

## Pilot project document

# Pilot #1 Implementing a blockchain technology for traceability and due diligence in the cotton value chain in support of a circular economy

*Version of 20-04-2020*

## 1. Background<sup>1</sup>

Improving transparency and traceability has become a priority for the garment and footwear industry in order to increase its ability to manage its value chains more effectively; identify, mitigate and address labour and human rights and sustainability impacts; combat counterfeits; and manage reputational risks.

Today, many companies have a limited view of the network of business partners within their value chain. Most can identify and track their immediate (tier 1) suppliers, but information is often lost about the suppliers of their suppliers – a UNECE study demonstrates that only around 34% of fashion companies implement tracking and tracing in their supply chain – and most of these reach Tier 1 only (UNECE study, 2019).

Nonetheless, the implementation of traceability in supply chains is a complex issue because it requires the collaboration of all stakeholders and the deployment of shared, reliable technical solutions. The global fragmentation of production is a key feature of the fashion industry which is further complicated by the prevalence of subcontracting and informal work, especially in lower supplier tiers. As a result, it has been difficult to provide consumers with information about product provenance

Advanced technologies (distributed ledgers such as blockchains, AI, machine learning, Internet of Things) can enable fashion industry actors to improve supply chain transparency across a variety of ecosystems by making available all information about product origin in a transparent and trustworthy manner by notably assigning a digital identity to the product.

Cotton is a key sector for the textile and garment industry because it is the world's most widely-used natural fiber, with an approximate yearly global production of 20 million metric tonnes (mt). It is a vital industry and a critical source of economic growth which contributes to the livelihoods of more than 350 million people, mainly smallholder farmers in developing countries. Nonetheless, cotton

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<sup>1</sup> Source: Background note UNECE 2017 / Textile Exchange, 2025 Sustainable Cotton Challenge First Annual Report 2018

production has substantial environmental and social impacts which are increasingly interconnected and trickle down to negatively impact cotton producers.

Cotton production represents 6 percent of global pesticide use and is correlated with pervasive land degradation and important water consumption. One t-shirt requires around 2,700 liters of water so cotton-clothing production on a massive scale contributes to the depletion and pollution of local water sources. The overuse of petroleum-based fertilizers has a highly negative impact on Cotton farmers' occupational health and safety as reflected in growing rates of chemical poisoning. In addition, the volatility of market prices and the uncertainty stemming from current purchasing practices have put cotton farmers into precarious situations which result in widespread poverty, child labour and excessive indebtedness.

Many companies have already engaged with global cotton sustainability programmes and have started to shift from the use of conventionally-grown to organically-farmed cotton. In this context, and in connection with the UNECE project for advancing transparency and traceability of sustainable value chains in the garment and footwear sector, a first pilot will focus on a blockchain solution in cotton value chains.

The pilot will be implemented in collaboration with experts from brands, manufacturers, raw material providers, standard-setting bodies and technology providers. It will cover all the production steps of the value chain along with relevant business data and sustainability data elements identified in a mapping conducted by UNECE and UN/CEFACT experts, and a selection of certificates linked to specific hotspots of the cotton value chain (i.e. certificate of origin, certificate of organic cotton, and the zero discharge and hazardous chemicals substances self-assessment tool), to ensure the traceability of a product type (i.e: a shirt/a suit, TBC) and assess the pilot's scalability to other textile fibers.

## 2. Contribution to the UNECE project

This project directly contributes to UNECE project "Enhancing transparency and traceability of sustainable value chains in the garment and footwear industry" which is jointly implemented with ITC, in collaboration with the ILO, and is financially supported by the European Commission. In particular, this activity supports project Activity A2.1, "Pilot the use of the transparency and traceability policy framework, standard and guidelines for one country and 4 companies".

## 3. Implementing partners

The project will be led by UNECE.

It will be jointly implemented by the following partners:

- |                     |  |
|---------------------|--|
| ▪ Hugo Boss         | Brand  |
| ▪ Stella McCartney  | Brand  |
| ▪ Vivienne Westwood | Brand  |
| ▪ Burberry          | Brand  |
| ▪ Weba              | Spinning, Fiber Processing, Weaving, Dyeing, Assembling, Finishing |
| ▪ Albini            | Spinning, Dyeing, Weaving, Finishing                               |

- |   |                                     |
|---|-------------------------------------|
| ▪ Filmar                                | Farming, Spinning, Fiber processing |
| ▪ Global Organic Textile Standards      | Certification                       |
| ▪ OEKO-TEX                              | Certification                       |
| ▪ Zero Discharge of Hazardous Chemicals | Self-assessment tool                |

And in collaboration with the following entities:

- Organic Cotton Accelerator
- Textile Exchange
- Cittadellarte Fashion B.E.S.T
- The Italian Ministry of Economic Development
- UNIDO

#### 4. Overall Objective

**OO:** To enhance the traceability and due diligence in the cotton value chain through the implementation of blockchain technology, to support a circular economy approach

#### 5. Expected accomplishments

**EA1:** Proof the possibility of increased connectivity and cost-efficiency based upon the use of blockchain technology and strengthened capacity to source more sustainably for retailers, brands and manufacturers along the cotton value chain

**EA2:** Demonstrate the capacity of companies operating in the cotton value chain to take risk-informed decisions and use a set of internationally agreed traceability and sustainability standards;

#### 6. Indicators of achievement

**IA2.1** A Proof of Concept (PoC) for a transparency and traceability blockchain-based system for sustainable cotton value chains, covering all the production steps from seed provider to final consumer with relevant business and sustainability data elements. in line with the OECD due diligence guidelines (for selected KPIs), is completed by the end of 2020;

**IA2.2** At least two project documents for undertaking additional PoCs in other plant-based, animal-based, synthetic, man-made fiber, linen or leather supply chains are developed by the end of 2020;

**IA2.3** At least one technical solution to address the issue of accessing data on sustainability performance is identified as part of the PoC by the end of 2020, with the overall aim of significantly reducing the paperwork burden from a cost-effective and time-saving perspective for the project partners involved.

**IA1.1** At least 1 brand and 4 manufacturers/farmers participate in the pilot project and fully test the blockchain-based system developed by the project by the end of 2020;

**IA1.2** At least 30 stakeholders (including brands, manufacturers and farmers) are trained in the use of the blockchain system developed by the project by the end of 2020.

#### 7. Activities

**A1.1** Definition of the value chain and data model: mapping of the value chain, parties involved, with identification of the sustainability hotspots, and B2B transactions to be covered from seeds to

consumers, selection of the information entities/data/ KPIs/ relevant standards and certificates that will be uploaded and exchanged through the blockchain (e.g. certificate of origin, certificate of organic cotton);

**A1.2** Definition of the technology model and the traceability systems for the physical assets: including the definition of the digital twin to be used for the product/parts/components (e.g. DNA markers, HELIXA, RFIDs) and the necessary functions to be implemented;

**A1.3** Analysis of the legal aspects of the blockchain pilot implementation (e.g. GDPR);

**A1.4** Design of the IT data model, definition of data to be stored on- or/and off-chain, development of smart contracts, access concept to third party data bases (e.g. Oekotex STeP), API and Web development including the Front-End and User-Interface development (mock-up) and the integration into supply chain partners existing websites (certificates and products);

**A1.5** Parallel testing of blockchain modules developed, integration test for partner certification and necessary KPI's stored on blockchain (off – and on-chain), supply chain testing from end to end (seed to product), going live with real data entry and testing of the application in project pilot countries (e.g. Egypt for seeds, farming and ginning, Italy and Switzerland and different countries in the value chain). Pilot feedback with an immediate error fixing for road blocking problems and an after pilot fine tuning of the blockchain concept and IT adaptation

**A1.6** Summarisation of pilot project results in a project pilot report/case study presenting results achieved, challenges and lessons learned and, by the end of 2020, the development of project documents for replicating the results in at least two additional fashion supply chains (for example, other plant-based, animal-based, synthetic, man-made fibers, leather).

**A2.1** Identification and mapping of key stakeholders and possible beneficiaries for the project pilot and coordination with identified stakeholders and beneficiaries;

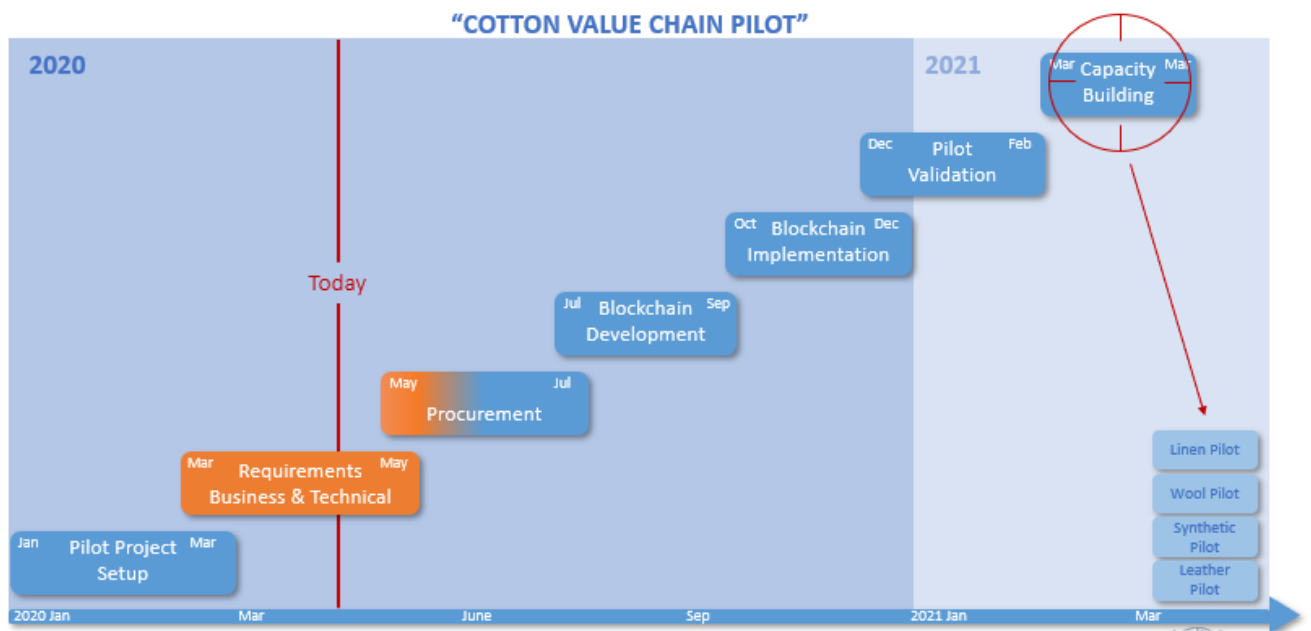
**A2.2** Selection of brands, manufacturers and farms to participate in the pilot project and support to these companies throughout the implementation of the pilot project;

**A2.3** Development training materials targeting potential end-users, including for webinars and online tutorials;

**A2.4** Training of at least 30 experts (brands, manufacturers and farmers, standards/certification entities) including managers, technical staff and end users, on the key components of a blockchain system for traceability and due diligence in cotton value chains through a workshop (2-day workshop) and online tutorials/webinars;

**A2.4** Organization of a concluding conference (half-day) to present and disseminate the project pilot results (e.g. in connection with the OECD Due Diligence or Blockchain Forums).

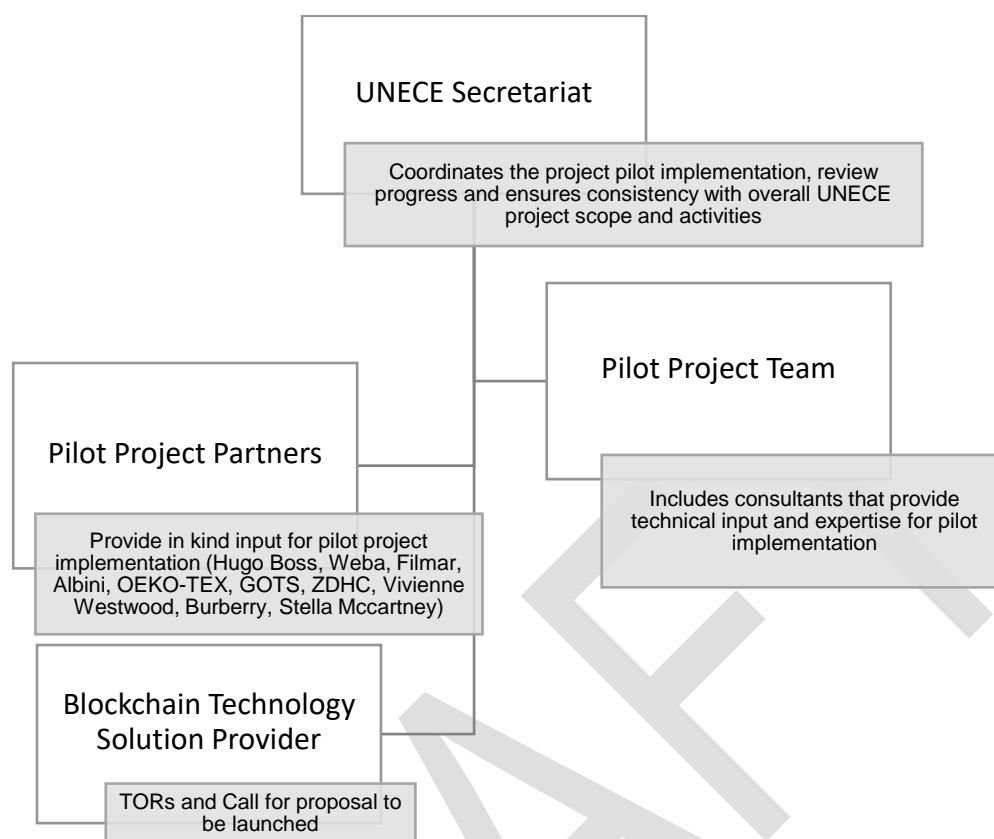
## 8. Implementation timeframe for the activities



## 9. Key events to present pilot progress in 2019-2020

- UN/CEFACT Forum 30-31 October 2019
- OECD Due Diligence Forum 11-13 February 2020
- Virtual Multi-stakeholder Policy Dialogue: Accelerating action for Sustainable and Circular Value Chains in Garment & Footwear 27-28 April 2020
- OECD Blockchain Policy Forum September 2020 TBC

## 10. Pilot project governance structure



## 11. Pilot implementation progress

Since the launch of the pilot in January 2020, the project team under the supervision of the UNECE secretariat has achieved substantial progress. The inputs collected from the group of experts have tremendously supported the pilot concept moving forward.

### *Stock taking: existing pilot projects*

In November and December 2019 and early January 2020, the secretariat invited several experts of the project group to present pilot projects already implemented using advanced technologies to foster traceability. Key takeaways were reflected in the further development to build on lessons learned and best practices, and avoid duplication<sup>2</sup>.

### *Outreach: Garment Tech Talk*

During the OECD Forum on Due Diligence in the Garment and Footwear Sector (Paris, February 2020), UNECE organized a Garment Tech Talk “Can blockchain advance traceability and due diligence in garment and footwear value chains?” with piloting partners the start-up Haelixa, the manufacturer Alba-Gruppe and the brand Hugo Boss. Actors along the value chain need to have the same understanding of sustainability and a common framework for data and information exchange. DNA

<sup>2</sup> UNIDO “Egyptian Cotton Project”; UNDP “Sustainable Cashmere Traceability”; Haelixa “Tracing Organic Cotton from Farm to Consumer”; Avery Dennison “Trace Blockchain for Apparel & Footwear Transparency & Traceability”; Italian Ministry of Economic Development/IBM “Blockchain for Made in Italy Traceability: Origin, Quality, Sustainability”.

physical markers not only prove the origin and authenticate products, but they also prevent false product claims and detect blending by ensuring the connection between the physical and the digital assets. Due diligence achieved by traceability and certification through digitization has proven to be a cost-effective and key competitive factor. The blockchain system can enable an immutable and secured exchange of information/documents between partners in mass markets and smart contracts can entail the appropriate supply chain visibility and automatize B2B information exchange.

### *Scoping the pilot: questionnaire*

In February 2020, the project team put together a questionnaire which was discussed with the group in order to get experts' views on the scope of the cotton blockchain pilot (Section 1) and on lessons learned from blockchain projects already implemented (Section 2). The purpose of the questionnaire was also to support the development of the business and technical requirements to be set out in the ToRs for procurement of the technology solution.

The secretariat collected 16 questionnaires from key industry players and actors. The findings from the questionnaire were presented to the group at the end of February and highlights are featured in the Annexes. The review of the questionnaires supported the project team for the definition of the pilot's scope, targets, stakeholders, organization and timeline.

### *Pilot scope, stakeholders, B2B transactions, blockchain characteristics*

It has been agreed by the experts that the supply chain phases covered for the pilot are cotton field to brand/retailer and their key partners (farmers/cooperatives, suppliers, producers, brands/retailers, auditing and certification bodies). The consumer phase is likely to be simulated to keep the pilot's complexity low. The key B2B transactions to be covered are auditing and sustainability/certification. In order to allow best possible uptake and implementation, the blockchain solution characteristics feature a hybrid solution, open-source that allows permissioned but does not exclude permissionless for certain interoperability issues, which enable to define clearly who can see what, eventually going public at a later stage. The open-source approach for the blockchain is also a basic requirement to guarantee full transparency of the blockchain solution developed for the pilot.

### *Targets*

1. End-to-end traceability in line with relevant norms and standards for sustainability.
2. A scalable pilot that can be used in the whole Textile sector and for any kind of sustainability claim.
3. Multi – claim solution able to validate a wide range of sustainability claims (social, health, security, environment, animal welfare) for specific supply chain partners but also for the whole value chain.
4. A stand-alone pilot, able to function independently and without a link to other projects or software.
5. Technological effectiveness and reliability.
6. Good understanding of the modelling required to build a blockchain application.
7. Good understanding of on-the-ground operating environments and constraints.
8. Data collection points within the supply-chain are clearly identified.
9. Testing of scenarios and hypotheses during the roll out.

The project team together with partners will define measurable / quantitative KPIs.

## Organization

The secretariat coordinates and facilitates three layers

1. Strategical: Project Team & Experts Sub-Group 4
2. Services: technology solution provider, certifications, legal, technical, product tracking, auditing, education, training.
3. Operational: piloting partners

## Highlights from experts<sup>3</sup>

1. Focus on traceability and the granularity of traceability
2. Flexible certification uploading e.g. audit, certificate, questionnaire
3. Separate sustainability layers: production versus processing
4. Distinct layers: traceability layer versus certification layer
5. Product's characteristics definition for fiber integrity and traceability e.g. a yarn, finished fabric, garment item
6. Solution access designed by the technology solution provider based on pre-defined performance parameters.
7. Scalable and flexible solution (i.e. mass markets)

## ToRs for procurement

In March, the project team under the supervision of the secretariat, has put together the draft TORs for the procurement of the technology solution along with the evaluation matrix of criteria. The TORs is currently being reviewed by UNECE/UNOG procurement department. The TORs describe the assignment description, the timeline, the business and technical requirements for this pilot and list of deliverables. The solution is requested to be open-source (although in the initial phase it will be a permissioned blockchain) for use after the Proof-of-Concept, hence it should also be scalable and extendable right after to support business purposes. The Request for Proposal (RfP) is to be published online in May 2020. The secretariat will inform the experts on the RfP issuance and of the timeline of the submission of proposals.

## Alignment of piloting partners

In March, the secretariat organized an alignment call with the implementing partners from organizations based in Egypt, Germany, Italy, Switzerland, United-Kingdom mentioned above (see above 3. Implementing partners) to present the business process analysis methodology required to capture key data elements for traceability and a detailed supply chain analysis for individual product types in the cotton value chain. \$

The inputs collected from the partners, from April to early May, on each business processes of the chain will support the project team to understand how the supply chain works, to structure the data value chain model and to identify the data entities which will be uploaded on the blockchain solution.

The secretariat will also look at the linkage between products and sustainability criteria. Additionally, the implementing partners will define the user stories for each business processes for their needs and expectations from the blockchain solution.

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<sup>3</sup> Kindly refer to the minutes of the monthly calls for further information on the experts' highlights.



**Contacts:**

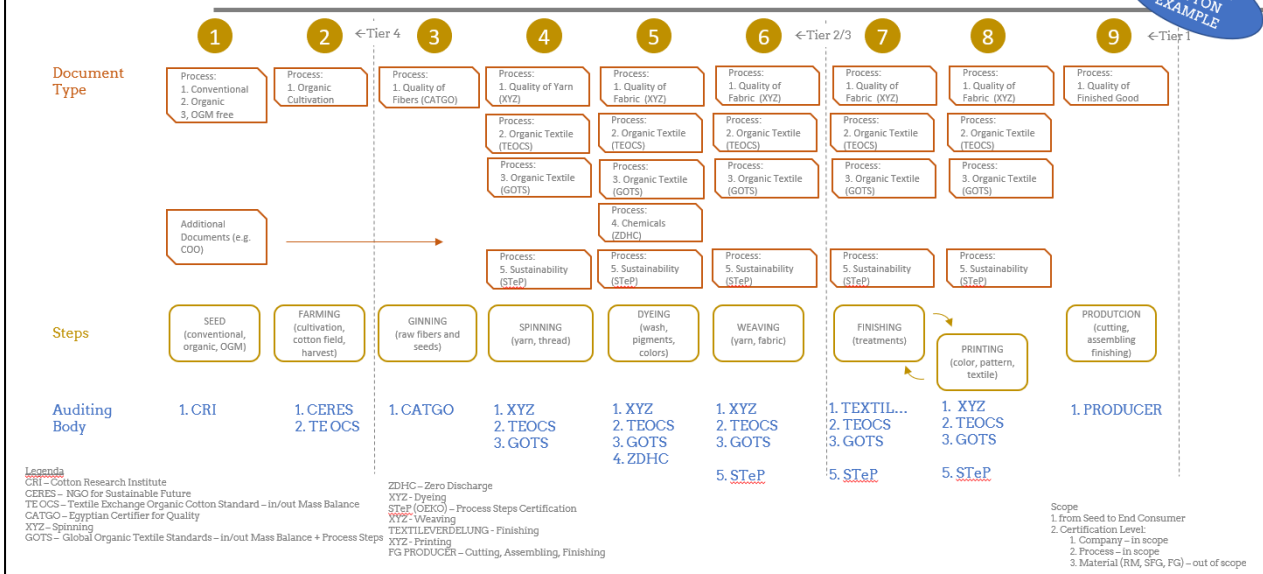
For any additional information, please contact the UNECE Secretariat: Maria Teresa Pisani at maria-teresa.pisani@un.org; olivia.chassot@un.org

12. Annex

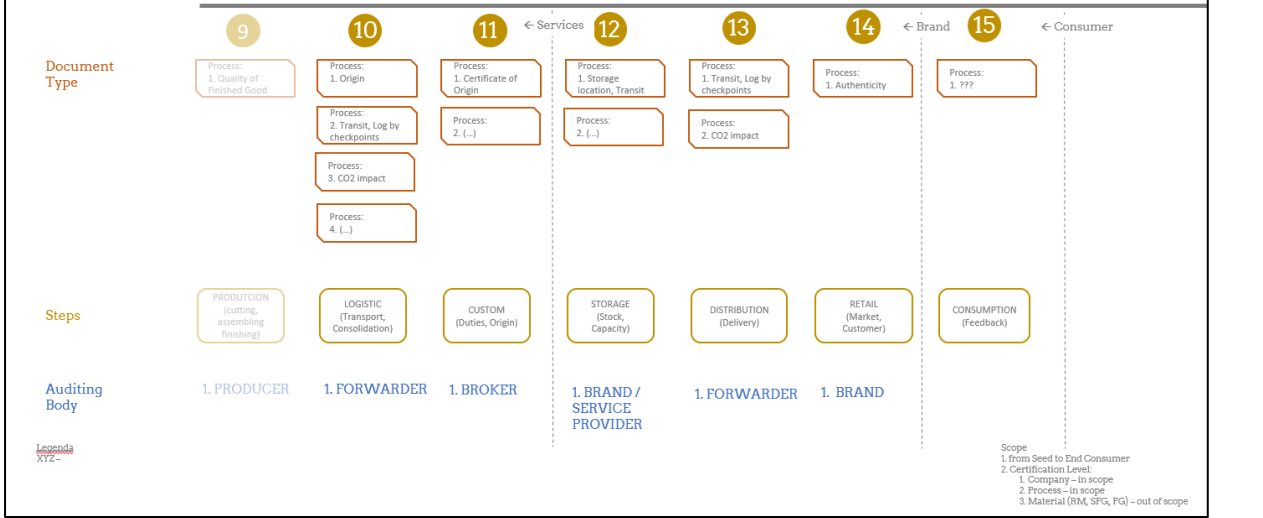


# Certifications in a Cotton Supply Chain (WEBA "Tier1" example)

EGYPTIAN COTTON EXAMPLE



# Certifications in a Cotton Value Chain (general)



### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### IN SCOPE

- Traceability and proof of source should be the sole focus.
- Core components are: Smart Contracts and off-chain systems used (databases, IPFS, ...)
- Development of open source UI interfaces to interact with items and company profiles
- I would recommend Ethereum Virtual Machine
- It is thus very important to involve as many possible intermediaries in the production chain, including the logistics companies if possible.
- in the production chain, it could be possible to only track the product at the entry point or exit point of these steps, to simplify the pilot.
- the pilot has to have the basic information and trace the basic steps of the process. In a second step it could be enhanced and further implemented.
- to explore the reduction of bureaucracy among the participants.
- to understand the cost-benefit of this traceable process via blockchain.

#### OUT OF SCOPE

- Trade finance and other financial matters
- Advanced and detailed steps of the supply chain process
- All the processing activities like sales, consumption, disposal and post-consumption

#### FOR DISCUSSION

- The larger blockchain setup, e.g. consortium or public chain
- Transparency and traceability have to be put in place in the real process .
- In the fashion industry, the real manufacturing process is quite complicated and if we want to trace everything from the beginning to the end, I think it will take an enormous effort and a lot of time.

### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### IN SCOPE

- establishing the viability of the deployment of traceability tech into the supply chain
- It should be considered to include a training concept in the project so that the assigned staff is capable of working with the technology
- the essential supply-chain with a wide enough sample range to be able to draw viable conclusions
- narrow down the scope as much as possible
- It should focus on the minimum set of data needed to ensure traceability
- put cotton transparency in question (not the whole chain)

#### OUT OF SCOPE

- Customs processes and regulations from different countries.

#### FOR DISCUSSION

- utilising blockchain to integrate NSOP (National Standards of Organic Production, e.g. APEDA, USDA, EU standards) to the International Production standards (e.g. OCS and GOTS). Because that is something not happening yet and is bit of a mystery black box in the supply chain.

### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### KEY PARTNERS

- Farmers, Mills + Manufacturers, Retailers and the Technology providers
- One farmer, a spinner, a dyeing, a weaver, a finisher (if not inside the weaver), a garment maker, a brand and one auditor
- On-the-ground training and certification bodies, and the communities and cooperatives that will be participating in the pilot
- the entire textile production chain (Production of Fibres; Spinning-, Weaving-, Knitting Mills; Finishing Facilities; Manufacturers of ready-made Clothes), Standard Bodies, Retailers
- Certifying and auditing organisations

#### NOT RELEVANT

- Consumer, Disposal and Recycler

#### FOR DISCUSSION

- see later key players of the supply chain in example (as a reference)

### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### PROCESSING ACTIVITIES

- Seed to Assembling should only be tracked through reputational certification
- A few processes, could be tried out in more details
- Cultivation to Distribution
- Cultivation, Spinning, Dyeing, Weaving, Finishing, Garment manufacturing, sales
- from the farm to the store
- We could track everyone, but the important thing is that we start tracking something and we can add more stages as the pilot progresses
- Harvest to Sales

#### NOT RELEVANT

#### FOR DISCUSSION

- Consumption, Disposal and Post-Consumption

### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### BLOCKCHAIN CHARACTERISTICS

- Open-Source software
- Public
- Permissioned
- For a pilot phase, a permissioned blockchain is an appropriate place to start until the concept is proven
- A mix of open-source software and proprietary software can be used.
- All blockchain software and smart contracts should be open source.
- A permissioned blockchain can later be made public while the opposite is not true.
- A public blockchain increases visibility and could create some buzz around the project
- For the initial limited scope project could be hybrid approach
- Open-source is important for the nature of the pilots developed by UNECE and the future of its development in different applications
- We don't want proprietary out-of-the-box software

#### NOT RELEVANT

- Proprietary Software

#### FOR DISCUSSION

- Hybrid public and permissioned
- The setup of the blockchain, depends use cases and the level of transparency. For the initial pilot a permissioned chain is probably the better fit. But plans should be in place for an actual world wide supply chain system, using a public more decentralized approach

### MAIN RESULTS FROM QUESTIONNAIRES – PRESENTATION AND DISCUSSION

#### B2B TRANSACTIONS

- Auditing and Sustainability and certification
- Financial transactions/value exchange
- In order to not defocus, we should limit the pilot to looking at sustainability and certification

#### NOT RELEVANT

- Not standardisable transactions

#### FOR DISCUSSION

- Contracts, material purchase order, order management, material quality management, product process management
- Customs transactions

### MAIN RESULTS FROM QUESTIONNAIRES SECTION 2 LESSONS LEARNED— PRESENTATION AND DISCUSSION

#### 1. Missing stakeholders:

- Raw material suppliers
- Suppliers beyond tier 2 (e.g. spinners, cooperatives)
- Product and engineering actors
- Retailers
- Government bodies
- Transporters/traders
- Financial flow actors
- Certifications bodies

#### 2. Technology importance:

- Is instrumental, a tool for impactful processes and incentives
- Benefits: digitization, data collection, process modernization
- Blockchain: transparent and tamper proof time-stamped records of events
- For a seamless process flow and information

#### 3. Awareness-raising/Education:

- Functionality of blockchain
- Differences in public versus private / permissioned systems
- Review key technology concepts (workshop)
- Good understanding: data collection and use in the blockchain, data trust

#### 4. Legislation:

- Consider privacy protection legislation i.e. GDPR compliance
- Regulatory bodies to facilitate blockchain solutions:
  - accountability issues
  - consumer information
  - reliable sustainability claims

#### 5. Governance:

- Clear governance all along is critical
- Aligning incentives and stakeholders
- Stimulate partners' eagerness to participate

#### 6. Data Security:

- Data security and protection is a key topic
- Data immutability and user management
- Easier to manage from a permissioned blockchain
- T&C's, NDA, internal protocols, ...

### MAIN RESULTS FROM QUESTIONNAIRES SECTION 2 LESSONS LEARNED— PRESENTATION AND DISCUSSION

#### 7. Existing blockchain standard:

- No specific blockchain standard identified to date
- Seldom defined
- Create a standard under this pilot for easy uptake for all companies (i.e. including with limited resources)

#### 8. User-friendly software:

- Good UX software is a critical successful criterion for adoption and good use
- User experience: simplified front end users applications (minimal buttons and fields, visual and tactile feedback)
- Have a user tech testing survey beforehand to test user experience on interface and design

#### 9. Workload:

- Automated as much as possible
- Roles to be defined from the very beginning with piloting partners for good engagement; will entail additional work at the early stages to be balanced as the project yield cost and time savings

#### 10. Risk-assessment exercise:

- Experts agree on running this exercise prior to the starting of the project, potentially throughout

#### 11. Data reliability versus proof of the process:

- Experts agree that the focus is more important on the proof of the process rather than on data reliability (granularity tbd)

#### 12. Onboarding and educating partners:

- Crucial all along the project to have everyone efforts aligned
- User interface to support partners willingness to achieving their goals (working group, user interviews, training sessions, demos)
- Ensure the technology can be used after the initial field tests for deployment

### MAIN RESULTS FROM QUESTIONNAIRES SECTION 2 LESSONS LEARNED – PRESENTATION AND DISCUSSION

#### 13. Complexity level for a scalable and replicable result

- Start simple and grow complex, keeping the data required as simple as possible (foster partners engagement)
- Additional data to be requested at a later stage
- Focus on the actual business solution to develop modular solutions which can be substituted if standards evolve
- Depends on the relationship with direct suppliers and level of trust
- ERP systems could be used to narrow down the data scope with partners

#### 14. Standardized master data:

- Experts agree that standardization is key
- Important to leave room for more input and explanations still.
- Standard identifier to ensure the common understanding of the outcome
- Rather than facing companies' resistance, it is better to collect first data companies are willing to give and use analytics on what is consensual.

### MAIN RESULTS FROM QUESTIONNAIRES SECTION 2 LESSONS LEARNED – PRESENTATION AND DISCUSSION

1. Demonstrating **end-to-end traceability** and prove the product certifications
2. **Scalability** of the pilot
3. Open **communication and alignment** between the piloting partners (scope, expectations, roles and responsibilities)
4. **Good understanding** of the process to model on a blockchain in the requirements
5. Rolling out several test scenarios
6. Keeping the **pilot focused** (without attempt to combine it with other IT initiatives)
7. **Technology** effectiveness and reliability
8. Understanding the on-the-ground **operating environments**
9. Breaking the project into progressive phases with **measurable goals**
10. Identify the important **data collection points** (e.g. site visits to key supplier chain members)

### MAIN RESULTS FROM QUESTIONNAIRES SECTION 2 LESSONS LEARNED – PRESENTATION AND DISCUSSION

- **H1** Identify the incorrect sustainability claims
- **H2** Provide high visibility to all supply chain stakeholders with the traceability system developed
- **H3** The digital platform for blockchain developed will enable easy access and participation
- **H4** The solution can be operated by value chain actors without relying on external assistance
- **H5** Reduced administration processing time
- **H6** The origin of goods can be tracked across all tiers and end-to-end process definition
- **H7** Volume reconciliation is achievable from the farm to gin segment and then to later segments
- **H8** Gain knowledge about the different permission steps to be used in a permissioned blockchain

#### OTHER HYPOTHESES:

- **H:** Video-training is sufficient to onboard supply chain participants (majority of cases)
- **H:** The inclusion of anonymous worker reports can help identifying supply chain incidents which are not identified in third-party assessment.

DRAFT