

# UNECE-UN/CEFACT “Enhancing Transparency and Traceability for Sustainable Value Chains in Garment and Footwear”

<b>I. Recommendation n°46: Enhancing transparency and traceability for sustainable garment and footwear value chains.....</b>	<b>3</b>
<b>A. Introduction .....</b>	<b>3</b>
<b>B. Scope .....</b>	<b>5</b>
<b>C. Target audience .....</b>	<b>6</b>
<b>D. Purpose and Benefits.....</b>	<b>6</b>
<b>E. Challenges .....</b>	<b>7</b>
<b>F. Recommendation .....</b>	<b>8</b>
Norms and Standards .....	8
Incentives .....	8
Research & Development.....	9
Awareness & education.....	9
Multi-stakeholder collaborative initiatives.....	9
<b>G. Conclusion.....</b>	<b>9</b>
<b>II. Guidelines for Recommendation n°46 on enhancing transparency and traceability for sustainable garment and footwear value chains.....</b>	<b>10</b>
<b>A. Introduction .....</b>	<b>10</b>
<b>B. Traceability principles .....</b>	<b>10</b>
<b>C. Key traceability system concepts.....</b>	<b>11</b>
1. Sustainability claims.....	14
2. Traceable assets .....	15
(a) Granularity of the traceable asset.....	15
(b) Traceable assets and product transformations.....	15
(c) Traceability Information and data collection methodologies.....	16
3. Logistics unit .....	17
4. Unique identifiers (IDs).....	17
(a) Maintaining traceability information across product transformations in the value chain .....	18
5. Traceability models .....	20
(a) Product segregation (preferred and most demanding model) .....	20
(b) Mass balance (moderately demanding method).....	21
(c) Book and Claim (least demanding model).....	22
6. Entry and exit points.....	23
7. Verification criteria.....	24
8. Verification processes: the role of audit and certification .....	24
(a) Audit .....	24
(b) Certification .....	25
<b>D. Cost allocation and incentive systems.....</b>	<b>25</b>
<b>E. Supporting role of advanced technologies.....</b>	<b>27</b>
<b>F. Creating inclusiveness in traceability systems .....</b>	<b>31</b>
1. The digital divide.....	31
2. Gender considerations .....	32
3. Small- and medium-sized enterprises .....	33
4. Integrating developing countries .....	33
<b>Annexes .....</b>	<b>35</b>
<b>Annex I Formulation and implementation of a traceability and transparency Action Plan.....</b>	<b>35</b>
1. Define a vision statement.....	35

2.	Set the objectives and related performance indicators .....	35
3.	Plan the activities and define the timing .....	36
4.	Define the governance structure .....	36
5.	Allocate resources.....	37
6.	Monitor results.....	37
7.	Communicating the results and related recommendations.....	37
<b>Annex II Glossary .....</b>		<b>40</b>

DRAFT

## **I. Recommendation n°46: Enhancing transparency and traceability for sustainable garment and footwear value chains**

### **A. Introduction**

1. Improving transparency and traceability has become a priority for the garment and footwear industry. Consumers, governments and the civil society are demanding responsible business conduct and are calling upon the industry to identify and address actual and potential impacts, in terms of human rights violations, adverse environmental effects, and human health hazards.

2. By achieving enhanced visibility in value chains, companies are better equipped to manage such impacts, and address financial, operational and reputational risks. Also, more transparent value chains, allow them to more effectively respond to unforeseen disruptions, conform with applicable laws and regulations, ensure product quality and safety, combat counterfeits, and protect cultural and industrial heritage.

3. On the other side, greater transparency empowers consumers to make better informed consumption choices, as they have more reliable information about the sustainability and circularity claims of products and processes. As a result, traceability and transparency have a strong potential to build trust among all industry actors.

4. Both developed countries, and developing and transition countries are deeply involved in the global garment and footwear trade and both have a key role in advancing the industry's sustainable production and consumption patterns in line with the 2030 Agenda for Sustainable Development and, particularly, its Goal 12 on Responsible Consumption and Production.<sup>1</sup>

5. At the same time, their roles tend to be differentiated. Developed countries tend to operate more in the downstream part of the value chain where there is higher capital investment and more consumer-linked activities (design, branding and retailing, consumption, and post-consumption activities). Developing and transition countries tend to mainly intervene in the upstream part of the value chain, where there are more labour-intensive activities (farming, harvesting, ginning, spinning, dyeing, weaving, stitching, tanning, cutting and finishing).

6. Because of their nature and socioeconomic context, it is in these upstream manufacturing activities that most sustainability hotspots are concentrated, and where industry actors face most of the challenges in identifying, preventing and mitigating them. On the other hand, it is the downstream actors that often set the parameters and the financial incentives for upstream actors. Indeed, it is the design, product specifications, contract clauses related to payment terms, and withdrawal conditions that determine the margin of manoeuvre that upstream actors have for providing decent working conditions and respecting the environment.

7. As a result, effectively addressing risks to responsible business conduct depends on all the links in the value chain and requires the active and effective engagement of both upstream and downstream actors. The latter, who make the final decisions about which materials are used and which products are placed on the market, also are expected – and at times, legally required – to identify and mitigate risks that might result in harm to humans or the environment throughout their entire value chain.

8. In this context, downstream actors must increase their knowledge of where fibres, materials and all product parts and components come from, as well as how they are sourced and processed. At the same time, there is clear evidence that their actual capacity to perform and manage activities in support of enhanced traceability and transparency is limited and that

---

<sup>1</sup> Transforming our world: the 2030 Agenda for Sustainable Development ([https://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E) accessed on 2020-04-22).

their digital skills and capabilities to collect and elaborate data, needs to be further developed. In order to be effective, optimize scale and create efficiencies, actions to improve traceability and transparency in garment and footwear value chains must be sector-wide and encompass globally scattered actors.

9. Moving beyond consumption activities, traceability and transparency are enablers that guarantee circularity claims. As such they can help shifting from the linear economic model that takes resources, makes products and disposes of waste (“take-make-waste”), towards the circular economic model that Reduces the new resources used, Reuses products and parts, and Recycles waste (“the 3Rs model”). The aim is to obtain the maximum value from resources, leveraging zero-waste design, product-life extension, resource efficiency, repairing and remanufacturing services.

The following definitions of key concepts are used in this Policy Recommendation:

**Traceability** is understood as “the ability to trace the history, application or location of an object” in a supply chain (ISO 9001:2015). In this context, it is defined as the ability to “identify and trace the history, application, location and distribution of products, parts and materials, to ensure the reliability of sustainability claims, in the areas of human rights, labour (including health and safety), the environment and anti-corruption” (UN Global Compact 2014);<sup>2</sup> and “the process by which enterprises track materials and products and the conditions in which they were produced through the supply chain” (OECD, 2018).<sup>3</sup>

**Transparency**, relates directly to relevant information been made available to all elements of the value chain in an harmonized way, which allows common understanding, accessibility, clarity and comparison (European Commission, 2017).

**Sustainability**<sup>4</sup> In the context of garment and footwear value chains, means that all activities, throughout a product’s life cycle, take into account their environmental, health, human rights and socio-economic impacts, and their continuous improvement (UNECE 2019).

**Due diligence** is understood as “the process through which enterprises can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts” (OECD 2018) as an integral part of business decision-making and risk management systems (OECD, 2018).<sup>5</sup>

**Circularity** of a production process refers to the ability of such process to retain the value of products, materials and resources in the economy for as long as possible and to minimise to the extent possible the generation of waste along all the steps of the value chain (European Commission, 2015).<sup>6</sup>

<sup>2</sup> United Nations Global Compact Office (2014), ‘A Guide to Traceability A Practical Approach to Advance Sustainability in Global Supply Chains’. Available at: [https://d306pr3pise04h.cloudfront.net/docs/issues\\_doc%2Fsupply\\_chain%2FTraceability%2FGuide\\_to\\_Traceability.pdf](https://d306pr3pise04h.cloudfront.net/docs/issues_doc%2Fsupply_chain%2FTraceability%2FGuide_to_Traceability.pdf)

<sup>3</sup> OECD (2018), ‘OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector’, OECD Publishing, Paris. Available at: <http://dx.doi.org/10.1787/9789264290587-en>

<sup>4</sup> United Nations, 2015 (A/RES/70/1) Transforming our world: the 2030 Agenda for Sustainable Development, [https://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E) (accessed 24-06-2020), where sustainability refers to the ability of an activity to support “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This implies that the activity also takes into due account the needs of “People, Planet, Prosperity, Peace and Partnership” as outlined in the United Nations Sustainable Development Goals.

<sup>5</sup> OECD (2018), ‘OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector’, OECD Publishing, Paris (accessed on 2020-04-22). Available at: <http://dx.doi.org/10.1787/9789264290587-en>

<sup>6</sup> European Commission (2015), European Circular Economy Package of the European Commission, Communication ‘Closing the loop – An EU action plan for the Circular Economy’, COM(2015) 614 final.

10. This Policy Recommendation responds to the increasing demand for policy and legislative action for responsible business conduct along global value chains. It seeks to support measurable sustainability efforts and targets to identify, prevent and mitigate adverse impacts entailed by corporations on people and the planet, through their own operations and third-party business relations. Thus, it aims at reducing the imbalance between upstream and downstream actors, enhancing empowerment of and equality among garment and footwear workers.

11. The measures and approaches recommended here are aligned with: the relevant Sustainable Development Goals (SDGs) of the United Nations Agenda for Sustainable Development 2030; the United Nations Guiding Principles on Business and Human Rights;<sup>7</sup> the International Labour Organization's (ILO) Declaration on Fundamental Principles and Rights at Work, relevant ILO Conventions and Recommendations, and the ILO Tripartite Declaration on Principles concerning Multinational Enterprises and Social Policy; the Paris Agreement on Climate Change; the Convention on Illegal Trade of Endangered Species; the Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises,<sup>8</sup> and the OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector.<sup>9</sup>

## B. Scope

12. This Policy Recommendation is relevant for all countries and companies participating in global value chains for garment and footwear, from raw materials production and processing, through manufacturing to finished product branding and retailing, consumption and post-consumption activities.

13. Areas where action to advance the transparency and traceability of value chains is needed include:

- Awareness of the indispensable role transparency and traceability play in due diligence, advancing the sustainability and circularity of value chains and, especially, responsible consumption and production.
- Identification, prevention, mitigation and remediation of potential and actual adverse environmental, social and ethical risks to responsible business conduct by companies and their global business partners throughout the entire value chain, including tiers that are more at risk of remaining hidden like subcontracted, informal and small producers and report on the efforts to monitor these risks in line with sustainability, due diligence and traceability norms and standards.
- Incorporation into the analysis supporting risk-based management of value chains, many of which can be measured using traceability and transparency.
- Development, implementation and enforcement of supporting government policy and legislation on due diligence.
- Integration of transparency information into purchasing practices in order to better inform the work of buying and compliance offices.
- Promotion of sustainable consumption encouraging consumers to better understand their role and take action, based on product's information transparency, during the purchase, re/use and disposal of products in order to reduce potential negative impacts and effects on the environment and society.

---

<sup>7</sup> UNHR ,UN Guiding Principles on Business and Human Rights ([https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR\\_EN.pdf](https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf) accessed on 2020-04-22)

<sup>8</sup> OECD Guidelines for Multinational Enterprises ([www.oecd.org/daf/inv/mne/48004323.pdf](http://www.oecd.org/daf/inv/mne/48004323.pdf) accessed on 2020-04-22)

<sup>9</sup> ILO Tripartite Declaration on Principles concerning Multinational Enterprises and Social Policy [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---emp\\_ent/---multi/documents/publication/wcms\\_094386.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---multi/documents/publication/wcms_094386.pdf)

- Engagement of enterprises in long-term relationships based on their mutual adherence to the United Nations Sustainable Development Goals.
- Development of educational materials for enterprises on traceability, transparency, and sustainability.
- Adoption of a more proactive vision by value-chain leaders and related incentives to encourage continuous improvement in transparency for sustainability in sector activities.
- Development and promotion of supporting common framework across the entire sector and guidance on the implementation of traceability and transparency for all stakeholders.
- Enabling value retention of textile and leather materials.

14. The last of the above needs to support the design of traceability and transparency systems for rapid and effective information exchange that better allow value-chain actors to take targeted actions based their goals for supporting sustainable development and related risk-based priorities.

15. At the same time, such systems need to be underpinned by a set of common, agreed rules which take into account the capacities of all actors involved, and build the trust needed for sharing data. They also need to be practical and allow for the use of appropriate technologies for implementation by facilities of varying sizes and technological capabilities, including farmers and small businesses.

### **C. Target audience**

16. This Recommendation offers a basis for action by both public-sector policymakers and private-sector decision makers who wish to advance due diligence, sustainability, and circularity approaches.

17. The Recommendation can also serve as a reference for other industry stakeholders in their efforts to support the uptake and implementation of the recommended measures, including:

- Business and industry associations
- Consumers and consumers associations
- Intergovernmental Organizations
- Investors/shareholders
- Local authorities
- Non-governmental organizations (NGOs)
- Scientific and technological community
- Workers and trade unions

### **D. Purpose and Benefits**

18. This Recommendation responds to the call from industry stakeholders for government action in support of:

- Greater awareness by government, industry and the public of the benefits provided by traceability and transparency for due diligence, sustainability and circularity.
- A level playing field where industry actors investing and taking action to enhance traceability and transparency in their value chains in support of due diligence and sustainability, will benefit from a competitive advantage.
- More efficient ways to access remedies for workers and consumers, including due to human rights violations and value chain disruptions.

- A globally recognized and harmonized approach for collecting, exchanging and validating information for traceability and transparency in the sector's value chains.
- The use of identical data definitions and codes to facilitate the exchange of information (semantic interoperability) between IT systems that support traceability and transparency in the sector's value chains.
- The fight against product counterfeiting, fraud and illegal trade in protected species through the identification of origin – which means provenance and location of all products, parts, components, processes and factories – and local content.

19. The final objective of this Recommendation is to establish a mechanism that enables governments, industry partners, consumers and all other relevant stakeholders to take risk-informed decisions, overcome information asymmetry, communicate and achieve accountability for sustainability claims that go beyond regulatory compliance, and anchor business models to responsible business conduct.

20. It does so by providing industry and other relevant stakeholders with a set of internationally agreed practices for the harmonized collection and transmission of data for tracking and tracing materials, products and processes across an entire value chain including all involved facilities and intermediaries as well as related information about the sustainability performance of these value chain participants. This will help to ensure the reliability of sustainability claims in the areas of human rights, fair labour practices, the environment, consumer interests and anti-corruption, while also allowing simplification, cost-efficiency and improved organizational efforts, especially for SMEs and industry actors in less-advanced economies.

21. The Policy Recommendation includes implementation Guidelines which assist policy and decision makers in better understanding tracking and tracing while also providing a framework for implementation by all stakeholders in garment and footwear value chains. The annexed Call to Action provides a mechanism to monitor and keep track of implementation of the recommended measure, and to facilitate the exchange of good practices and lessons learned.

## **E. Challenges**

22. Tracking and tracing in value chains is a multifaceted effort and a challenging task due to the organizational and technological complexities of the business networks in this industry, which makes it often difficult for companies to track a product's history and attributes back to its origins.

23. The maintenance of data privacy and security is a critical aspect, of particular concern for brands, traders, and companies in the high-value segment of the market, who often consider information about specialized providers to be an important competitiveness factor. In addition, there are challenges around ensuring that data systems are secure for all users.

24. The reliability and authenticity of data shared as well as the stringency of controls around the validation of materials, products and production processes, and the proofs of compliance with sustainability requirements, are also important issues. In the context of traceability, models with less stringent controls, for example around the handling of certified and non-certified materials, are often less complex and, thus, less expensive.

25. In addition, there are costs associated with the necessary resources and technologies for the implementation of traceability and transparency systems. Traceability and transparency require substantial investments in systems and technologies aimed at performing various levels of verification of processes, products, parts and components at all stages of the value chain and related data entry and product labelling. In this connection, technological barriers are also a concern. Technological advances such as blockchain and distributed ledger technologies, bar codes and RFID tags offer an opportunity, but mastering these technologies may be difficult, due to geographical and language barriers as well as costs. In addition, coordination between different supply chain actors requires time and

willingness on all sides. These costs are a concern for many actors pursuing traceability, and especially for non-vertically integrated companies, brands and SMEs.

26. Alignment around tools, as proposed in this Recommendation and its accompanying Guidelines, helps to reduce costs to individual actors. When leadership is there and collaboration is widespread, there is greater incentive for actors to work together, which improves results, lowers costs overall – and thus helps to address the above challenges.

## **F. Recommendation**

27. The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) of the United Nations Economic Commission for Europe (UNECE), at its twenty seventh session, agreed to recommend that Governments act in the aforementioned action areas:

### **Norms and Standards**

(a) Establish harmonized policies and regulations that support the implementation of traceability and transparency, in order to achieve higher environmental and social standards, economic viability and circularity in garment and footwear value chains by:

- (i) Encouraging responsible business conduct, which addresses actual and potential adverse impacts resulting from companies' decisions;
- (ii) Ensuring the reliability of non-financial reporting and sustainability claims about materials, products and processes;
- (iii) Contributing to international policy coherence, thus addressing the challenges, for both producers and consumers, that are created by a proliferation of similar, but different, policies and regulations, as well as establishing a more level playing field for companies operating in this industry.

(b) Define minimum levels of traceability across garment and footwear value chains, from raw materials sourcing, and the minimum data that needs to be collected in order to show due diligence and transparency in support of claims regarding the origin, quality or other characteristics, and sustainability performance for products, and processes. Encourage companies' efforts to embrace higher transparency in value-chain operations, for example by disclosing the names and addresses of suppliers' factories, and sharing relevant information on their sustainability performance with stakeholders who are impacted, or potentially impacted, by enterprise decisions. This should be done in a timely, culturally sensitive and accessible manner, in line with international data protection norms and standards.

(c) Reduce the implementation burden on business and support SMEs by promoting the use of international standards such as the UN/CEFACT standard for traceability and transparency of sustainable value chains in garment and footwear, or the equivalent, and encouraging the use of existing data. For example, requiring the use of these standards for any mandatory reporting requirements linked to traceability results such as showing that materials were legally sourced or no forced labour was used.

### **Incentives**

(d) Provide economic and fiscal incentives (positive and negative) for establishing and implementing value-chain traceability and transparency systems, especially in support of SMEs small farmers and producers, and other vulnerable groups such as women, young workers, home-based workers and migrant workers;

(e) Provide non-financial incentives, including measures to facilitate access to markets, fast-track processes, public procurement criteria that are green and socially responsible, specialized managerial and workforce training, public visibility, peer-learning and non-financial reporting requirements.



### **Research & Development**

(f) Support research and development, and identify and scale-up innovative solutions for:

- (i) Tracing and verifying products' authenticity and provenance;
- (ii) Advancing the sustainability and circularity of production and consumption processes;
- (iii) Increasing the lifespan of products;
- (iv) Creating more sustainable materials and;
- (v) Recycling garments and textiles.

### **Awareness & education**

- (g) Provide education in order to:
- (i) allow consumers to make informed choices;
  - (ii) create an awareness of the shared responsibility of all stakeholders including both business and consumers in preserving our planet, and;
  - (iii) increase the demand for materials, products and processes that are more responsible and sustainable.

### **Multi-stakeholder collaborative initiatives**

(h) Stimulate and support multi-stakeholder, collaborative initiatives that seek to achieve industry-wide change and create shared value for all industry actors, benefitting especially SMEs and vulnerable groups in developing and transition countries while, at the same time, addressing garment and footwear value chains' sustainability risks and impacts. Such initiative could include:

- (i) A global, open-source knowledge platform to make guidance available and ensure that industry actors receive appropriate training and information;
- (ii) Policy dialogues for the sharing of good practices and lessons learned at international, regional and national levels;
- (iii) Pilot projects to experiment with innovative approaches and advanced technologies in traceability, including blockchain, artificial intelligence (AI), Internet of things (IoT), and digital markers to ensure an effective connection between digital and physical assets.

## **G. Conclusion**

28. When deciding upon specific public policy actions to be taken, multi-stakeholder consultations are recommended in order to strike a balance between the different interests at stake, and to identify targeted support for vulnerable groups in the implementation processes. Special attention needs to be given to SMEs, smallholders and farmers, and other groups including, as appropriate, women, young workers, home-based workers and migrant workers, who are affected by unfair practices in this sector.

29. In order to monitor and keep track of the implementation of this Policy Recommendation, Governments are requested to report on commitments to the recommended measures starting from 2022, and thereafter, every two years. Such pledges are to be expressed in accordance with the annexed Call to Action, which is open to all industry stakeholders and actors embracing transformational change for a responsible and sustainable garment and footwear industry of the future.

## II. Guidelines for Recommendation n°46 on enhancing transparency and traceability for sustainable garment and footwear value chains

### A. Introduction

30. These Guidelines aim to assist policy and decision makers who wish to put in place or encourage recommended approaches for enhancing the transparency and traceability of sustainable and circular value chains in the garment and footwear industry.

31. *Transparency* requires companies to know what is happening upstream in the value chain, and to communicate this knowledge to both internal and external stakeholders. This knowledge includes where, by whom, how and when the product is made. Indeed, more and more consumers are insisting upon value-chain transparency for the products they buy and they also tend to be willing to pay more for brands that provide this information.<sup>10</sup>

32. *Traceability* is an essential requirement for creating transparency. It allows to identify where assets are as they move through a value chain and, when you have a final product, to identify all of the “assets” that were used to make that product, their origin and characteristics, and the way they have been processed and transformed.

33. The surrounding ecosystem includes supporting policies, norms and standards, incentives, promotion, capacity building, and collaborative initiatives.

34. A *traceability system* together with its surrounding ecosystem forms a *traceability framework*.

35. The Guidelines look at the planning and design of *traceability frameworks* across the entire value chain – from the production and processing of raw materials, through manufacturing to finished product branding and retailing, consumption and post-consumption activities. It covers

(a) The *guiding principles* for effective and efficient traceability in garment and footwear value chains.

(b) The *key components* of a *traceability system*, encompassing all the practical processes, procedures and technology that make up a functional system.

(c) *Cost allocation and incentive systems* as well as *creating inclusiveness* because the success of a system depends upon having all value-chain partners participate

(d) *The supporting role of advanced technologies* because they can improve the cost structure, operational effectiveness, and inclusiveness of traceability frameworks.

36. A complimentary annex to the Recommendation and these Guidelines is a *Roadmap* which presents a step-by-step approach for developing and implementing, from a practical standpoint, a traceability framework in support of sustainability, both at the industry and government level. Then, at the end, there is another annex with a Glossary which establishes a common understanding of the terms used across all of these documents.

ADD GRAPH Figure 2.1

### B. Traceability principles

37. To develop and implement an efficient and effective traceability framework in the garment and footwear industry, a number of guiding principles should be taken into consideration:

---

<sup>10</sup> Harvard Business Review, What Supply Chain Transparency Really Means, by Alexis Bateman and Leonardo Bonanni, 20 August 2019 <https://hbr.org/2019/08/what-supply-chain-transparency-really-means> (accessed on 16-05-2020).

(a) **Awareness:** Key stakeholders and industry actors need to be aware of the benefits of traceability systems in terms of enhanced regulatory compliance and corporate value.

(b) **Knowledge:** A clear understanding of the purpose of a traceability system, its scope, and the information needed in order to promote sustainability and circularity in production and consumption processes. This includes the information which should be collected and exchanged about the traceable asset (“what”), by which actors (“by whom”), at which locations (“where”), in which processes (“why”), and at which time (“when”).

(c) **Risk-based analysis:** In order to maximise impact and make the best use of limited resources, traceability systems should be focussed on where there are risks of non-sustainable practices. These risk areas differ between products, value chains and geographic areas so an in-depth risk analysis is needed at the start of the planning and implementation processes.

(d) **Commitment:** Policy and decision makers need to commit to traceability in the entire industry value chain – from the production and processing of raw materials, through manufacturing to finished product branding and retailing, to consumption and post-consumption activities, and such commitment must be embedded into policy and legal frameworks as well as corporate strategies for sustainability and circularity.

(e) **Engagement:** Traceability in the industry value chain requires a consensus approach and, therefore, engagement, buy-in and cooperation from a wide range of actors. To this end, the identification of their roles and the establishment of effective cooperation and collaboration mechanisms are essential. Due consideration should also be given to measures for supporting the participation of small actors, especially in emerging economies.

(f) **Structured implementation:** The implementation of traceability systems requires a high level of organization in the value chain, in order for assets or a groups of assets, to be identified (tagged), traced, and related information made available, preferably in an electronic format.

(g) **Norms and standards:** Traceability systems are of greatest value if they are implemented using relevant norms and standards, including for the data to be collected and exchanged. Therefore, implementation should be based on available, recognised norms and standards for data, implementation and certification of traceability in order to favour the harmonisation of concepts, approaches and terms, and the interoperability of systems.

(h) **Appropriate technology:** Tools and operating infrastructure to support effective traceability are a key enabling factor. Digital technologies should be interoperable and support for their use must come from all actors along the value chains and, when required, support must also be given to actors so that all value-chain participants have access to the required technologies.

(i) **Inclusiveness:** Traceability systems need to be inclusive, in order to integrate all stakeholders including small- and medium-sized companies, disadvantaged groups (such as minorities and women) as well as low and middle-income economies. Acceptance and support for a traceability system depends on its capability to integrate these stakeholders.

## C. Key traceability system concepts

38. *Traceability system* refers to all of the practical processes, procedures and technology needed to create a functional system.

39. Value-chain actors in the garment and footwear industry need to perform due diligence and exercise responsible business conduct in order to ensure that their products are made in a way that does not harm the environment or result in unacceptable social conditions

including human rights violations. Traceability systems are an effective way to monitor and report on the sustainability of garment and footwear products throughout the value chain.<sup>11</sup>

40. Traceability systems support sustainability **claims** about the characteristics of a product, a process or an organization, and collect data to validate these claims based upon defined **verification criteria**.

41. To do this, a system needs to:

- Identify the sustainability **claim(s)** and the related **verification criteria** which will define the traceability information to be collected, exchanged and verified
- Identify the **traceable assets** for supporting the claim – which could range from raw materials through to final products
- Select the most appropriate **traceability models** for organizing the value-chain's processes
- Track traceable assets when they are transported in **logistics units**
- Consider the need for post-consumption processes and traceability when identifying **verification criteria**
- Mark/tag each traceable asset and logistics unit with a unique **identifier (ID)**
- Record and link these IDs to **sustainability information** that will support the verification criteria as the traceable assets move between the **entry and exit points** for traceability in the value chain
- **Have a verification process**, carried out by auditors, which verifies that the data collected is accurate, aligned with the verification criteria and supports the claims

Table 2.1  
Summary of key traceability system concepts

<p><b>C1. Claim</b></p> <p><i>Why traceability? What is its objective?</i></p>	<p>A claim is a high-level statement about a <b>characteristic of a product, or about a process or an organization associated with that product</b> (traceable asset).</p> <p>In order to show that the characteristic is true, <b>it is necessary to trace the asset as it moves through the value chain.</b><sup>12</sup></p>
<p><b>C2. Traceable asset</b></p> <p><i>What is being traced?</i></p>	<p>The claim should be linked to a traceable asset, which is the <b>material or product to be traced</b>. It can be defined at different levels:</p> <ul style="list-style-type: none"> <li>• Individually (for example a single garment)</li> <li>• In batches from raw material production or manufacturing processes (for example a bale of cotton or one machine load of dyed fabric or all of the thread or all of the products produced by one machine during a specified period such as a work shift or a day)</li> <li>• In trade units, which are quantities used for buying and selling (for example a package of shirts or a container-load of thread).</li> </ul> <p>Which traceable assets to use will depend upon the objective(s) of a traceability system and the selected traceability model, as well as the processes in the value chain and the capabilities of value-chain partners.</p>
<p><b>C3. Logistics unit</b></p>	<p>Logistics units contain traceable assets for transport and/or storage.</p>

<sup>11</sup> UNECE, Traceability for Sustainable Trade, A Framework to Design Traceability Systems for Cross Border Trade, ECE/Trade/429, <http://www.unece.org/index.php?id=43763> (accessed 17-05-2020).

<sup>12</sup> UNECE, Traceability for Sustainable Trade, A Framework to Design Traceability Systems for Cross Border Trade, ECE/Trade/429, <http://www.unece.org/index.php?id=43763> (accessed 17-05-2020).

<p>Which package(s), pallet(s), container(s) are my traceable assets being transported in?</p>	<p>Most often they contain aggregated traceable assets (for example, multiple fabric rolls in a container), but logistic units may also contain disaggregated traceable assets (for example, one batch of thread spindles that is packaged onto multiple pallets).</p> <p>Logistics units are given IDs in order to follow the traceable assets they contain. This is done by recording the IDs of the traceable asset(s) and linking them to the ID of their logistics unit. As a result, if a logistics unit is lost, the sender or receiver will be able to immediately identify the traceable assets it contained.</p> <p>Sometimes this chain of IDs can also be used for detecting fraud (for example if 6 fabric rolls from a weaver are loaded onto a container and 7, or 5, are unloaded). In addition, because logistics providers track only logistics units (and not what they contain), if there is a need to calculate CO2 emissions, then the information from the logistics provider about transportation routes and modes for a logistics unit needs to be linked to the traceable assets contained in the logistics units.</p>
<p><b>C4. Identifiers (IDs)</b></p> <p><i>How do you know what happens to what is being traced?</i></p>	<p>To follow the path of a traceable asset, you need to collect information linked to it and to do that, the traceable asset must have a unique Identifier (ID).</p> <p>IDs are also required for all of the traceability/transparency components that information is collected about (see the section which explains Unique Identifiers in more detail); examples include, enterprises, locations, processes and transportation units.</p> <p>Whenever possible, IDs should be based on open non-proprietary standards in order to support interoperability (for example, ISO/IEC 15459).</p> <p>Many IDs are attached directly to individual traceable assets (products, batches or trade units) or a logistics unit. This is best practice, but is not always possible, especially during transformation processes.</p> <p>For transformations, the IDs and quantities of inputs are recorded, the quantity of output is measured (to be sure it matches the input quantities) and a new ID is given to the output which is linked to its input IDs.</p> <p>How this and other practices result in a “Chain of IDs” going from the start of traceability through to its end is explained in more detail in the explanatory sections after this table.</p>
<p><b>C5 Traceability models</b></p> <p><i>How should I organize processes to be sure that traceability is preserved?</i></p>	<p>There are three basic models for organizing the flow of traceable assets within a value chain in order to support a claim. These are product segregation, mass balance, and book and claim. These are applicable across a value chain from the raw materials stage through to finished products.</p>
<p><b>C6. Entry and exit points</b></p> <p><i>When does traceability take place?</i></p>	<p>Entry and exit points are <b>the events (activities)</b> at the start and the end of the traceability process within the value chain. At each of these points the traceable asset needs to meet specified criteria. For example, if the entry point is “harvesting cotton,” the entry point criteria could be “that the cotton must have been raised according to an organic standard”.</p>
<p><b>C7. Verification criteria</b></p> <p><i>Why should anyone believe the claim?</i></p>	<p>Verification criteria define the <b>information to be collected</b> about the traceable asset, and the <b>scope of the verification process</b>. Verification criteria should be objective. These criteria are set by the verification</p>

<p><i>What is the information that needs to be collected in order to verify the claim?</i></p>	<p>requestor. The following description is in line with the ISO definition.<sup>13</sup> Criteria should include:</p> <ul style="list-style-type: none"> <li>• A definition of the claim to be verified including tolerances (for example, 50 per cent organic cotton with a tolerance of 5 per cent)</li> <li>• The applicable process for verification (for example, which data need to be collected, which control methods should be used etc.)</li> <li>• The standards and normative documents against which the claim is verified (e.g. ISO or industry standards/guidelines)</li> </ul>
<p><b>C8. Verification process</b></p> <p><i>How do you prove that your traceability process is working? Who is checking to be sure that the data is accurate and, also that no one is cheating?</i></p>	<p>Verification is “confirmation of a claim, through the provision of objective evidence, that specified requirements have been fulfilled”.<sup>14</sup> In the context of traceability, the verification process is carried out by a verification (audit) body that analyses traceability events and validates the information about them against the verification criteria and any other transparency system rules.</p> <p>Based upon risk analysis, independent verification may only be needed for selected stages of the value chain.</p> <p>An independent verification agency could be from: (i) The public sector, such as a ministry; (ii) The private sector, such as an inspection service or industry association, or (iii) A public private sector partnership (PPP), such as an inspection agency appointed by the government.</p> <p>The role of the verification process is to:</p> <ul style="list-style-type: none"> <li>• Request from stakeholders selected traceability data from the relevant Entry/Exit Points and from business processes between the Entry and Exit Points (i.e. traceability events)</li> <li>• Ensure that the data recorded for traceability purposes reflects what is actually happening in the supply chain (for example through field inspections)</li> <li>• Monitor and safeguard traceability by ensuring that assets meet entry/exit conditions and verification criteria (rules) are applied correctly.<sup>15</sup></li> </ul>

## 1. Sustainability claims

42. “A claim is a high-level statement about a characteristic of a product, or about a process or an organization associated with that product (traceable asset).”

43. Sustainability claims to support sustainable development objectives should be selected based on a value-chain risk analysis, corporate objectives, and a company’s commitment to responsible business conduct and due diligence. The contents of the claim should be accessible and may need to comply with legal requirements. Also, some organizations that develop sustainability standards and guidelines have rules about how they can be referenced in claims.

44. A claim should contain the following elements:

- **A clear objective** which sets out the **purpose** of tracing the traceable asset, sets out the sustainability requirement and summarizes the specific accomplishment(s) to be achieved by fulfilling the proposed Claim.
- **Description of the traceable asset** (as described above) for the proposed claim.

<sup>13</sup> Conformity Assessment – General principles and requirements for validation and verification bodies, ISO/IEC IS 17029.

<sup>14</sup> ISO standard: ISO/IEC DIS 17029:2018(E), Section 3, “Terms and Definitions”.

<sup>15</sup> UNECE, Traceability for Sustainable Trade, A Framework to Design Traceability Systems for Cross Border Trade, ECE/Trade/429, <http://www.unece.org/index.php?id=43763> (accessed 17-05-2020).

- **Description of the proposed claim.** The claim should support the objective and should be understandable, clearly stated and defined in terms of the physical characteristics or process(s) connected to the traceable asset.
- **The defined verification criteria.** Criteria should be objective and measurable. They can be a standard, a guideline or other document which describes the sustainability characteristics that a product, process or organization must have in order to conform to the “claim”. The criteria are what an auditor compares information against to determine if due diligence has been followed in ensuring a claim.

45. A suggested general format for claims is the following: [Traceable Assets] comply with [Claimed State] in accordance with [Verification Criteria] for/to support [Objective].

<p>#1 Example of sustainability Claim</p> <p>(From Brand Y) <b>Imported knitwear</b> contains <b>ethically grown and traded cotton</b> from Country A and is obtained in compliance with the <b>XYZ standard</b> for ensuring <b>responsible business conduct</b>.</p>
<p>#2 Example of sustainability Claim</p> <p>(From Brand X) <b>Imported Ready-made-garments</b> from suppliers in Country B have been manufactured using <b>good labour practices in accordance with the ILO fundamental labour standards</b>, which supports <b>sustainable sourcing</b>.</p>

## 2. Traceable assets

46. A traceable asset is any product or material [individually, in batches or in trade units] that needs to be tracked along a value chain

### (a) Granularity of the traceable asset

47. When deciding which traceable assets to use, the **granularity of the traceable asset** needs to be decided upon.

48. Granularity determines the physical size of the traceable asset, including how aggregated it is. For example, options for the allocation of unique IDs include every individual product, shipping carton of products, production batch, container of goods, etc. In addition, a “production batch” can be defined at different levels of granularity. For example, a yarn manufacturer can typically choose whether they assign a traceable asset ID to a new production batch every day, every shift (e.g. 2-3 times per day) or to every bobbin, in a particular ring frame machine.

49. Granularity needs to be in line with the type of traceability model that is being implemented. i.e. product segregation, mass balance, or book and claim (for more see section 5. Traceability models). The most appropriate traceability model will depend upon:

- The nature of the traceable asset; for example, the smallest unit of raw cotton from a farm that can be traced is probably a bale of cotton
- The claim; for example, if the claim says, “this is a real brand X product and not a counterfeit”, then the traceable asset will be the finished product and not, necessarily, its components
- The capacities of value-chain participants; for example, some weavers may package their fabric in bolts and some in rolls, so it would make no sense to require the tagging of fabric bolts in a factory that makes rolls.

50. Higher granularity, while it provides greater accuracy, also means higher complexity (more IDs to be used and tracked) and higher costs, both internally and along the value chain (in transformation processes and shipments).

### (b) Traceable assets and product transformations

51. Within the textile and leather value chains, traceable assets are periodically used as inputs to processes that transform them into outputs which are new and different traceable

assets. These outputs must also be traced, and linked to their inputs, so that when the customer receives a final product, all of the inputs can be identified – by following the links of the chain back to the beginning.

52. Traceable assets need to be defined for each stage in the value chain and the relationship between traceable assets that are inputs and traceable assets that are outputs need to be clearly defined and recorded.

53. For example, the main value-chain stages for textile and leather products, parts and components, include:

- Cultivation and harvest / Livestock raising and slaughter
- Fabric production / leather production
- Garment / footwear manufacturing
- Retailing
- Consumer use
- Post-consumption.

54. This can become complicated because there is often not a one to one correspondence. For example, 1 batch of spooled thread might contain 3.5 bales of cotton – of which 0.3 bales came from a bale that was partially used in a previous batch. As a result, there are 3 bales allocated entirely to this batch, and then 0.3 and 0.2 bales (one left over from the previous batch and one that is not completely used in this batch) that will need to be shown as input to two batches.

55. More about transformations is discussed below.

(c) *Traceability Information and data collection methodologies*

56. Many points in these Guidelines focus on the information related to identifying traceable assets (unique IDs) and identifying the locations and events that the traceable asset passes through along the value chain. At the same time, in order to fulfil the objective of these Guidelines, information on sustainability also needs to be collected. This information is determined by the claim and careful thought needs to be given to the points in the value chain where this information should be collected. Efforts should be made to minimize the amount of data collected and to identify existing sources for the data.

57. In addition, for business reasons, it may be useful to collect other information as part of a traceability system. Information related to product, quality and processes may also be used by companies to improve the management and efficiency of their value chains, thus creating operational savings that could help “pay for” the collection of sustainability data. Some examples of where traceability information can improve operations are: greater stock rotation, enhanced use-by date management, reduced shrinkage and distressed product sales, less waste, better management of targets (and rewards for reaching them) as well as improved service levels.

Table 2.2

**Traceability information (to be revised)**

<b>Product related information</b>	<b>Quality related information</b>	<b>Process related information</b>	<b>Sustainability related information</b>
Origin	Test procedures	Manufacturing process details	Environmental and social certifications
Composition	Audit reports	Time stamps	Carbon footprint data



<b>Product related information</b>	<b>Quality related information</b>	<b>Process related information</b>	<b>Sustainability related information</b>
Material specifications	Quality certification	Unit identifications	Recycling data
Product specifications	Tracking data of surplus or damaged material/product		Reparability and durability data
Economic-operator details			
Batch number			
Sales data			
Cost			

### 3. Logistics unit

58. Giving IDs to logistics units is important for preserving chain-of-custody information across transport activities. There is, however, nothing more to add to their description than what is found in the table at the beginning of this section.

### 4. Unique identifiers (IDs)

59. Traceability requires information about traceable assets, including information about their what, where, when, who and why. To specify the asset and link it to events, each of the following seven data components of a traceability system that are related to an event must have a unique identifier (ID) if a system is recording information about the component. These are:

- **Party** (company or individual – farmer, tanner, ginner, weaver, subcontractor...)
- **Traceable asset** (commodity material, intermediate or finished product, or trade unit)
- **Product batch** (grouped products, production batch)
- **Facility** (farm, manufacturing site, etc.)
- **Process** (harvesting, spinning, dyeing, etc.)
- **Location** (farm, production site, etc.)
- **Transport** (means of conveyance for goods and **logistics units** used for transporting traceable assets).

60. Each event that affects the traceable asset should be registered and linked to the relevant ID(s).

61. The uniqueness of IDs for traceable assets should be ensured by whomever assigns the ID, which could be a party within a company (i.e. for production batch IDs) or a trading partner in the value chain (i.e. for trade unit numbers for packages), etc. It is also important, to the maximum extent possible, that IDs be selected and attached to traceable assets in a way that prevents the ID from being counterfeited or lost.

62. Because value chains include multiple partners, interoperability (ability to exchange data with a minimum amount of transformation) is important. The best way to achieve interoperability is to agree upon a common standard for both IDs and the format of the data to be exchanged. There are many options for ID standards, a number of which are discussed further below. For operating purposes, it is important that each supply chain participant have control over their own IDs, within the context of the agreed standard.

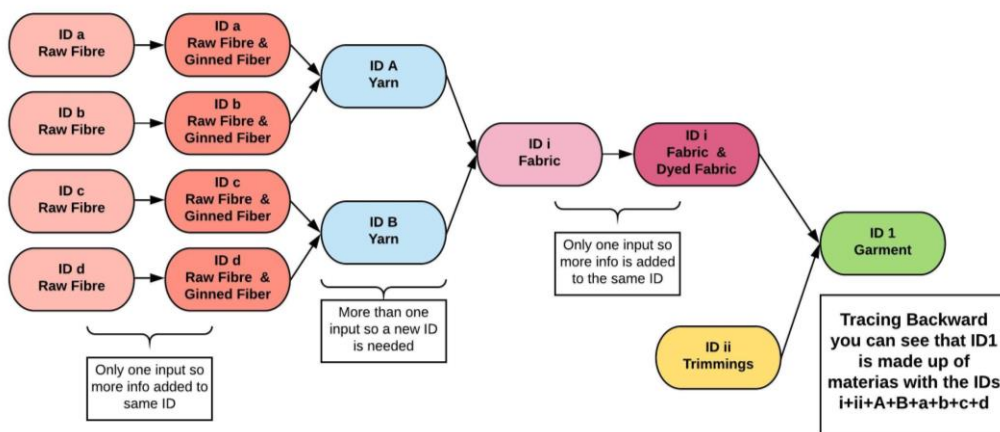
(a) *Maintaining traceability information across product transformations in the value chain*

63. The majority of traceable assets are transformed as they move through a value chain. Therefore, the effectiveness of a traceability system depends upon maintaining accurate links to information about materials and products as they move through various transformations.

64. For example, at the beginning of the value chain, the traceable asset may be a bale of cotton, which is transformed into thread, then into cloth and, at the end, it may be a shipping carton of cotton shirts. Each of these traceable assets (cotton bale, thread, fabric, carton of shirts, etc.) must have a unique ID that is linked to the unique ids of the input(s) used for its creation.

65. In other words, all the transformations which a given traceable asset passes through should be recorded in a way that it can be associated with its “ancestors” (i.e. the IDs for the inputs to the traceable asset), and with its “progeny” (i.e. the IDs of the outputs where the traceable asset was an input). Because value chains can be quite complicated this can result in different scenarios for the splitting, joining and merging of traceable assets.

Figure 2.2



66. Maintaining accurate links between IDs across the value chain is called *referential integrity*. In order to monitor the referential integrity of identifiers for traceable assets along the value chain, as well as for verifying other traceability information, links must be established between identifiers for traceable assets and identifiers for companies and physical places. A range of options exist for IDs, some of which are given in the box below.

Table 2.3

**Examples of IDs (To be completed)**

ID	Type of ID
United Nations Location Code (UN/LOCODE)	Location
Global Legal Entity Identifier (LEI)	Organization
EAN-UCC	Product

67. Verification checks, to ensure alignment with claims, can be done either at the end of any transformation activity or at the end of the entire process (by tracing back through the chain of input and output product IDs and associated information).

68. In addition, some “logic checks” or calculations regarding quantities may be made such as comparing the quantity of inputs to the quantity of outputs for a process (as identified by their IDs) to be sure that they “balance”. Another example could be to check the amount of organic cotton a farm has sold in one year (based on the number of IDs for cotton bales registered with that farm’s ID) to see if it exceeds their maximum harvest capacity. If yes, then maybe they were selling non-organic cotton from other farmers as organic.

69. The information linked to IDs depends upon what the “Requestor of Traceability” has asked for and what is needed to perform due diligence in support of the claim. There are a wide range of options including test or audit results, the IDs for inputs, the certification status of value-chain participants and/or the certification of specific locations, production lines or processes within a larger company), etc.

70. In addition to changing when there are transformation events, IDs for traceable assets may change based on aggregation or dis-aggregation events. To give a simple example, aggregation could be the placing of multiple products in one box for sale as “a box” and disaggregation could be the removal of products from a box for the purpose of sale as individual items. If the custody and/or location of goods is being traced, it is also important to record unique IDs for logistics units. A logistics unit is created when traceable assets are aggregated (put together) or disaggregated for the purposes of transport and the size of logistics units can range from boxes to pallets to containers.

71. Information about possession of the goods (for example by processors, sub-contractors, transporters and/or warehouses), also known as “chain of custody” (see box 2.1) can be used for inventory management, for locating goods and for identifying who possessed goods and when negative events occur such as damage or “contamination” with goods from

#### Box 2.1

##### **Traceability or Chain of Custody?**

An often-used definition of **traceability** is found in the International Standardization Organization (ISO) standard 8402 which defines it as: “The ability to trace the history, application or location of an entity by means of recorded identifications.” In another ISO example, traceability is defined in ISO 9000 and ISO 22005 as “The ability to trace the history, application or location of that which is under consideration” (Olsen, P., & Borit, M., How to define traceability, Trends in Food Science & Technology (2012), <http://dx.doi.org/10.1016/j.tifs.2012.10.003>).

A “traceability system” is one that implements traceability as described in one of the very similar definitions given above.

**Chain of Custody** in supply chains has its origin in the legal term which refers to, “A chronological documentation of the handling of evidence throughout a criminal investigation....When a trial takes place, the prosecution and defence use evidence to prove the facts of the case.... A primary means of authenticating an item involves analysing the chain of custody for evidence. This refers to the chronological documentation of who handled it, what they did with it, and where they stored it.”<sup>1</sup>

If you substitute “product” or “traceable asset” for it in the last sentence, then you also have a good definition for chain of custody in value chains.

This illustrates that the concepts of “traceability system” and “chain of custody” are very close and, at least in some cases, appear to be synonymous (when traceability starts at the moment of creation of a traceable asset). Unfortunately, in the literature on traceability and chain of custody there does not appear to be a consensus on the difference, so one can find different texts that give almost the same definition for traceability as for chain of custody and vice versa.

##### **Therefore, in these Guidelines**

- “Traceability” is defined as “the ability to trace the history, application or location of an object” in a supply chain (ISO, 2015).
- “Traceability system” means the practical system of processes, procedures and information exchanges that implements traceability.
- “Chain of Custody” refers to the documented chain of parties who had possession of the goods at every moment between the entry and exit points in the value chain where traceability took place (ISO / PC 308 ISO (draft) standard 22095).

outside of the traceability network (i.e. with goods that may not conform with the product claim).

72. Successive links in the value chain between traceable assets, and between traceable assets and logistics units, should be recorded. For this to happen a traceability system should:

- Ensure a secure integration between the physical product levels (represented by the unique IDs for traceable assets) and the information associated with IDs at each level.
- Ensure an accurate history of traceable assets<sup>16</sup> throughout the transformation, shipping and storage processes. This history includes: i) the links between IDs (i.e. between input and output IDs and between logistics-unit and traceable-asset IDs) and ii) the links between traceable-asset IDs and associated information about some or all of the traceability components listed at the beginning of this section.
- Predefine, in line with company objectives and the product claim(s), the information to be recorded during transformation, aggregation and dis-aggregation processes throughout the entire value chain.
- Ensure continuous monitoring and periodic validation of the data recorded at each process stage.
- Associate the flow of information with the physical flow of the products by registering departures and arrivals.

## 5. Traceability models

73. “Traceability model” refers to the organization of a value chain in order to ensure that traceability can be implemented. There are different traceability models whose usefulness depends upon the type of product and the claims being made. The most appropriate model may also change along the value chain. Therefore, value chains may need to implement more than one traceability model. Examples of traceability models which can be applied to products and processes throughout the entire value chain are: product segregation; mass balance, book and claim

74. The most appropriate traceability model will depend upon factors such as:

- The nature of the traceable asset; for example, the smallest unit of raw cotton from a farm that can be traced is probably a bale of cotton.
- The claim; for example, if the claim says, “this is a real brand X product and not a counterfeit”, then the traceable asset will be the finished product and not, necessarily, its components. There are also significant differences in the traceability required for claims about materials (for example type of cotton) and the traceability for claims about processes or organizations (for example, no use of child labour).
- The capacities of value-chain participants; for example, some weavers may package their fabric in bolts and some in rolls, so it would make no sense to require the tagging of fabric bolts in a factory that makes rolls.

**Insert image here** Figure 2.3

### (a) *Product segregation (preferred and most demanding model)*

75. The preferred model for a traceability system is product segregation. The objective is:

- Products produced according to the same sustainability standard are strictly separated from other products.
- Bulk commodity which is certified is strictly separated from non-certified materials (but at the same time allowing mixing of certified materials from different producers).

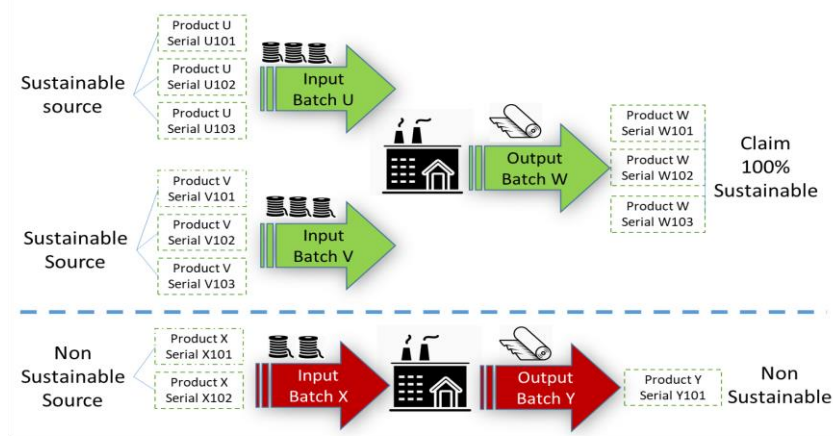
---

<sup>16</sup> In the case of “book and claim” traceability systems, the certificates used for “booking” the claims become a tradeable asset which needs to be traced and linked to inputs and outputs in order to be sure that correct claims are made.

- Material which is certified is strictly separated from the noncertified materials throughout the value chain to provide traceability from a specific plantation to the final consumers (Identity preservation).

76. With product segregation there is a physical separation of certified materials and products from non-certified materials and products at each stage in the value chain. This ensures that certified and non-certified materials and products are not mixed and that the end product comes from a certified source.

Figure 2.4  
**Product Segregation**



77. There are two product segregation approaches: Bulk Commodity and Identity Preservation (IP). Whenever sellers are required to be able to identify the supplier of the traceable asset, Identity Preservation is required. For example, in the EU this is the case for timber and fish and in the United States for timber and conflict minerals.

- **Bulk Commodity** separates certified from non-certified materials but allows mixing of certified materials from different producers. All producers must comply with the certification standards. This model is often used for organic commodities such as organic cotton or vegetables.
- **Identity Preservation (IP)** also requires segregation of the certified material from the non-certified material but it **does not** allow mixing of certified materials from different producers in the value chain. The IP model enables the traceability of products back to the originating farm, forest or production site. The IP model is sometimes criticized for being cost and resource intensive and requiring advanced technology since all material sources must be strictly separated, controlled and monitored at each stage of the supply chain. In order to implement the IP model, companies must know all their suppliers and collect and verify data at all levels throughout the supply chain.

78. Product segregation requires a well-defined administration and process design in order to be implemented.

(b) *Mass balance (moderately demanding method)*

79. It is not always feasible to segregate sustainable and non-sustainable products and materials from the perspective of efficiency and/or production processes. In the Mass-Balance model, products from both sustainable and non-sustainable sources are mixed, but as they move through the supply chain an exact account is kept of the volume ratios. The purpose is to guarantee that the amount of sustainable content claimed is equal to the amount of sustainable products or materials used. As is the case for product segregation, implementing a mass-balance model requires a well-defined administration and process design.

Figure 2.5  
**Mass Balance**



80. This model is commonly used for products and commodities where segregation is very difficult or impossible to achieve, such as for cocoa, cotton, sugar and tea.

(c) *Book and Claim (least demanding model)*

81. If product segregation is impossible (e.g. green electricity) or the registration of the volume ratios of sustainable and non-sustainable products and materials is impossible, a Book & Claim model can be applied.

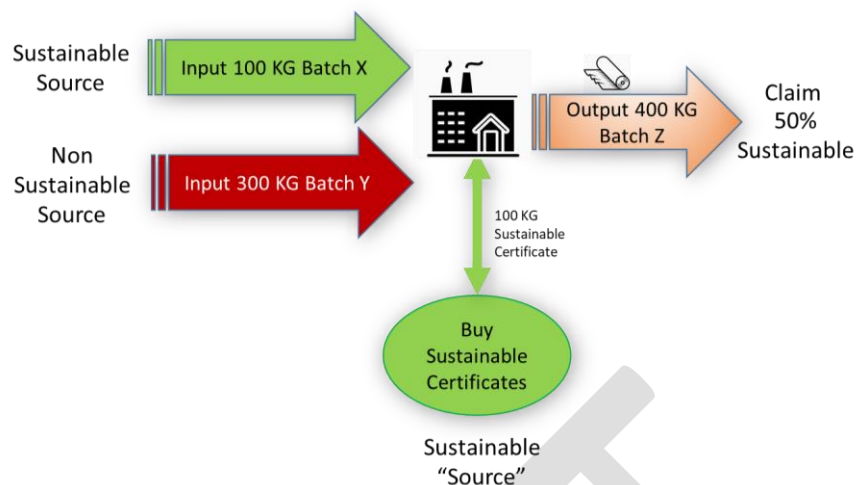
82. When non-sustainable physical products or materials are mixed and sold, the right to claim sustainable sourcing is traded in the form of sustainability certificates. A central authority monitors the sustainability claims by brands and retailers and compares these with the number of certificates issued and traded.

83. In the book-and-claim method there is a free flow and mixing of certified and non-certified assets, with no segregation of assets, so it is actually a mixed product that is sold. Instead, a producing company can obtain sustainability certificates for the volume of goods that it puts into the value chain which are certified as following a good practice. These certificates are then sold via a platform, or the certifying organization, to companies who use the type of goods in question as inputs to their products. The purchaser of the certificates can then claim that their product supports the sourcing and production of commodities grown or processed according to the good practice in question – even if it is not certain that their product contains certified material.

84. The earnings from the sale of certificates is then used to make payments to the producers whose goods were certified as using the good practice, thus providing an incentive for other growers to be certified.

85. This model is typically used when the production and market conditions make it impractical to sell certified product that has been segregated from non-certified product. At the same time, this model requires audit trails in order to demonstrate that for every certificate sold, certified growers have been compensated for the associated quantity of certified goods. This model is used for soy and palm oil.

Figure 2.6  
**Book and Claim**



86. Product segregation requires advanced Information and Communication Technology (ICT) implementations, in which the farmers and micro-, small- and medium-sized enterprises (MSMEs) participate. It is used for high-risk and delicate products, such as fresh food, high-value products and products where regulations require that the specific origin of the product be known. Mass balance and the book-and-claim models, on the other hand, require less advanced ICT systems. This is because they are based on a set of rules and require only periodic auditing by stakeholders. As a result, one factor that must be taken into account when selecting a traceability model is the ICT capabilities of participants in value chains – which vary greatly.

## 6. Entry and exit points

87. Entry and exit points are the events (activities) at the start and the end of the traceability process within the value chain. At each of these points the traceable asset needs to meet specified criteria.<sup>17</sup>

88. **The primary factor in deciding upon entry and exit points should be the identification of what must be traced, and when, in order to support the claim.**

- Keeping in mind the claim, it is important to clearly establish the authorized activity(ies) or locations where the traceable asset enters and exits the **traceability** system.
- Based on the verification required for a specific claim, the transformation and logistics processes that take place between the entry and exit points in the value chain should be visible. Visibility at each node (activity or location) consists of providing a minimum set of information including a location ID, a timestamp for entry and one for exit from the activity, the ID for the traceable asset coming out of a process and the ID(s) for its ancestors (the inputs). This is greatly facilitated when there are information systems for data interchange, and standards for determining the types and formats of the data elements to be recorded.

89. A claim should be linked to a segment of the value chain where the traceability system records data for monitoring. This means the first step in developing the traceability solution is identifying the entry and exit points (value chain activities) which mark the start and the end of the value chain that the traceability system will trace. Good choices for Entry and Exit Points are locations where business processes are well controlled, i.e. where there is a high level of automation and business processes are well documented and enforced.<sup>18</sup>

<sup>17</sup> The document ECE/TRADE/429 provides guidelines to take into consideration when deciding upon, reporting and monitoring traceability systems' entry and exit points.

<sup>18</sup> For further detailed, see document ECE/TRADE/429.

90. The traceable asset is assumed to have a specific and defined state at entry and exit points. An example of typical entry and exit points are landing zones in ports, Customs control points, inspection points, etc. For example, one system for sustainable furs uses a certification system for farms who have an ID that is registered with a third party and each fur has a unique ID tied to the farm it came from. As a result, auction houses can trace a pelt back to its origin. Therefore, the auction house could be a good entry point for a traceability system that supports a claim about good animal welfare practices at fur farms.

91. Another example, from Costa Rica, is for tracing shark fins (an internationally controlled product) where an entry and exit point could be defined as follows:

- Entry Point: Medium or large-scale longline boats must land sharks in a Costa Rican port that is authorised by the Costa Rican Ministry of Fisheries and under no circumstances without the presence of a fishery inspector.
- Exit Point: Submission of Customs declaration for the export of sharks or derived products.

## 7. Verification criteria

92. Verification criteria are the standards and key performance indicators that traceable assets are supposed to meet and the rules for the supporting traceability process. These criteria are the basis upon which verification processes are carried out by auditors or other verification agencies in order to prove that the traceable assets have complied with relevant claims.

93. As discussed above, for the success of a traceability system it is important to have well-defined states at the entry point and the exit point as these are among the verification criteria.

94. Other verification criteria that may be useful include:

- Defining governance options and mandates for assigning responsibilities for the coordination, implementation and distribution of traceability tasks and their verification.
- Procedures for organizing, recording and reporting **product conditions** at entry/exit points as well as at transformation, aggregation and disaggregation event points (see the section on traceable assets above) as well as the beginning and end of shipment processes in line with regulatory guidelines, standards or certificates or other sustainability criteria.

## 8. Verification processes: the role of audit and certification

95. A traceability system can be imagined as a filing cabinet, because it requires the systematic identification, storing and retrieving of data. Importantly, neither a traceability system nor a filing cabinet care about what types of data are being stored.<sup>19</sup> Fraud and errors can falsify records or render them incomplete; thus, the need to verify data, using comprehensive verification methods, including audit, certification, chain of custody information, and physical markers.<sup>20</sup> The level of verification and the methods used depend upon the requirements defined by the Traceability Requestor.

### (a) Audit

96. To create confidence in a claim an audit process should take place in order to confirm that the predefined rules for the traceability process have been followed, and prove that the traceable assets comply with the defined sustainability requirements and their performance indicators.

97. An audit agency performs audits to protect the integrity of the claim and may include audits of management systems. The agency collaborates with relevant value chain partners

---

<sup>19</sup> Olsen and Borit, 2013.

<sup>20</sup> Kelly et al., 2011.



and government agencies. It receives data on relevant events in the value chain transaction and evaluates the information against the defined conditions and rules.

98. The role of the audit agency is to:

- Examine data from the relevant Entry/Exit Points in the value chain
- Examine data on the business processes recorded between the entry and exit Points (i.e. traceability events)
- Ensure that the data recorded for traceability is consistent with what is actually happening in the value chain
- Monitor and safeguard traceability by ensuring that assets meet entry/exit conditions and rules are applied correctly.

99. The audit agency could be: from the public sector, connected to a ministry; from the private sector, for example an industry association or a private inspection agency; or it could be a public private sector partnership (PPP), such as an inspection agency appointed by a government.

(b) *Certification*

100. Certification of sustainability practices can be an important tool as part of a company's due diligence. At the same time, it is worth mentioning that it is a complementary and not a sufficient tool because it needs to be undertaken following best practices and implemented in conjunction with robust traceability. Certification plays a similar role to that of independent audits (third party validation of sustainability claims), as its role is primarily for verification. Certification can provide trust and facilitate the collaboration process among value chain actors. At the same time, it imposes additional administrative and organizational costs and, when it is used, best practices should be followed. Best practices for certification for sustainability:

- Are independent
- Are aligned with internationally recognised standards for sustainability and circularity of value chains in garment and footwear (e.g. ILO fundamental labour standards, OECD due diligence guidelines, etc.)
- Evaluate both environmental and social criteria on a scientific basis
- Follow a risk-based approach
- Verify full chain of custody with an eye to avoiding fraudulent mixing of non-certified materials
- Are easy to use and understand
- Are affordable and scalable
- Make training available to small value-chain actors on how to follow the standards and practices upon which the certification is based.

101. Certification bodies should document the governance of their certification process as well as the criteria and methods used, in a transparent and clear manner.

## **D. Cost allocation and incentive systems**

102. Estimating the implementation cost of a transparency and traceability framework and making decisions on cost allocation is a key element in its uptake and implementation. In this connection, putting in place an effective and efficient system of incentives and accountability mechanisms, both private and public, also play a key role.

103. Costs related to traceability and transparency exist in two forms: the first is the cost linked to the development of the system; the second is the cost for its ongoing implementation, including for data collection, supporting data exchange between systems, inventory management and labelling. In addition, there may be costs associated with meeting

sustainability verification criteria such as certification or audit. It is important to highlight that development costs also include identifying and implementing a standardized dataset for information exchange among partners. The use of such standardized datasets is key to ensuring that everyone is “speaking the same language” and that shared data is interpreted consistently and correctly. The decision about which information exchange standards to use should consider not just the costs on a short-term basis, but also the longer-term efficiency gains from having common data standards used by all actors across the whole value chain. The UN/CEFACT information exchange standard for the garment and footwear industry serves this purpose.

104. When deciding the cost structure for value-chain partners criteria that could be taken into consideration are:

- How the profit margins are distributed
- The relative price of partners’ outputs
- Partners’ product volumes
- Partners’ needs
- The allocation of benefits from the traceability system.

105. When it comes to incentive systems, two main types of **incentives** can be identified: financial and non-financial.

106. Financial incentives include economic and fiscal incentives, both positive and negative, that Governments can adopt to support value chain traceability and transparency. Among these incentives are financial support to technological innovation; investments in physical and digital infrastructure; direct incentives for the development of interoperable solutions and digitalization; preferential financing loans and grants on the base of transparency and traceability criteria; funding of feasibility studies and pilot projects, in particular in value chains with a high concentration of SMEs.

107. Governments and, in particular for developing countries, also financial institutions and donors should consider supporting projects that create shared value for a large number of stakeholders and value chain actors, giving priority to SMEs and small suppliers in emerging countries.

108. On the other end, industry actors such as brands and retailers, could consider implementing private financial incentive schemes for: suppliers of traceable fibres and materials, or suppliers with harmonized, or interoperable systems or small suppliers needing assistance in order to cover part of the initial implementation cost.

109. **Non-financial incentives** are complementary to financial incentives. On the **government** side, such incentives could include, measures to facilitate market access, fast-track processes and expedite customs clearance for products with higher transparency and traceability, specialized managerial and workforce training, and the development and nurturing of open source tools (see Box 2.2), traceability and transparency criteria for green and socially responsible public procurement, cradle to cradle criteria as part of an overall policy for waste management supported by government procurement (see Annex XX), and public visibility, both positive and negative. In addition, **industry actors** could encourage participation through user-friendly interface designs for the Apps used for data entry to make this as simple as possible and free training for SMEs in their value chains.

110. The underlying principle behind the use of incentives is to lighten the burden for actors such as SMEs, women-led firms and value-chain participants in developing countries.

111. With regard to responsibility, a shared **accountability** principle is suggested: every actor in the value chain should be held accountable for any lack of traceability and transparency within their “link” in the chain. The role of Governments is to adopt and enforce regulatory systems (in particular, norms) that create a level playing field both within their country and at an international level. Intergovernmental Organizations and International Non-Governmental Organizations can help by supporting the alignment of initiatives and legislation around a model regulation for traceability and transparency, both in developed countries where value chains are often “designed” and in developing countries where

manufacturing and labour-intensive activities are predominant. Legislation should enable accountability and identify remediation mechanisms and mediation actors.

Box 2.2

### **Definition of Open Source**

Open Source originated with Open Source Software. However, over the years, open source initiative has also taken hold in the field of engineering and innovation in general. A complete definition of Open Source Software can be found on the website of the Open-Source Initiative (OSI) at <https://opensource.org/osd>. The major aspects the OSI open source definition are summarized below and are also, generally, applicable to open soft engineering and innovation if one substitutes relevant equivalents for the terms “source code,” “program(s)” and “software”. Places where there is additional text in the definition are marked with “...”

*“The distribution terms of open-source software must comply with the following criteria:*

#### **1. Free Redistribution**

.....

#### **2. Source Code**

*The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed....*

#### **3. Derived Works**

*The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.*

#### **4. Integrity of The Author's Source Code**

*.....The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.*

#### **5. No Discrimination Against Persons or Groups**

*The license must not discriminate against any person or group of persons.*

#### **6. No Discrimination Against Fields of Endeavor**

*The license must not restrict anyone from making use of the program in a specific field of endeavour....*

#### **7. Distribution of License**

*The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties....*

#### **8. License Must Not Be Specific to a Product...**

#### **9. License Must Not Restrict Other Software...**

#### **10. License Must Be Technology-Neutral...”**

## **E. Supporting role of advanced technologies**

112. Global value chains pose great challenges for risk management particularly in the area of sustainability. To address these challenges, an increasing role is being played by advanced technologies such as distributed ledgers (blockchains), Artificial Intelligence (AI), machine learning, the Internet of Things (IoT), and DNA marking – to name just a few.

113. Among the key challenges in value-chain risk management are the need to collect large amounts of trustworthy data across many participants and geographic areas as well as to analyse this data in a timely manner. Advanced technologies have an important role in these areas and can help stakeholders to comply with due diligence, transparency and traceability requirements in support of sustainability as well as helping them to improve their operations.

114. Advanced technologies can support improved value chain traceability and transparency by:

- Making standardized information about product origin and other characteristics, such as those for sustainability, available in a transparent and standardized way
- Facilitating the real-time sharing of reliable, up-to-date information
- Assigning reliable digital identities to products, parts and components
- Collecting and storing information about these identities
- Analysing large volumes of data in support of improved risk and operations management.

115. It is important, as discussed in the section on inclusiveness, to ensure that the use these advanced technologies is an inclusive process and not one that ends up excluding participants. At the same time, advanced technologies have a catalytic role to play in creating higher connectivity between value-chain partners and incentives for stakeholders to invest over the long term. They can turn challenges into new opportunities for a responsible industry, building confidence that facilitates trustworthy and efficient data collection and verification as well as improved analysis.

116. There are a number of policies and practices that can support efficient and reliable data collection and analysis. For instance, technology access is facilitated by support for training in new technologies, open innovation and open source software (see [box 2.2](#)), as well as by the development of information infrastructure such as affordable Internet access and an active ICT services sector.

Table 2.3

**List of advanced technologies that can support traceability and transparency**

<b>Advanced technologies</b>	<b>Supporting role in traceability and transparency</b>
Artificial Intelligence (AI) and machine learning systems	Can use the data from traceability systems for risk analysis, for optimizing value chains and operating processes as well as for tracking textile waste.
Blockchain	Provides enhanced data reconciliation and tracing; trustworthy, real-time data updating and access for multiple stakeholders thus providing the same “truth” for everyone; and improved confidence in the trustworthiness of data A separate text box, below this table, describes two recent blockchain initiatives in the textile area.
Internet Cloud Services	Allow multiple parties to share common software services as well as to access and update the same data sources.
Distributed databases and data pipelines	Allow access to data stored in multiple locations using tools similar to those for accessing a single source of data, thus avoiding some of the problems of central database administration while offering an experience that is similar to the user.
Internet of Things	Increase automation in data collection. In addition, as low-energy and sensor technologies for IoT devices

Advanced technologies	Supporting role in traceability and transparency
	advance, they also allow for the automated collection of new data (such as the temperature inside of containers and other logistics units or the use of water/chemicals by manufacturing machinery)
Advanced product labelling Quick Response (QR) codes Product DNA labelling Radio Frequency IDs (RFID) Near-Field Communications (NFC) labels	Allow the “attaching” of additional data to traceable assets and the automated collection of higher-quality track and trace information.  These labelling technologies, which include both digital and physical markers, when used together with other technologies such as blockchain and AI, can also provide:  Greater accuracy in physical raw material tracing through multiple product transformations (i.e. from raw cotton to fabric)  Higher speed and automation  Lower costs in tracking data that is attached to products

### Box 2.3

#### Blockchain pilot projects

Among recent pilot projects supported by public funding is, “**Blockchain for Made in Italy Traceability**” launched by the Italian Ministry of Economic Development and developed in collaboration with IBM to assess the use of blockchain technology to implement traceability as a tool for promoting Made in Italy claims and anticounterfeiting. The public support was financial and organizational, the latter being especially relevant given the consultation activities needed in order to guarantee an inclusive approach.<sup>21</sup>

The UNECE **blockchain traceability pilot for organically farmed Egyptian cotton** is supported by EU financing and implemented in partnership with industry actors.<sup>22</sup> It aims to 1) Show the possible use of blockchain technology to support increased connectivity, higher cost-efficiency and strengthened due diligence and capacity for sustainable sourcing for retailers, brands and manufacturers along the cotton value chain; 2) Demonstrate the capacity of firms operating in the cotton value chain to take risk-informed decisions and use a set of internationally agreed traceability and sustainability standards. The pilot will cover traceability of sustainability characteristics across all the production steps of the value chain and includes the identification of relevant business and sustainability data as well as the key hotspots in the cotton value chain and related sustainability criteria and verification tools. When completed, a stakeholder group will assess the pilot’s scalability to other textile fibres. The pilot will also test the use of DNA markers to keep the connection between the physical and digital assets traced with support of blockchain technology.

<sup>21</sup> Source: <https://www.mise.gov.it/images/stories/documenti/IBM-MISE-2019-INGLESE.pdf>

<sup>22</sup> The pilot is implemented in collaboration with brands Hugo Boss, Stella McCartney, Vivienne Westwood and Burberry, raw material providers Alba-Group, Albini and Filmar, standard-setting bodies and technology providers GOTS, OEKO-TEX, ZDHC and in collaboration with Organic Cotton Accelerator, Textile Exchange, Cittadellarte Fashion B.E.S.T and the Italian Ministry of Economic Development and UNIDO.

Table 2.4  
**Matrix of criteria for selecting technology-based solutions tools for traceability**

<b>Criteria/need for selecting technology-based solutions</b>	<b>Impact</b>
Ease of use (“user friendliness”)	A key factor in the uptake of technology and its correct application by users is the ease with which it can be used.
Interoperability with a wide range of systems, platforms and technologies for the purposes of data collection, validation and publication	Interoperability is a key element in collecting and sharing data across multiple stakeholders and systems.
The use of existing international standards such as UN/CEFACT standards, for data acquisition, transmission and exchange	Data standards greatly facilitate interoperability and the exchange of data across systems.
The ability to use automatic rules in a system, and to efficiently change those rules as the environment evolves	Greater efficiency and the ability to modify a system based on experience and changes in the environment. The ability for implementing organizations to change decision parameters also reduces IT maintenance costs and reduces the risk of vendor “lock-in”
Virtual and physical training is available to support the use of technology solutions	Good quality training encourages actors’ engagement and good uptake
Simple, lean and accessible processes	Such processes are more cost-effective because of the reduced time and effort to achieve organizational goals and they are also more likely to be correctly implemented.
Technology solutions (such as IoT) that provide direct access to real-time information on sustainability in manufacturing processes, such as water, chemical and energy use.	Better, more accurate information about processes both for sustainability reporting and operations management
Differentiated information access rights, allowing the existence of a central data source but giving system owners the ability to give “reading and updating” rights according to the roles and interests of stakeholders.	More transparent sharing of information and efficient changes in the “sharing” status of data. For example, one NGO could be given information about current working conditions and another information about current water usage (but not working conditions).
Quick and efficient scaling solutions and partnerships	Cost effective implementation in systems where growth may lead to large numbers of stakeholders
Support for SMEs	Traceability which can be extended further up the value chain in order to include SME suppliers
Technology solutions that do not create “lock-ins” which make it difficult to change systems or suppliers	The ability to be more flexible and change systems in the light of evolving technology or needs – or if a given technology solution does not perform as promised.

117. The above can be used as input into the specifications for a system. When developing purchasing (procurement) specifications and/or developing regulations that require technology it is best practice to define the requirements in a technology-agnostic way. This means defining the performance parameters that must be met and **not** specifying the use of

any particular technology/ies. For example, one system performance requirement could be the processing of X number of transactions in Y time and with a maximum error rate of Z – or the ability to track goods back through 5 supplier tiers and 8 product transformations (for example the transformation from raw cotton into cotton thread). Specifications linked to a particular technology or version of a standard should be avoided in order to mitigate the risk of rapid obsolescence or irrelevance for systems and regulations.

118. It is also important to keep in mind that while technology may provide useful tools, data quality and, therefore, system reliability, can be impacted by a number of non-technological factors. These include what information is captured, when and by whom as well as data-quality controls that are in place. Therefore, when designing traceability systems, regardless of the technology used, data accuracy and neutrality need to be a priority as well the auditability of the system.

## **F. Creating inclusiveness in traceability systems**

119. In order to implement a resilient traceability framework and create shared value, policymakers and industry actors must be inclusive. This means addressing the digital divide, ensuring gender equality, supporting SMEs and taking into consideration the special needs of developing countries. How to approach inclusiveness in each of these areas is addressed in the sections below.

120. In addition, when designing a traceability framework, in order to be inclusive, it may be necessary to take a differentiated approach to implementation. This means tailoring requirements to the capacity of value-chain partners based on “steps” which may go from a basic manual record-keeping process to one that is highly automated.

121. Policymakers should also be approached since they can play a catalytic role in creating multi-stakeholder and multi-sectoral dialogues on inclusiveness as well as by supporting coordinated action. Multi-sectoral initiatives can make a special contribution by sharing the results of efforts already taken in other high-risk sectors such as agri-food, timber and minerals in order to address the issues described below.

### **1. The digital divide**

122. Most of the technologies used in traceability and transparency systems are based upon the digital revolution and, therefore, pose the risk of deepening the digital divide between urban and developed country stakeholders and rural, low-income, and developing country stakeholders. In global trade, smaller actors who fail to keep up with the pace of digitalized processes could be undermined, resulting in substantial socio-economic impacts.

123. From the outset, it is critical to consider several potential impediments to the use of technology, keeping in mind that the most important are often cost and access, followed by language and a lack of available training.

124. Some actions that can, at least partially, address these concerns include: making available low-cost devices and user-friendly<sup>23</sup> data collection tools to ensure that smaller actors (at farm and factory levels) in producing countries can provide the required information. In order to have efficient and effective tools, their design should take into consideration the language of users, communication channels and the provision of content which will build the confidence needed to support widespread use.

125. Lastly, engagement and participation are important prerequisites for enabling technology. For all stakeholders, these can be strongly supported by solutions that are as simple as possible, easily accessible, cost-efficient, and flexible in their implementation. In addition, it is essential to have awareness-raising on the potential of technology and capacity-building for using technology-based solutions

---

<sup>23</sup> (Google, Microsoft) <https://www.microsoft.com/design/fluent/>; <https://www.microsoft.com/design/inclusive/>; <https://material.io/>

126. In order to have a successful implementation of tracking and tracing across an entire supply chain, it is important that an evaluation of stakeholder’s technological readiness be undertaken, and preliminary actions taken to alleviate any issues highlighted by these evaluations.

127. Policymakers and key industry actors also have a key role to play in scaling up innovative solutions to these problems, as well as spurring coordinated action, collaborative approaches, and partnerships in order to ensure the accessibility of technology at a global scale for all stakeholders.

**2. Gender considerations**

128. The search for flexibility, higher productivity and low prices, have resulted in the outsourcing of textile and apparel work to developing countries and, in all geographic regions, the prevalence of women in the workforce – undoubtedly influenced by both the image of the sector and the generalized practice of paying lower wages to women (UNEP, 2020). The clothing industry directly employs 60 to 75 million<sup>24</sup> people worldwide, of which about 75 percent are women, which is a very substantial share of the industry’s workforce and of the support for the industry’s economic growth. Nonetheless, only a very small percentage of women reach management and supervisory roles.<sup>25</sup>

129. As emphasized in the OECD Due Diligence Guidance for Responsible Business Conduct,<sup>26</sup> gender-issues are a key element when implementing due diligence. Due diligence activities must have tailored approaches for evaluating adverse impacts (human rights, environment, health, etc.) which are specific to women in an industry where employment is often precarious, informal or irregular.

130. Supporting gender equality with traceability systems depends upon the claims being made regarding gender and how these will be validated and registered in the traceability system. Therefore, it is important to work with local partners to identify measurable indicators.

131. When deciding upon actions in support of gender equality it is essential to assess how impacts may differ for women depending upon their circumstances, which may include accumulated vulnerabilities (e.g. women who are also home-based workers, migrants, minorities, etc.) and to consider women’s specific positions at all stages of the production chain.<sup>27</sup>

132. To create real change will require supporting women’s economic empowerment and their promotion into leadership positions along value chains. Traceability and transparency can have an impact by measuring the results of measures taken to reach these goals.

Table 2.5

**Samples of gender-related Claims**

The apparel item (product/part/component) from <i>X suppliers</i> in <i>Y country</i> was manufactured in a factory which provides job opportunities for women in working conditions which comply with the standard Z.
The apparel item from <i>X suppliers</i> in <i>Y country</i> was manufactured in a factory which has women in leadership and management positions based upon policies which comply with the standard Z.

<sup>24</sup> (UNECE-UN/CEFACT 2017) TEXTILE4SDG12 Transparency in textile value chains in relation to the environmental, social and human health impacts of parts, components and production processes.

<sup>25</sup> European Commission (2017) STAFF WORKING DOCUMENT – Sustainable garment value chains through EU development action.

<sup>26</sup> OECD (2018), OECD Due Diligence Guidance for Responsible Business Conduct.

<sup>27</sup> OECD (2018), OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector, OECD Publishing, Paris.



The apparel item (product/part/component) from <i>X suppliers</i> was manufactured in <i>Y</i> factory which endorses the standard <i>Z</i> promoting equal remuneration for women and men workers for work of equal value
--

The imported apparel item (product/part/component) from <i>X suppliers</i> was manufactured in <i>Y</i> factory which endorses the standard <i>Z</i> complying with a due diligence exercise carried out on gender-based discrimination and violence in the workplace.
--

### 3. Small- and medium-sized enterprises

133. Traceability can be a costly activity and, when this is the case, it puts enterprises on an unequal footing depending upon their size, available resources and human capacity. On the other hand, systems for improved transparency and traceability can be beneficial to smaller actors, particularly SMEs, if they simplify the procedures, bring cost-efficiencies, add value and help the SME to upgrade their practices. One core principle for widespread uptake and participation in a traceability system is flexibility in its implementation and the avoidance of a one-size-fits-all approach. The goal of traceability is not to overwhelm actors in the value chain, it is to improve their sustainability footprint over the long-term in order to create a responsible and resilient industry.

134. Small- and medium-sized enterprises (SMEs) account for a large share of companies in the industry, thus it is essential to consider their limited human and financial capacity prior to designing and implementing a traceability framework. To support this approach, UNECE-UN/CEFACT is proposing the use of a twofold approach for traceability, taking into account the different capacities of smaller actors and larger enterprises. SMEs can be better integrated into a traceability system through a combination of financial and non-financial incentives such as increased market access, facilitated payments, specialized managerial and workforce training, infrastructure investment, fast-track processes and public visibility. Specific support also should be given to SMEs on technical and organizational aspects.

135. When developing a traceability system there are also some specific actions needed in order to enhance the trust between value chain partners, such as in-person meetings and in-the-field visits in order to have a clear view of what data is collected and by whom. Longer-term, stable contracts also ensure confidence by helping to re-assure participants with regard to the purpose of the data being collected.

136. Civil-society organizations such as non-governmental organizations and trade unions also can play a key role in empowering actors by guiding and training local small stakeholders, not only to collect and enregister the data needed to meet the core requirements of a traceability framework, but also to showcase the value added of enhanced transparency and traceability to the local community in terms of social (labour conditions) and economic aspects (marketing and competitive assets).

### 4. Integrating developing countries

137. Global value chains in garment and footwear are scattered globally and upstream value chain activities (from farming/cultivation and raw materials processing to manufacturing) are mainly undertaken in low and middle-income countries. When implementing traceability, low and middle-income countries' concerns must be considered. Much of what is said about inclusion for SMEs, also applies to low and middle-income countries, in part because the majority of their enterprises are SMEs. For example, just as for SMEs, in order to assure the effective functioning of a traceability and transparency solution, before implementation, an evaluation needs to be made of a solution's feasibility for actors located in low and middle-income countries.

138. Enhanced transparency and traceability are instruments which can support efforts by developing countries to implement due diligence and to identify and mitigate adverse impacts related to sustainability hotspots such as pollution, excessive energy use and poor labour practices.

139. It is also important to showcase, to national authorities, customs and industry associations, the added economic value of traceability, transparency and sustainability as tools for facilitating global market access and fostering domestic economies. For example, they can highlight and prove a product's origin, content and quality in order to attract a higher and fairer price. They also have the potential to support further market access by showing compliance with international and regional standards. For instance, being able to prove that a product meets the EU rules of origin may enable the product to be exported tariff-free. In addition, there is an increasing competitive advantage for producing and exporting countries if they can prove that they have taken action to support improved environmental sustainability and working conditions through the enforcement of internationally and acknowledged standards in social and labour sectors.

140. Enterprises in low and middle-income countries need to be open to implementation and willing to put forth effort for its implementation. In return, the price that the industry in emerging economies receives for their goods needs to reflect this extra effort for traceability and transparency.

141. Governments and government authorities need to put in place an enabling environment for transparency and traceability which comprises not only supporting regulations, but also technical infrastructure (notably affordable Internet access and ICT services), support for research and open-source technology solutions, and training for policymakers, officials and smaller stakeholders.

142. Intergovernmental and international organizations, finance institutions and national development agencies have a key role to play in providing financial support for capacity development activities and, in particular, for training on the implementation of international standards.

---

## Annexes

### Annex I

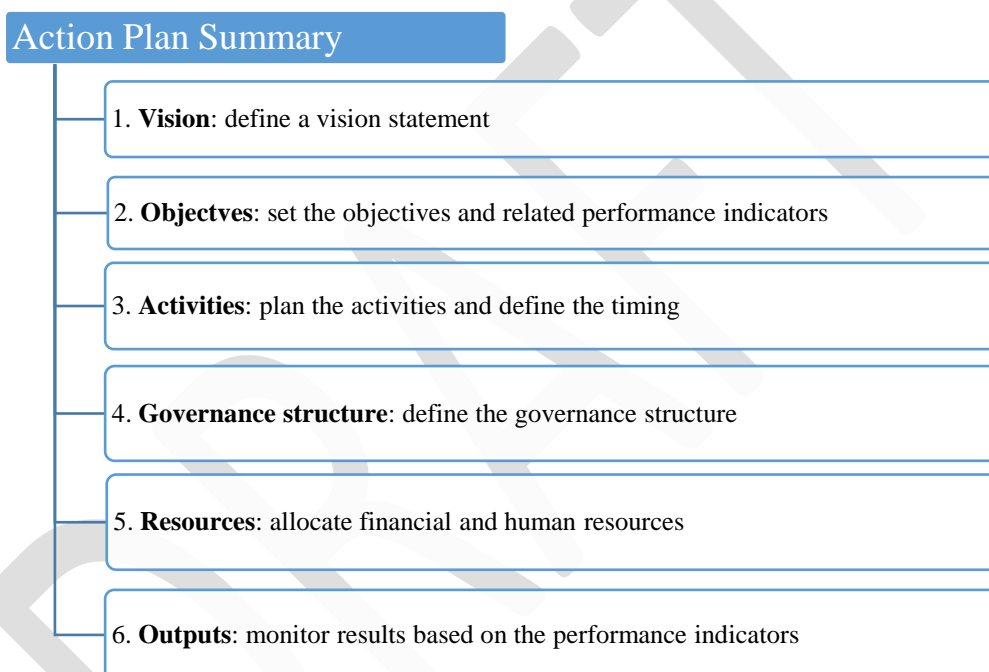
#### Formulation and implementation of a traceability and transparency

##### Action Plan

1. In setting and implementing a traceability and transparency system, firms shall consider developing an Action Plan, whose purpose is to define a vision with specific goals, corresponding activities, and performance indicators. Such Action Plan should also determine the governance structure for putting in place the foreseen activities and for monitoring and communicating progress against the defined performance indicators and timeframe. Financial and human resources to be devoted to the implementation of the plan and the achievement of its objectives should also be clearly identified (see **Figures** A.1 and A.2).<sup>28</sup>

Figure A.1

##### Action plan summary



#### 1. Define a vision statement

2. The vision statement summarizes the objectives of a traceability and transparency system and the benefits for the stakeholders involved. The aim of the vision statement is twofold: it provides guidance and direction, and it serves as inspiration and a source of motivation. It should start from and be consistent with the overall corporate sustainability strategy, since traceability and transparency shall be considered as key enablers of a higher sustainability performance and capacity to manage the value chain more efficiently.

#### 2. Set the objectives and related performance indicators

3. The objectives define more in detail the future outcome that needs to be accomplished. Each objective contributes to the achievement of the vision statement. Objectives contemplated in the Traceability and Transparency Action Plan should be specific, measurable, attainable, relevant and time bound (SMART). The Action Plan should also set performance indicators to monitor and assess the achievement of the objectives or their results (Objectives Performance Indicators).

<sup>28</sup> Source: UNECE Guide to drafting a National Trade Facilitation Roadmap.

4. When formulating a claim for products and their processes, the firm must clearly link them to traceability and transparency objectives defined in the Action Plan, verification criteria and data requirements, and related performance indicators. That is the condition for achieving the vision of increasing the sustainability performance through improved traceability and transparency.

### **3. Plan the activities and define the timing**

5. The Action Plan needs to define how the set goals will be achieved, in other words, which activities should be implemented. In the context of the Action Plan, an activity is a specific action or project that will implement a traceability and transparency tool or solution.

6. Implementing a traceability and transparency system shall be considered with a long-term view: planning the activities is needed at this point.

7. Typical decisions concerning activities to achieve a Traceability objective are about: the different types of information related to traceability that can be recorded; which specific information needs to be collected and shared and among who; how information will be shared with the actors of the supply chain; how frequently information will be shared; the technologies that will facilitate information sharing; how should information be stored (according to who needs to have access to the data and how often); the performance indicators to be monitored; when the content of the information should be reviewed; how to best communicate information to end consumers to inform their decision-making.

8. Typical decision concerning a Transparency are about the following key considerations: easy access, clarity and regular updates. The examples below by the Transparency Pledge<sup>29</sup> refer to effective disclosure when publishing supplier factory information but can be easily extended to activities to enhance transparency of the value chain:

- It is important to guarantee easy access of information by making information easily and freely accessible on the websites; and making information available in formats that have downloadable files and enable machine-readable searches.
- It is important to guarantee clarity in the disclosure by: clearly stating what precisely is being published and what definitions are being used; Clearly stating whether all authorized subcontractors used by cut-make-trim factories for processes to complete a brand's products are being published; Indicating the aggregate volume of business that is captured by the disclosure and the percentage of total supplier factories published; indicating exclusions from disclosures, if any, and impending plans to expand disclosures.
- It is important to guarantee regular updates by: specifying the date when the information was last updated and how frequently the information is publicly updated; communicating the achievements shall not be considered as a marginal activity since it is needed to justify the traceability claims, to educate consumers and inspire other industry players with the final goal of improving garment and footwear sustainability performance.

### **4. Define the governance structure**

9. The Action Plan should include an outline of the governance structure required to manage and implement the activities. The detailed governance structure and the functions and composition of the Steering Committee will vary from firm to firm, in accordance with the organizational charts for sustainability related functions.

10. The ideal structure consists of a Steering Committee that is depending directly from the Head of Sustainability, and includes representatives from each department/function that is involved in the implementation, monitoring and communication of the identified activity and achieved results. The departments/functions that are involved in the implementation of

---

<sup>29</sup> Source: <https://transparencypledge.org/good-practices-regarding-company-disclosures/>

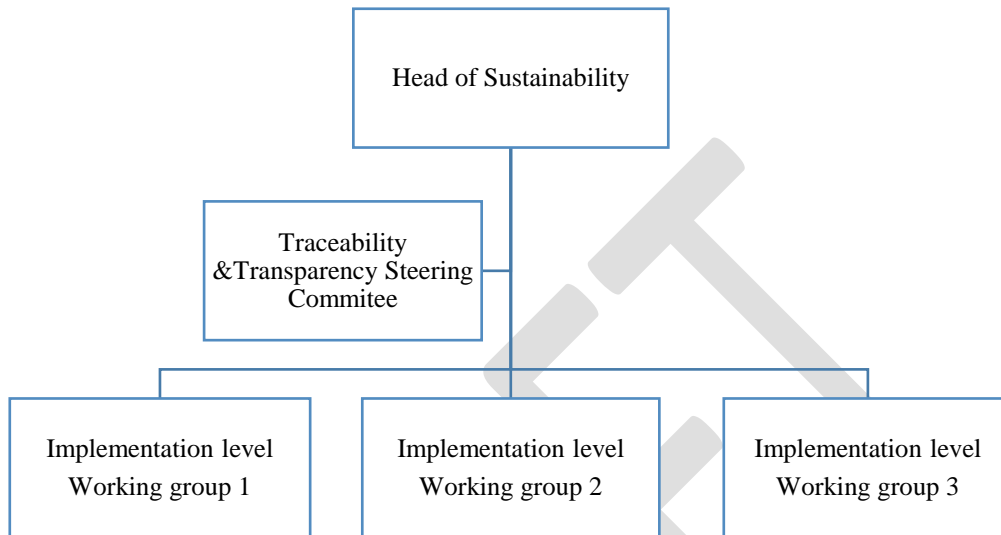
each activity will be appointed, and the working groups to manage activities and projects will be formed.

11. Also in this phase it is important to include activities that focus on stakeholder communication and collaboration: this will ensure that all traceability stakeholders understand the common objectives and the scope of the activities of the Action Plan.

12. A sample governance structure is available in Figure A.2.

Figure A.2

**Sample governance structure**



**5. Allocate resources**

13. This section of the Action Plan should describe the necessary human and financial resources needed for the implementation of the activities, as well as the overhead budget for the management of the Action Plan. Allocating human and financial resources ensures that the commitment to the Action activities is linked to a commitment to provide resources for the implementation of its activities, linked to a detailed budget.

**6. Monitor results**

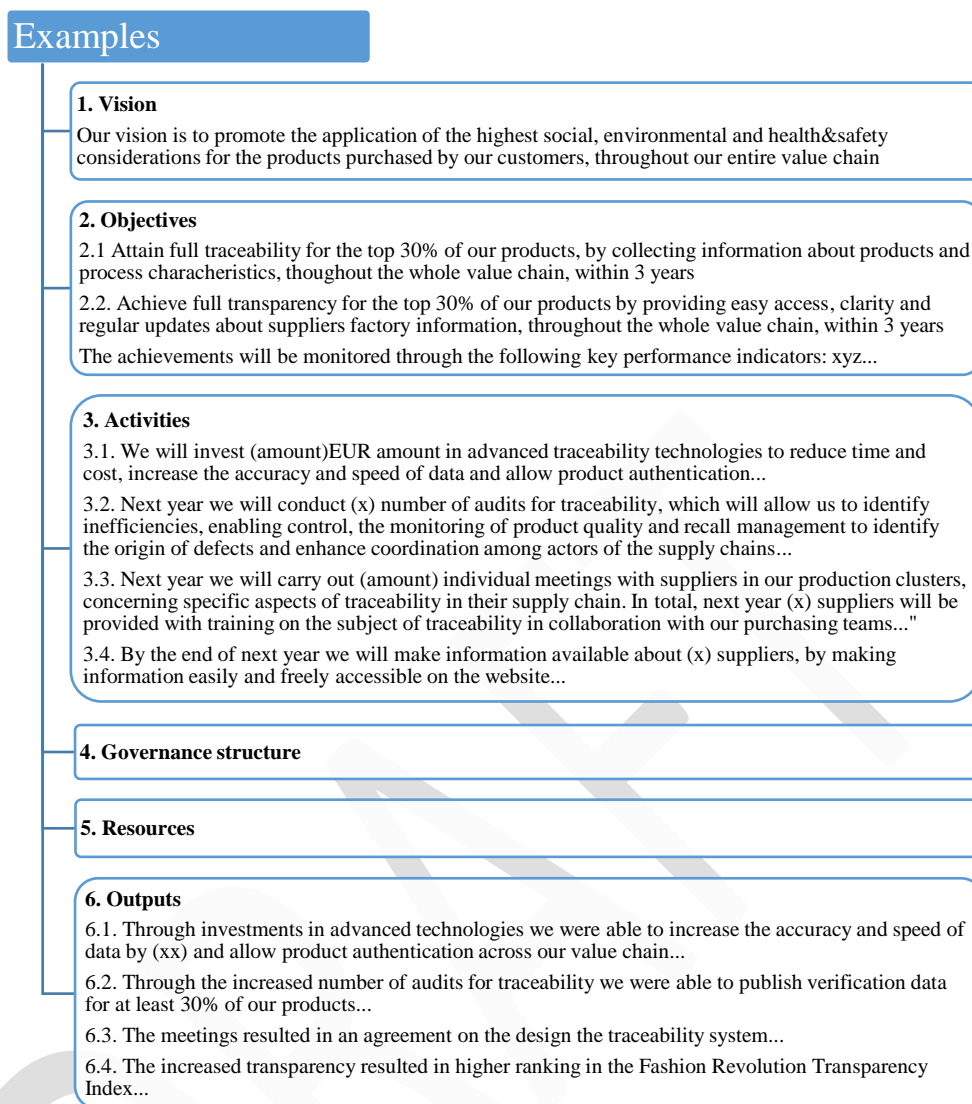
14. Monitoring and evaluation are core elements of the Action Plan. A continuous monitoring of the results is needed in order to improve the sustainability performance in time and for firms to be considered eligible for Governmental incentives.

**7. Communicating the results and related recommendations**

15. *This section will contain guidelines on: incorporating reporting requirements into a policy framework; establishment of a repository of commitments and a reporting mechanism to monitor progress; and the sharing of good practices and lessons learned across relevant stakeholders.]*

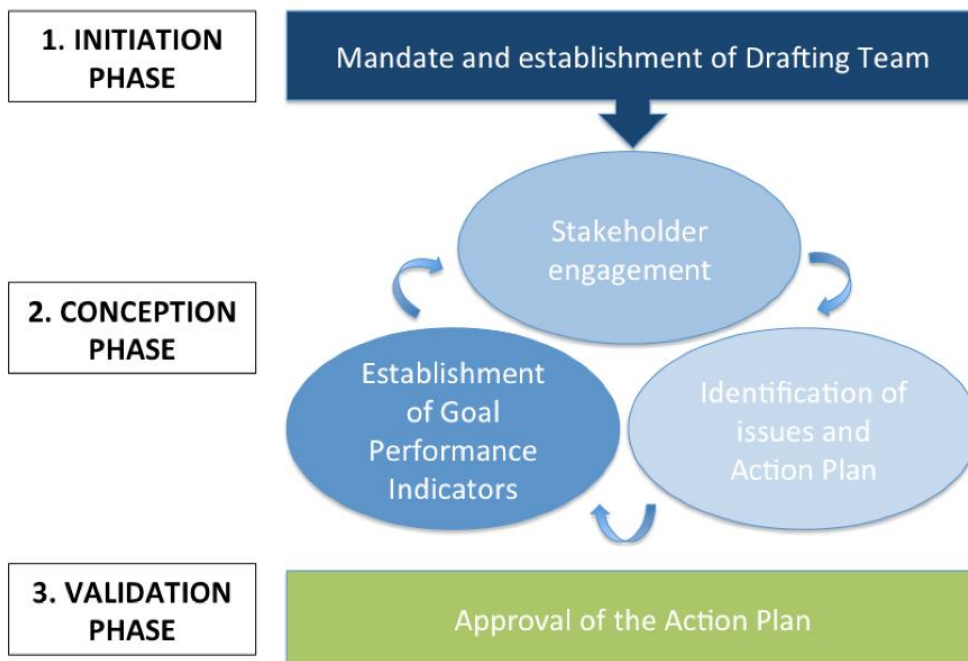
16. *Communication supports learning and success. Communication methods can range from incorporating reporting requirements into a policy framework; to establishment of a repository of commitments and a reporting mechanism to monitor progress; to the sharing of good practices and lessons learned across relevant stakeholders.*

Figure A.3



17. The **drafting process** for an Action Plan has three major phases (see **figure A.4**):
- (a) **Initiation Phase**, where the Head of Sustainability needs to request the development of a document that describes the Traceability and Transparency strategy.
  - (b) **Conception Phase** that consists of drafting the document itself. It includes three stages: 1) engaging stakeholders, 2) discussion with stakeholders on existing issues and possible activities to be undertaken as well as 3) defining the performance indicators to measure the achievements and results of the different activities. The outcome of the second phase is a consolidated draft Action Plan document.
  - (c) **Validation Phase**, where the document is presented to the internal decision makers in order to receive formal endorsement to start the implementation of the activities included in the Action Plan.

Figure A.4  
**Three-phase model for the drafting process of a Traceability Action Plan**



18. “The three phases “Initiation”, “Conception” and “Validation” are sequential, meaning they are only executed once and in this order. However, the three stages (engaging stakeholders, identifying issues and activities as well as establishing Performance Indicators) of the Conception Phase are iterative in nature. Thus, they might need to be repeated several times. Each step can unveil further issues in the processes or new proposals for how to address these issues. Consequently, it might be necessary to revisit previous findings, to redefine the activity or include new ones, to reconsider the Performance Indicators and to (re-) engage stakeholders.”

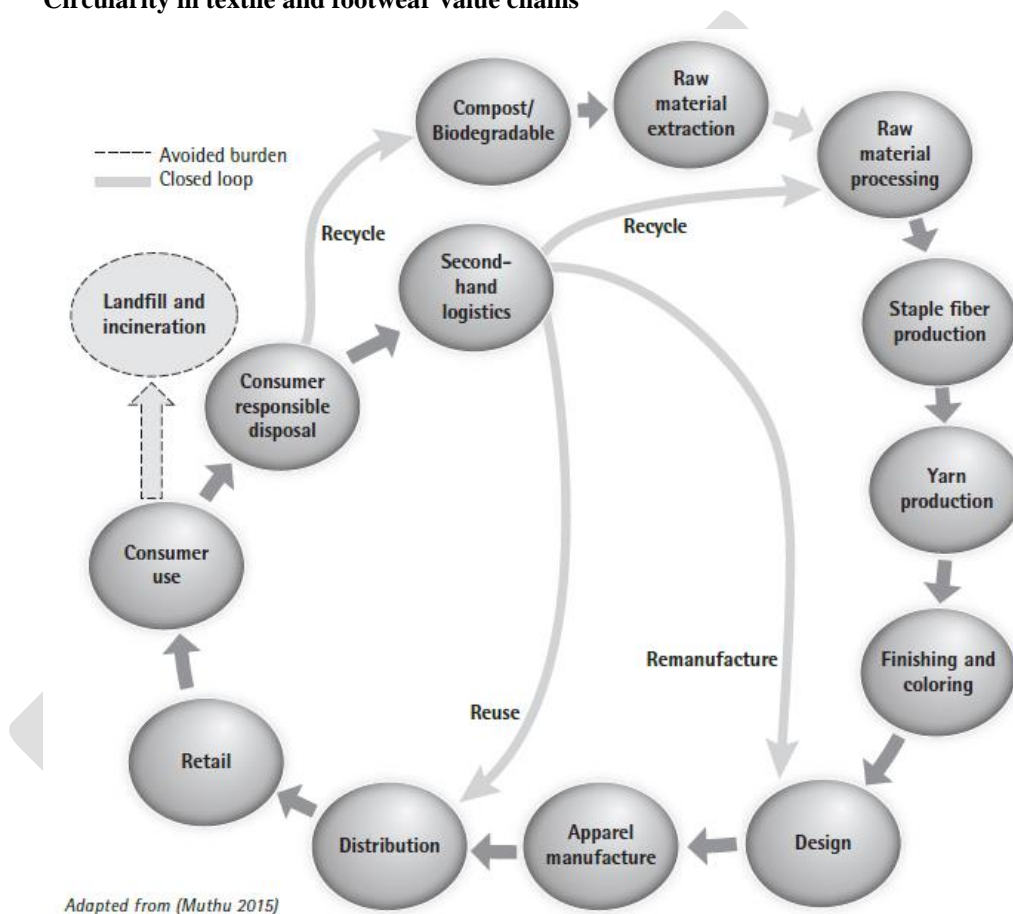
DRAFT

## Annex II Glossary

### (DRAFTING IN PROGRESS)

**Circular Economy**, products maintain their potential to create value for as long as possible. Products have a long lifetime, due to a durable design. In case a product breaks, it is repaired. When a consumer no longer needs a product, it is passed on and reused by another consumer, or products are shared from the outset. Products that are discarded after their first technical or economical lifecycle are updated or refurbished and begin another life cycle, or if this is not possible their materials are recycled with a minimum of remaining resources ending up in energy recovery. *European Commission (2019)*<sup>30</sup>

Figure A.5  
**Circularity in textile and footwear value chains**



Source: Rusinek, M. et al., 2018<sup>31</sup>

**Claim** is a high-level statement, usually about an intangible feature or a process that is associated with a traceable asset that requires tracing of a supply chain and is supported by data collection. For example, the claim that a product is “organic” or “sustainably produced”. *ECE/TRADE/429 (2016) Traceability for Sustainable Trade*.<sup>32</sup>

**Due diligence** is an ongoing, proactive and reactive process through which enterprises can prevent and mitigate adverse impacts related to human rights, labour rights, environmental

<sup>30</sup> European Commission, SWD 2019 Sustainable Products in a Circular Economy – Towards an EU Product Policy Framework contributing to the Circular Economy.

<sup>31</sup> Blockchain for a Traceable, Circular Textile Supply Chain: A Requirements Approach (2018), M. J. RUSINEK, H. ZHANG, N. RADZIWILL, 4 SQP VOL. 21, NO. ASQ.

<sup>32</sup> Idem.



protection, and bribery and corruption in their own operations and in their supply chains. *OECD 2017*.

**Entry and exit points** are the supply chain activities which mark the start and the end of the supply chain that the traceability system will trace. *ECE/TRADE/429 (2016) Traceability for Sustainable Trade*.<sup>33</sup>

**Logistics Units** are created when traceable assets are aggregated (put together) or disaggregated for the purposes of transport and the size of logistics units can range from boxes to pallets to containers.

For example, a container containing multiple fabric rolls (aggregated) or multiple pallets each containing part of one batch of thread spindles (disaggregated).

Logistics units are given IDs in order to track the traceable assets they contain. This is done by recording the ID of the logistics unit and then linking it to the IDs of the traceable assets it contains.

**Sustainability**, in this context, is understood as the manufacturing, marketing and use of garment, footwear and accessories, and its parts and components, taking into account the environmental, health, human rights and socio-economic impacts, and their continuous improvement through all stages of the product's life cycle. *UNECE 2018*.

**Traceable asset** is any product or material [individually, in batches or in trade units] that needs to be tracked along a value chain. Within garment and footwear it is, "any item (for example an object, a product or other traded item or a service) that needs to be tracked along a supply chain." (UNECE Traceability for Sustainable Trade Guide).<sup>34</sup> It can also be thought of as the unit that one wants to trace or record information about in a traceability system. In a garment or footwear value chain, it can refer to any manufacturing batch or packaging unit of raw materials, intermediary or finished products. In order to track a traceable asset, it needs to be given an identifier. This is most commonly a numeric or alphanumeric code which, either on its own or together with other relevant codes (for example for locations) allows tracking of the traceable asset at any point of time and/or back to its origin.

**Traceability** is understood as "the ability to trace the history, application or location of an object" in a supply chain (*ISO, 2015*). In this context, it is defined as the ability to "identify and trace the history, application, location and distribution of products, parts and materials, to ensure the reliability of sustainability claims, in the areas of human rights, labour (including health and safety), the environment and anti-corruption" (*UN Global Compact 2014*); and "the process by which enterprises track materials and products and the conditions in which they were produced through the supply chain" *OECD, 2017*.

**Traceability Architecture** is a description of fundamental components, and is referred to as an "Architecture" because it explains how a system is built. Architectures are useful tools when designing solutions because: If we understand all the components of a future traceability system, then the solution is to develop each of these components. Each component can be designed in a stepwise process which is easier to plan and implement. The architecture ensures that components will assemble into a meaningful overall project. This is similar to building a house where the plan of the architect that defines the different components is assembled into a meaningful whole.

**Traceability Framework** which is the entire ecosystem supporting value-chain traceability including policies, systems, support, and promotion. It covers the use of traceability across the entire value chain – from the extraction and processing of raw materials, to finished product branding and retailing, consumption and post-consumption activities. In addition, the Guidelines propose a step-by-step approach, a roadmap, for the development and implementation of a traceability framework both at the industry and government level.

---

<sup>33</sup> UNECE, Traceability for Sustainable Trade, A Framework to Design Traceability Systems for Cross Border Trade, ECE/Trade/429, accessible at [http://www.unece.org/fileadmin/DAM/trade/Publications/ECE\\_TRADE\\_429E\\_TraceabilityForSustainableTrade.pdf](http://www.unece.org/fileadmin/DAM/trade/Publications/ECE_TRADE_429E_TraceabilityForSustainableTrade.pdf) (accessed 17-05-2020).

<sup>34</sup> Idem.

**Traceability Model** refers to the organization of a value chain in order to ensure that traceability can be implemented. There are different traceability models, whose usefulness depends upon the type of product and the claims being made. Examples of traceability models which can be applied to products and processes throughout the entire value chain are: product segregation; mass balance, and book and claim.

**Traceability Rules** describe how the business processes between an Entry Point and an Exit Point need to be organized so that the Claim is met.” *ECE/TRADE/429 (2016) Traceability for Sustainable Trade*.<sup>35</sup>

**Traceability System** in this document refers to all of the practical processes, procedures and technology needed to create a functional traceability system. It does not refer to the surrounding ecosystem with its policies, incentives, promotion, etc. A traceability system together with its surrounding ecosystem forms a traceability framework.

**Trade Unit** is a unit used in trade; for example, the unit shown on an invoice which could be, among many options, a “package” or a “bale” or a “container” – this depends upon the product and the trading partners.

**Transparency** relates directly to relevant information been made available to all elements of the value chain in a standardized way, which allows common understanding, accessibility, clarity and comparison. *European Commission 2017*.

**Sustainability criteria** can be a standard, a guideline or other document which describes the characteristics that a product or process must have in order to conform with the “claim”. The criteria are what an auditor compares information against to determine if due diligence has been followed in ensuring a claim.

---

<sup>35</sup> Idem.