Session #4
The value chain and data model for transparency and traceability of sustainable value chains

(15:10–16:00)

Moderated by

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What is Business Process Analysis?

Virginia Cram-Martos
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What is Business Process Analysis (BPA)?

It is a top-down analysis of a value chain

01. Identification of the Value-Chain
02. Definition of the Processes
03. Identification & mapping of activities/events inside each process
04. Documentation of Information exchanges
05. Identification of Individual data
Example of Business Processes in a Value Chain

Cotton Value Chain

- Planting and Cultivation
- Harvest and Identification
- Ginning
- Spinning
- Finishing (including dyeing, printing, washing, bleaching, & other processes affecting fabric characteristics)
- Weaving
- Garment production
- Placement of product in stores or on-line
- Consumption, disposal and post-consumption recycling or processing
Types of Events / Activities Inside a Process

- **Transformation EVENTS**
  - Cotton is spun into thread

- **Transaction EVENTS**
  - Cotton thread is sold / used to fulfill purchase order, etc.

- **Aggregation or Disaggregation EVENTS**
  - Multiple batches of spools of thread are packed in a container for shipping and then are unpacked

- **Object EVENTS**
  - Asset was shipped from location A to location B at time Y
Traceability is Created Around Events and Their 5 Ws

- **Who**
- **Where**
- **When**
- **What**
- **Why (& How)**
To “Talk” About the 5 Ws you have to Identify Them

- **Who**
  - Company tax ID / employee ID for machine operator

- **Why (How)**
  - Purchase order #/ Code for type of weaving / machine / mfg. process

- **What**
  - Batch IDs for input thread spools & Batch ID for output fabric roll(s) & IDs for other inputs (chemicals, etc.)

- **Where**
  - Facility’s Location ID / GPS coordinates / Street address

- **When**
  - Date and time of manufacture

**Thread Woven into Fabric**

An example for a transformation event
The IDs for the 5Ws are linked and create traceability.
So How Do Events and IDs Create Transparency?

- Allow us to identify the 5Ws for events across organizations, then
- The IDs for the 5Ws allow additional information to be saved, and requested, about them
- For example: an organic cotton certificate linked to a cotton batch ID, a factory audit or inspection report linked to a facility ID, the chemical treatment of an agricultural area linked to a location ID, waste linked to a production process ID, etc.
From raw material production...
...through manufacturing and branding...
...to consumption and post-consumption.
And why are we analyzing info. exchanges and data?

If you have identified the data you need for transparency and traceability

- The cheapest way to obtain that data is to identify existing information exchanges where it is included (invoices, purchase orders, bills-of-material, transport documents, etc.)

A BPA can identify these existing data sources so they can be linked to events and their 5Ws

If you are collecting data from multiple value-chain partners

- You need to be sure they are all reporting the same thing (i.e. they are using common definitions and unique IDs/standard codes) and
  - That the parties who need to retrieve data can do so easily and can understand the data they find (in a shared, central or distributed database) or are given (based on requests to trading partners)
And
Now that you know
How Business Process Analysis works
Let's
Look at a leather and then a textile example
Enhancing Transparency and Traceability for Sustainable Value Chains in Garment and Footwear

Business Process Analysis
Leather Value Chain

Deborah Taylor
Sustainable Leather Foundation
Core Project Team, Leather Expert

How do we break this work down?

1. Understand the processes and actors involved.
2. Understand the sustainability risks and how to reduce those risks.
3. Recommend the necessary data and methods of transfer to provide transparency of value chains.
First, we identified the processes

Next, we identified the actors
Next, we broke the processes down into detailed activities to identify sustainability risks.

We also looked at organisations and institutions that assist in reducing those risks.
Next stage is to recommend the necessary data, the method of transfer and the mechanics of creating the framework.
Now I’ll hand over to Marco who will take you through a user story application of the framework
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Business Process Analysis
Textile Value Chain

Marco Ricchetti
Co-founder, Blumine Srl
Core Project Team, Textile Expert

CLAIM
«A claim is a high-level statement about a characteristic of a product, or about a process or an organization associated with that product»
Source: UNECE Draft Policy Recommendation, Guidelines

SUSTAINABILITY CLAIM
«Claim that covers one or multiple sustainability dimensions (economic, environmental, social)»
Source: UN Environment Guidelines for Providing Product Sustainability Information

How can claims be substantiated?
How is the relevant information collected?
Example: Information necessary to substantiate a “

hazardous chemicals free”

claim

T-shirt with overprint
cotton 94%, elastane 6%,
Mercerized cotton
Dyed yarn
A “free from hazardous chemicals” claim can be:

1. Just about the final product: “this T-shirt is free from hazardous chemicals”
2. About all processes along the supply chain, from the cotton field to the finished product: “hazardous chemicals have not been used in the supply chain of this T-shirt”

Option n. 2 requires
- Identification of hotspots along the supply chain
- Collection of information from 1st, 2nd, 3rd 4th .... tier suppliers
A LARGE SHARE OF ENVIRONMENTAL AND SOCIAL IMPACTS ARE GENERATED ALONG THE SUPPLY CHAIN

Source: Adapted from BSR, Apparel Industry Life Cycle, 2009
THE T-SHIRT SUPPLY CHAIN

- T-SHIRT MANUFACTURING
  - KNIT WEAVING
  - SPINNING
  - FIBER PREPARATION AND TRANSFER TO SPINNING
  - COTTON CULTIVATION
  - ELASTANE MELT SPINNING

- T-SHIRT FINISHING
  - KNIT FABRIC FINISHING
  - YARN DYEING and FINISHING

- UNECE
SUSTAINABILITY HOTSPOTS for CHEMICALS
- Washing (e.g. surfactants)
- Printing (e.g. dyestuff, plastic softeners, fluo additive pigments)

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX, BLUESIGN
- Compliance inspection results e.g. with ZDHC or Brand's own “Manufacturing Restricted Substances List” (M-RSL)
T-SHIRT MANUFACTURING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- No critical hotspot for chemicals

INFORMATION TO BE COLLECTED
KNIT FABRIC FINISHING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Mercerizing to increase fabric luster,
- Sanforizing to give dimensional stability and prevent shrinking during washing

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX, BLUESIGN
- Compliance inspection results, e.g. with ZDHC or Brand's own M-RSL
KNIT WEAVING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Heavy metals in oils and lubricants

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX, BLUESIGN
- Compliance inspection results e.g. with ZDHC or Brand's own M-RSL
YARN DYEING and FINISHING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Dyeing, (e.g. dyestuff)
- Mercerizing to increase yarn luster

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX, BLUESIGN
- Compliance inspection results e.g. with ZDHC or Brand's own M-RSL
SPINNING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Heavy metals in oils and lubricants

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX, BLUESIGN
- Compliance inspection results e.g. with ZDHC or Brand's own M-RSL
FIBER PREPARATION AND TRANSFER TO SPINNING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Preservatives used to protect cotton during transport and storage and provide rot resistance

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. GOTS, OEKO-TEX
- Compliance inspection results e.g. with ZDHC or Brand's own M-RSL
SUSTAINABILITY HOTSPOTS for CHEMICALS
- Pesticides
- Fertilizers

INFORMATION TO BE COLLECTED
- Organic certification
- Compliance with national norms
- Inspection results e.g. with Brand's own M-RSL
ELASTANE MELT SPINNING

SUSTAINABILITY HOTSPOTS for CHEMICALS
- Solvents

INFORMATION TO BE COLLECTED
- Safe chemicals certification e.g. OEKO-TEX
- Compliance inspection results e.g. with Brand's own M-RSL
HOW TRACEABILITY CAN HELP

**Without traceability system**
To substantiate the claim all the participants in the T-shirt supply chain must:
- be known.
- requested to provide information, directly or through the direct supplier
- respond with proper messages

**With traceability system**
Information is stored and available, or a channel for requesting more details is established

**The cost of information collection is cut**
**The information is actually accessible**
Enhancing Transparency and Traceability for Sustainable Value Chains in Garment and Footwear

Developing the UN/CCL Data Model to support Traceability & Transparency

Gerhard Heemskerk
Data Modeller, EDI Consultant
UN/CEFACT project expert
Focus on timeline

UN/CEFACT Open Development Process

- Mar: Jun/Jul Business Process Analysis
- Oct: Internal Review
- Nov: Public Review
- Dec: Jan Process Comments
- Feb: Mar: Apr Data into UN Library
- May Jun: Publication
Inputs of the created BRS documents

- Initial Contributions
- Policy Recommendation
- Workshops, experts’ feedback
- Business Process Analysis

**Business Requirement Specifications** for Textile & Leather

- Process & Data Model
- Messages
UN/CEFACT International Supply Chain Reference Model as a basis

UN Library of data components

BSP RDM*

Trade - Transport - Payment
(Buy-Ship-Pay View)

SC RDM
Cross Industry Supply Chain View

MMT RDM
Multi Modal Transport View

CBM RDM
Cross-Border Management View

SDCE RDM
Sustainable Development & Circular Economy View

Textile & Leather

*RDM = Reference Data Model
Aligned with UN/CEFACT Trade Facilitation principles

TRADE FACILITATION

- Simplification
  - Flexible & Inclusive, for “S” & “XXL” enterprises
  - No unnecessary elements, optional data
  - No duplication in processes & procedures, one model

- Harmonization
  - Re-use of existing data components as much as possible
  - Alignment of data with standards and practices

- Standardization
  - Agreed formats, documents and information
Structuring sustainable data

- CO² Emissions
- Used Methods
- Corrective actions
- Events
- Inspection Results
- DNA Marker
- Retumable Asset Instructions
- Standard
- Tolerances
- Inspection event
- Inventory level
- Mass balance
- Assertion
- Segregation
- Country of origin
- Inspection
- CITES
- Quality
- Bio Based
- Environmental impact
- Observation
- Mass ratio
- Toxicological Material
- Crop protection
- Health Risks
- Consumption
- Dangerous goods
- Waste & Disposal process
- Compliance Policy
- Metrics
- Recycling
- Reusable
- Input/Output
- Laboratory Results
- Social aspects
- Certification
Key info entities now supporting sustainability data

Data Model

- Facility Location, Agro Location
- Product
  - Product Batches
  - Materials
- Organization Company Facility
- Production process
  - Transport movement
- Sustainability data
Supporting traceability & transparency

1. Which materials & processes involved?
   - Share Events
     - What
     - Who
     - Where
     - When
     - Why

2. How was it created?
   - Sustainability
     - Environment
     - Social
     - Health Risks

- Traceability data
  - Discovery
  - Snippets of data

- Transparency data
  - Retrieving
  - Additional Data

Snippets of data

Discovery

UNECE
Supporting different technologies

- Traditional EDI
  - UN/CEFACT
    - EDIFACT
    - ebXML standards

- EPCIS
  - BRS Traceability & Transparency based on this

- RFID, DNA marker
  - Textile & Leather data model supports these elements

- APIs
  - UN/CEFACT project RDM2API
  - Cotton Blockchain Pilot

- Blockchain
  - Textile & Leather data model supports IOT device reported events
Thank you for your attention