this renewed focus, the G20 should coordinate with ISO/TC 307 and the OECD (both their Blockchain Policy Centre and their Centre on Responsible Business Conduct) to address issues of blockchain governance and standards related to international trade, specifically the use of blockchain as a traceability tool to promote supply chain responsibility. An important consideration in these conversations will be ensuring the usability of blockchain supply chain traceability systems by first mile agents who may lack internet access or literacy skills. Adding this topic to the Digital Economy Ministerial Meeting's agenda and engaging in conversations with other international organizations now will help keep the G20 from falling behind as international trade increasingly embraces blockchain. Furthermore, the G20 can play a leading role in keeping traceability and responsible supply chains at the forefront of the conversation on blockchain in the international trade space and ensure that relevant issues are addressed in the ISO/TC 307 standards conversations.
- **G20 members should recognize that options for traceability technology are undergoing a period of dramatic improvement and continued evolution.** As such, it is important to consider the growing potential for such developments to raise the standards for supply chain responsibility when developing national legislation and international trade agreements. However, policy makers must also keep in mind that the technologies for blockchain-based international traceability schemes are still being refined; as such, they should be tested in sandbox environments prior to the development of binding standards that interfere with future innovations and international interoperability goals, such as those

---

<sup>i</sup> For a full list of ISO/TC 307's participating and observing countries, see: <https://www.iso.org/committee/6266604.html?view=participation>

being pursued by the ISO/TC 307.<sup>31</sup> Furthermore, it is essential to note that supply chain traceability systems alone, whether through blockchain or other technologies, cannot be a replacement for proper supply chain due diligence and oversight, but rather a complementing force.<sup>32</sup>

## Bibliography

---

- <sup>1</sup> Ortiz-Ospina, E., & Beltekian, D. (2018). Trade and Globalization. *Our World in Data*. <https://ourworldindata.org/trade-and-globalization>
- <sup>2</sup> Jensen, R. (2007). The Digital Divide: Information (Technology), Market Performance and Welfare in the South Indian Fisheries Sector. *Quarterly Journal of Economics*.
- <sup>3</sup> ILO. (2017). *Global Estimates of Modern Slavery: Forced Labour and Forced Marriage*.
- <sup>4</sup> Germanwatch. (n.d.). *Fallbeispiele*. Initiative Lieferkettengesetz.de. <https://lieferkettengesetz.de/fallbeispiele/>
- <sup>5</sup> OECD. (2017). *Promoting Sustainable Global Supply Chains: International Standards, Due Diligence and Grievance Mechanisms*.
- <sup>6</sup> LOI n° 2017-399 du 27 mars 2017 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre
- <sup>7</sup> Eerste Kamer, vergaderjaar 2016–2017, 34 506, A: Voorstel van wet van het lid Van Laar houdende de invoering van een zorgplicht ter voorkoming van de levering van goederen en diensten die met behulp van kinderarbeid tot stand zijn gekomen (Wet zorgplicht kinderarbeid)
- <sup>8</sup> McKinsey Global Institute. (2020). *Climate risk and response: Physical hazards and socioeconomic impacts*.
- <sup>9</sup> Sourcemap. (2020). *How the Coronavirus is Affecting Consumer Supply Chains*. <https://www.sourcemap.com/blog/2020/3/29/how-the-coronavirus-is-affecting-consumer-goods-supply-chains-tldr-for-once-its-on-the-demand-side-not-the-supply>
- <sup>10</sup> G20 Foundation. (n.d.). *What is the G20*. <https://www.g20foundation.org/g20/what-is-the-g20>
- <sup>11</sup> *Decision of the Council on the OECD Guidelines for Multinational Enterprises*. (2011). OECD Legal Instruments. <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0307..>
- <sup>12</sup> *Recommendation of the Council on the OECD Due Diligence Guidance for Responsible Business Conduct*. (2018). OECD Legal Instruments. <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0443>.
- <sup>13</sup> Germanwatch e.V. (n.d.). *Fallbeispiele*. Initiative Lieferkettengesetz.de. <https://lieferkettengesetz.de/fallbeispiele/>
- <sup>14</sup> European Commission. (2020). *Study on due diligence requirements through the supply chain*.
- <sup>15</sup> Ernst & Young. (2020). *Monitoring des Umsetzungsstandes der im Nationalen Aktionsplan Wirtschaft und Menschenrechte 2016–2020 beschriebenen menschenrechtlichen Sorgfaltspflicht von Unternehmen Zwischenbericht Erhebungsphase 2019*. <https://www.auswaertiges-amt.de/blob/2314274/3a52de7f2c6103831ba0c24697b7739c/20200304-nap-2-zwischenbericht-data.pdf>
- <sup>16</sup> OECD. (2019). *Annual Report on the OECD Guidelines for Multinational Enterprises 2018*.
- <sup>17</sup> Provenance. (2016). *From shore to plate: Tracking tuna on the blockchain*. <https://www.provenance.org/tracking-tuna-on-the-blockchain>
- <sup>18</sup> Leong, C., Viskin, T., & Steward, R. (2018). Tracing the Supply Chain: How blockchain can enable traceability in the food industry. [https://www.accenture.com/t20190115t192110z\\_\\_w\\_/us-en/\\_acnmedia/pdf-93/accenture-tracing-supply-chain-blockchain-study-pov.pdf](https://www.accenture.com/t20190115t192110z__w_/us-en/_acnmedia/pdf-93/accenture-tracing-supply-chain-blockchain-study-pov.pdf)
- <sup>19</sup> UNECE. (2020). *Digital and Sustainable Trade Facilitation: UNECE Regional Report 2019*, p. 21-22.
- <sup>20</sup> Song, J. M., Sung, J., & Park, T. (2020). Applications of Blockchain to Improve Supply Chain Traceability. *7th International Conference on Information Technology and Quantitative Management*, 119–122.
- <sup>21</sup> Provenance. (2015). *Blockchain: the solution for transparency in product supply chains*.
- <sup>22</sup> Ganne, E. (2018). *Can Blockchain revolutionize international trade?* [https://www.wto.org/english/res\\_e/booksp\\_e/blockchainrev18\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/blockchainrev18_e.pdf)
- <sup>23</sup> OECD. (2020). *OECD forms a high-level expert group on blockchain*. <http://www.oecd.org/finance/oecd-forms-a-high-level-expert-group-on-blockchain.html>
- <sup>24</sup> *ISO/TC 307 Blockchain and distributed ledger technologies*. (2020). International Organization for Standards (ISO). <https://www.iso.org/committee/6266604.html>
- <sup>25</sup> OECD. (2019). *Is there a role for blockchain in responsible supply chains?*

- 
- <sup>26</sup> United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT). (2005). *Case Studies on Implementing a Single Window*. [https://www.unece.org/fileadmin/DAM/cefact/single\\_window/draft\\_160905.pdf](https://www.unece.org/fileadmin/DAM/cefact/single_window/draft_160905.pdf)
- <sup>27</sup> Vives, L., Bayhaqi, A., & Singh, S. K. (2018). *Study on Single Window Systems' International Interoperability: Key Issues for Its Implementation*. <https://apec.org/Publications/2018/08/Study-on-Single-Window-Systems-International-Interoperability>
- <sup>28</sup> World Trade Organization. (2020). *Third anniversary of Trade Facilitation Agreement sees increasing implementation rate*. [https://www.wto.org/english/news\\_e/news20\\_e/fac\\_22feb20\\_e.htm](https://www.wto.org/english/news_e/news20_e/fac_22feb20_e.htm)
- <sup>29</sup> Pandey, P. N. (2019). *Global Trade and Blockchain Forum*. World Customs Organization. [https://www.wto.org/english/res\\_e/reser\\_e/04\\_d\\_pashupati\\_pandey\\_wco\\_blockchain\\_session\\_4.pdf](https://www.wto.org/english/res_e/reser_e/04_d_pashupati_pandey_wco_blockchain_session_4.pdf)
- <sup>30</sup> Allen, D. W. E., Berg, C., Davidson, S., Novak, M., & Potts, J. (2019). International policy coordination for blockchain supply chains. *Asia and the Pacific Policy Studies*, 6, 367–380.
- <sup>31</sup> Maupin, J. (2017). *The G20 Countries Should Engage with Blockchain Technologies to Build an Inclusive, Transparent, and Accountable Digital Economy for All*. [https://www.g20-insights.org/policy\\_briefs/g20-countries-engage-blockchain-technologies-build-inclusive-transparent-accountable-digital-economy/](https://www.g20-insights.org/policy_briefs/g20-countries-engage-blockchain-technologies-build-inclusive-transparent-accountable-digital-economy/)
- <sup>32</sup> United Nations Global Compact, & BSR. (2014). *A Guide to Traceability: A Practical Approach to Advance Sustainability in Global Supply Chains*.