

# Training

*Sustainable Textiles: basics around its circularity and waste management*



**In the framework of the GIZ project**

“Advancing Closed-Loop Recycling - Textile Waste Improvement Programme for Circularity (WIP4C)”

12.03.2024; Phnom Penh; Cambodia

Training developed by Closed Loop Fashion



Implemented by



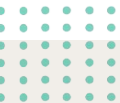
**FABRIC** Cambodia



ស្វាគមន៍ !

# Agenda of today's training

08.00 - 08:30 08:30 - 08:45	Arrival & registration GIZ Opening remark
<b>Part I:</b> 08.45 - 09:45 <b>Background knowledge: Principles &amp; Regulations</b>	<ol style="list-style-type: none"><li>1. Introduction of the project &amp; team and attendants</li><li>2. Circular Economy Principles</li><li>3. EU Regulations and Legislation</li><li>4. Cambodian Waste Strategy</li></ol> <i>Q&amp;A</i>
09:45 - 10:15	Coffee break
<b>Part II:</b> 10:15 - 11:45 <b>Textile Waste Management (TWM)</b>	<ol style="list-style-type: none"><li>5. Textile Waste Management (TWM)</li></ol> <i>Exercise</i> <i>Q&amp;A</i>
11:45 - 12:45	Lunchbreak
<b>Part III:</b> 12:45 - 14:15 <b>TWM in practice: challenges and opportunities</b>	<ol style="list-style-type: none"><li>7. Standards: How to improve your Higg Score ?</li><li>8. Recyclers introduction and requirements</li><li>9. Next steps</li></ol> <i>Q&amp;A</i>
14:15-14:30	Closing Remark & Evaluation



**Opening remark**

**Kristin Sommer, GIZ FABRIC**

# Meet the Training Team



**MARINA CHAHBOUNE**

**Founder &  
Sustainability Specialist**  
Closed Loop Fashion



**JENNY PUTS**

**Sustainability &  
Circularity Specialist**  
Closed Loop Fashion



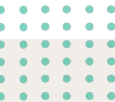
**CHUON VICHHEKA**

**Garment & Sustainability  
Consultant**  
Sevea



**CHANCHHAYA CHHOM**

**Garment & Sustainability  
Consultant**  
Sevea



## Meet the GIZ Team



**KRISTIN SOMMER**

**Environment and Due  
Diligence Coordinator**  
GIZ-FABRIC



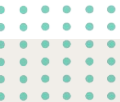
**SOKCHEA LAY**

**Private Sector  
Development Advisor**  
GIZ-FABRIC



**BUNLONG OU**

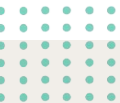
**Environmental  
Sustainability Advisor**  
GIZ-FABRIC



## Who are you ?

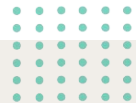
Turn around and take **5 minutes** to discuss with the person behind you:

- Introduce yourself - **1min**
- Share your feedback from the assessment in your factory - **2min**
- Share what you expect from today - **2min**



## Today's expectations

- Be here and present. We are all here together to **learn and share** !
- Respect and be on time
- **Listen and be active:** we want everyone to benefit from this Training!
- **Ask questions:** we need your inputs and opinions !
- We will share with you **training materials** after today's session!





## Objective of today



Understand coming regulations and the importance of the topic



Understand the principles of Circular Economy and Textile Waste Management



Receive hands-on tools to improve TWM at your facility



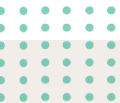
Prepare your facility for standard requirements  
Higg FEM / GRS



Valorize your waste streams by following recyclers requirements



Learn and share industrial challenges and find common solutions





# Instructions

Go to

[www.menti.com](https://www.menti.com)

Enter the code

5594 6646



Or use QR code





# What are the benefits of having a good and compliant textile waste management system ?

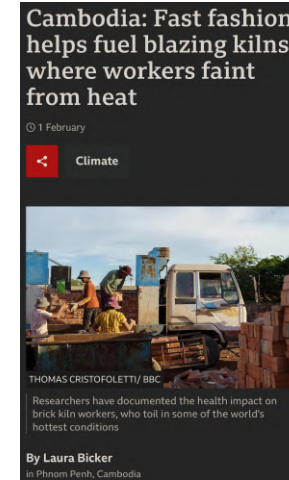
Waiting for responses ...



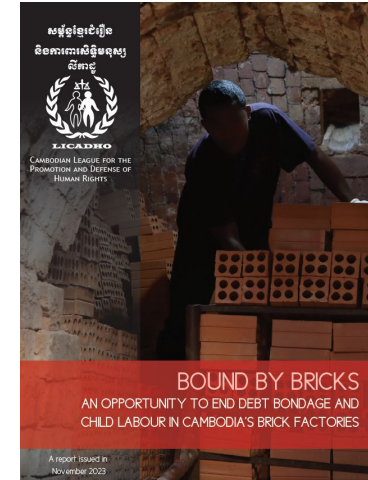
# **1. Introduction of the Textile Circularity Pilot Project (WIP4C)**

# Initial situation

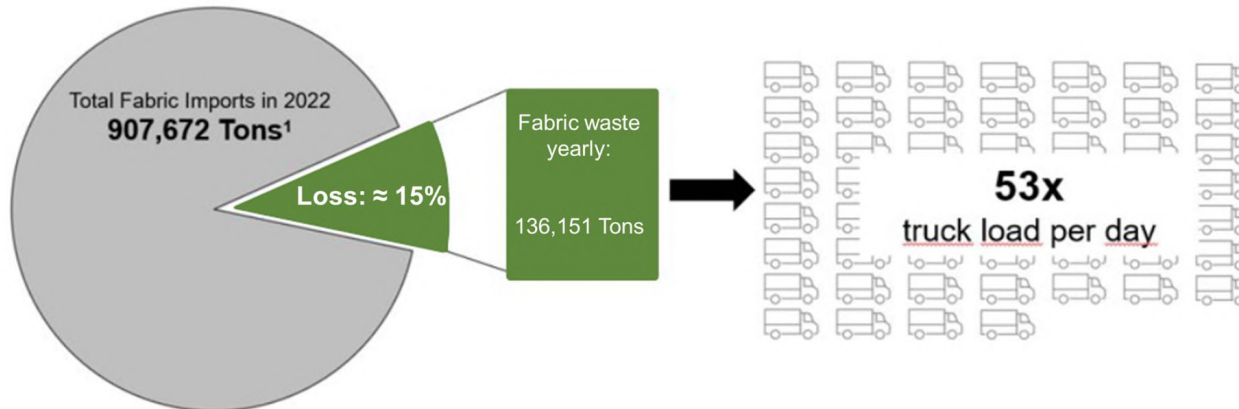
- **Fabric Waste Stream Mapping Study** [[Link](#)]
- Large portion of textile waste is disposed of on **landfill sites or burned**, both at factories and brick making sites
- There is an **unregistered industry** selling waste to downcyclers, exporters or recyclers



[BBC News](#)



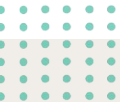
[Licadho Report](#)



# Objective of the Textile Circularity Pilot

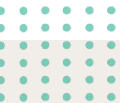
**Collective action** between brands, factories and recyclers to:

- Support **higher recycling** of textile waste
- Demonstrate **circular (textile-to-textile) supply chain**
- Improve **waste disposal situation**, avoid burning and landfill and reduce environmental impacts in Cambodia
- Demonstrate mutual benefiting **business models** for factories and recyclers, improve local economic conditions and local recycling infrastructure



## Benefits for Factories to join

- Having a significant impact of textile waste being recycled
- Improving textile waste management practice(include sorting) & performance in FEM4.0 & GRS throughout pilot program
- Being traceable all textile waste flow to reliable recyclers and financial gain by maximizing the real value of textile waste
- Align with goals and objectives of brands on textile waste requirements
- Being NO RISK of media attention on \* Burning Textile Waste



# Progress of Circularity Pilot

12



Brands confirmed

GIZ | GFA | Brands |  
Recyclers | Factories



MoUs with Stakeholders

SEVEA | CLF



Capacity Building

21



Nominated manufacturers

2

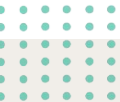


Recycling partners

TAFTAC & Govt



Project Supporters





# Pilot Partners



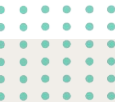
Implemented by



FABRIC Cambodia



PRIMARK®



## Pilot Partners

Wen He Da

Vanco Industrial

Sportex

Hun Wah

Sun World

Callito Apparel

G Evergreat

Fushun Cambo

Seduno Cambo Knitting

Seduno Cambo

Xin hai Tong

Ocean Apparel

Marvel

Evergreen

Humble Apparel

Olive Apparel

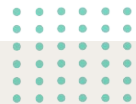
Top Sport Textile

Fashiontex Apparel

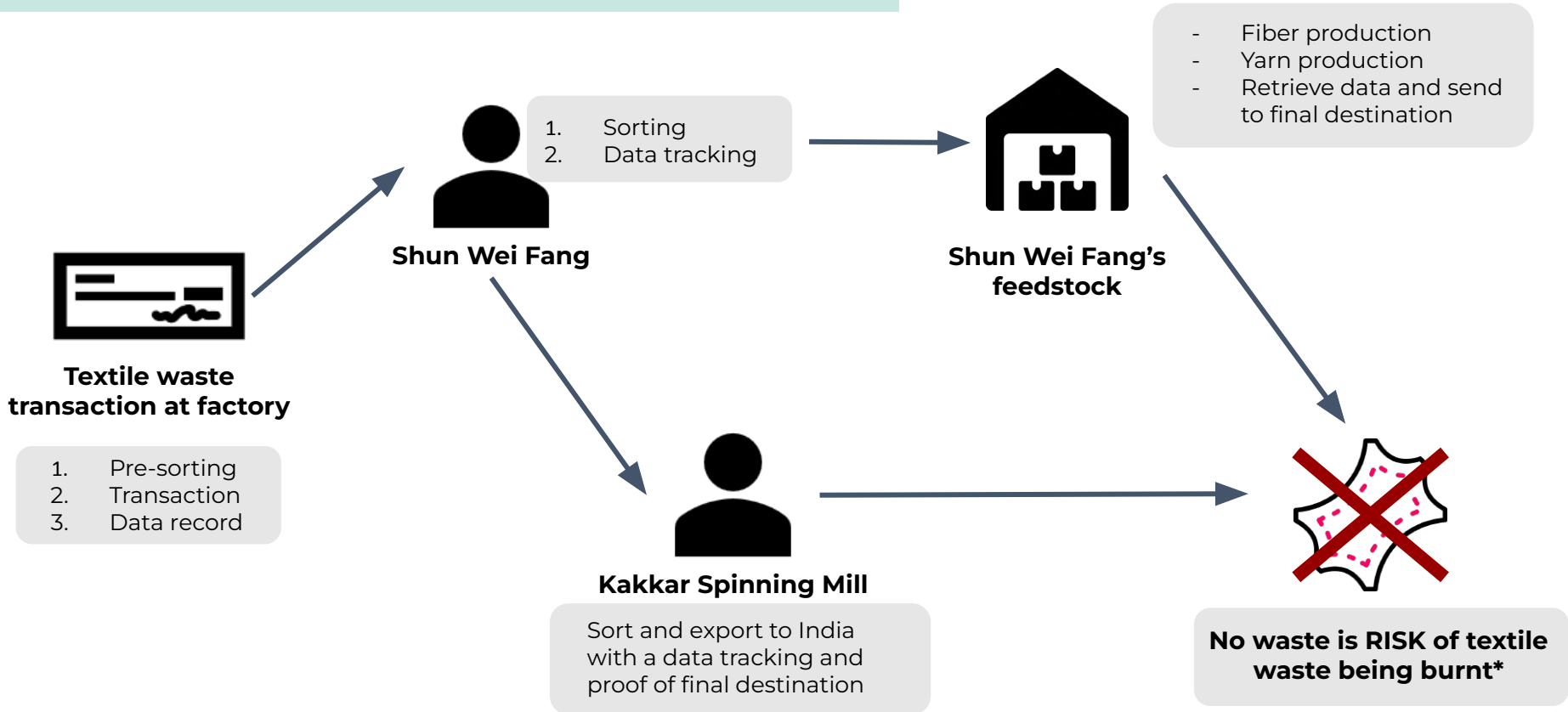
Nyan Kids

JD Toyoshima

KNN Apparel



# Our Way forward to Circular Economy



# Pilot: Factory Commitment Letter



FABRIC Asia

## II. Benefits for factories

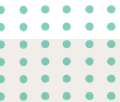
Through active participation in Advancing Post-Industrial Textile Waste Recycling for a Circular Supply Chain in Cambodia, the factory will improve its knowledge on the essential topics around waste management system and, in particular:

- Improving on waste reduction and minimize negative impact of environmental aspects.
- Functional Waste Management System
- Traceability of waste flow and transparency data reporting
- Having a potential to showcase project outcomes to the brand clients.
- Improving performance of HIGG FEM 4.0; GRS
- Increasing value of waste recycles which diverted from landfill and other informal waste collection.
- Saving cost of waste disposal to waste collection company

## III. Responsibilities for factory management and participants

- Committed to fulfil the pilot activities as required by the consultants, adhering to the project's timeline and objectives.
- Assign and ensure a team of two to work in Textile Waste Training Pilot Project
- Supply pre-segregated textile cutting waste to identified pilot recyclers
- Help transparency in sharing textile waste data
- Demonstrate potential interest in continue for future

**Supply pre-segregated textile cutting waste to identified pilot recyclers**



# MoU: Commercial Cooperation between Recyclers

## Memorandum of Understanding (MoU) between

### Shun Wei Fang Zhi Ke Ji

Prey Khvav Village, Roka Kaoh Commune, Kong Pisei District, Kampong Speu, Cambodia

and

### Kakkar Spinning Mills

Village-Mehrana, Near LCRT School, Gohana Road, Panipat-132103, Haryana, India

on






## On commercial Cooperation between Pilot Project on Advancing Post-Industrial Textile Waste Recycling for a Circular Supply Chain in Cambodia

### 1. About the Partners

**Shun Wei Fang Zhi Ke Ji Co. Ltd:** is a textile recycling company who established in Aug 2022 which was issued a certificate of incorporation # **100018626** by the Ministry of Commerce. This company is in Prey Khvav Village, Roka Kaoh Commune, Kong Pisei District, Kampong Speu Province, Cambodia.

**Kakkar Spinning Mills:** is a textile recycling company who has recently registered company under name **HSN REVIVE ECONTEX CO.,LTD** in Cambodia following issued certificate of MoC

Re: Save the date- Finalize on commercial cooperation on waste pilot of Kakkar & Shun Wei-

 Harshit Kakkar <harshit@kakkarspinning.com>  
To  Lay, Sokchea GIZ KH  
Cc  bunsrey81@gmail.com;  Sommer, Kristin GIZ KH;  Tropeano, Massimiliano CIM-IF;  Ou, Bunlong GIZ KH;  
 shunwei9999@gmail.com

 You replied to this message on 3/11/2024 3:45 PM.


You don't often get email from harshit@kakkarspinning.com. Learn why this is important

Dear Mr.Bunsrey & Mr.Sokchea ,

We confirm all the points in point with an additional clarification.

Re: Save the date- Finalize on commercial cooperation on waste pilot of Kakkar & Shun Wei-

 Harshit Kakkar <harshit@kakkarspinning.com>  
To  Lay, Sokchea GIZ KH  
Cc  bunsrey81@gmail.com;  Sommer, Kristin GIZ KH;  Tropeano, Massimiliano CIM-IF;  Ou, Bunlong GIZ KH;  
 shunwei9999@gmail.com

 You replied to this message on 3/11/2024 3:45 PM.

To: Lay, Sokchea GIZ KH <sokchea.lay@giz.de>; 'Harshit Kakkar' <harshit@kakkarspinning.com>; Sommer, Kristin GIZ KH <kristin.sommer@giz.de>; Tropeano, Massimiliano <tropeano@cimonline.de>; Ou, Bunlong GIZ KH <bunlong.ou@giz.de>; shunwei9999@gmail.com

Subject: RE: Save the date- Finalize on commercial cooperation on waste pilot of Kakkar & Shun Wei-

Importance: High

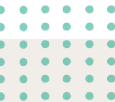
You don't often get email from bunsrey81@gmail.com. Learn why this is important

Dear B. Sokchea,

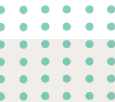
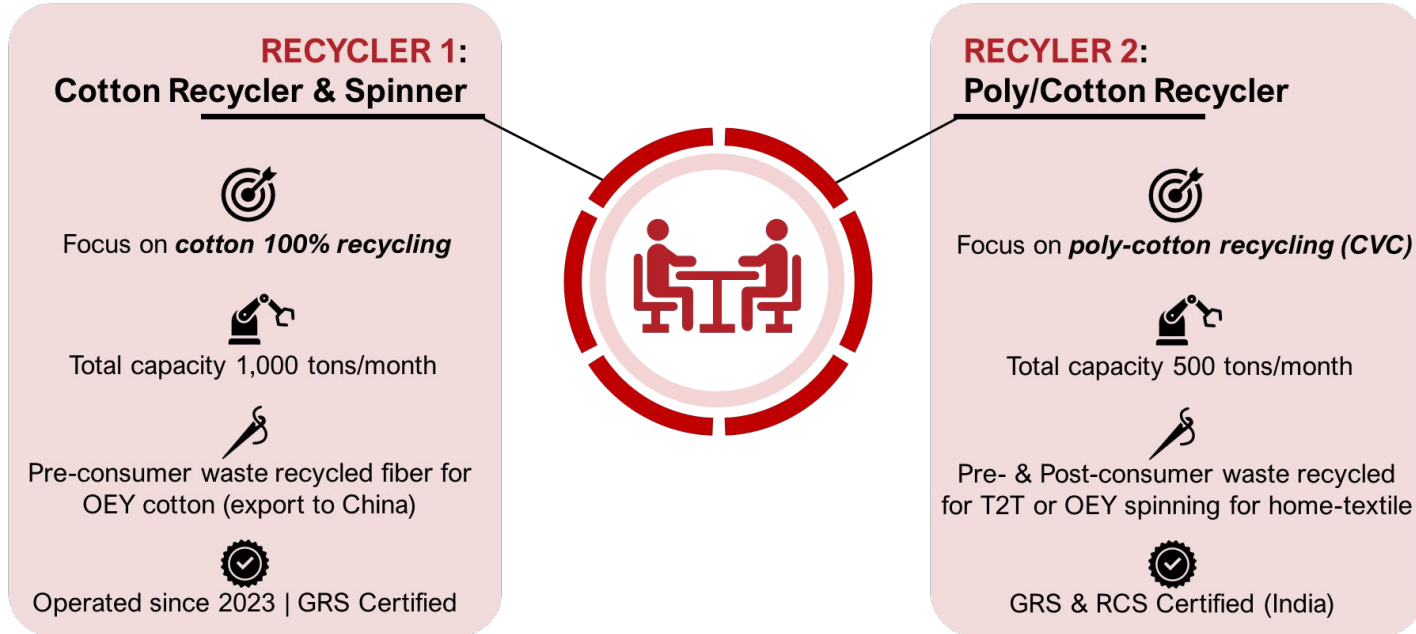
Apart from the last point, We "CONFIRM" our understanding of the rest.  
For the last point, we request further communication in order to reach a viable consensus.

Thanks,  
Bun Srey

  Reply

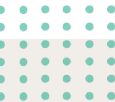
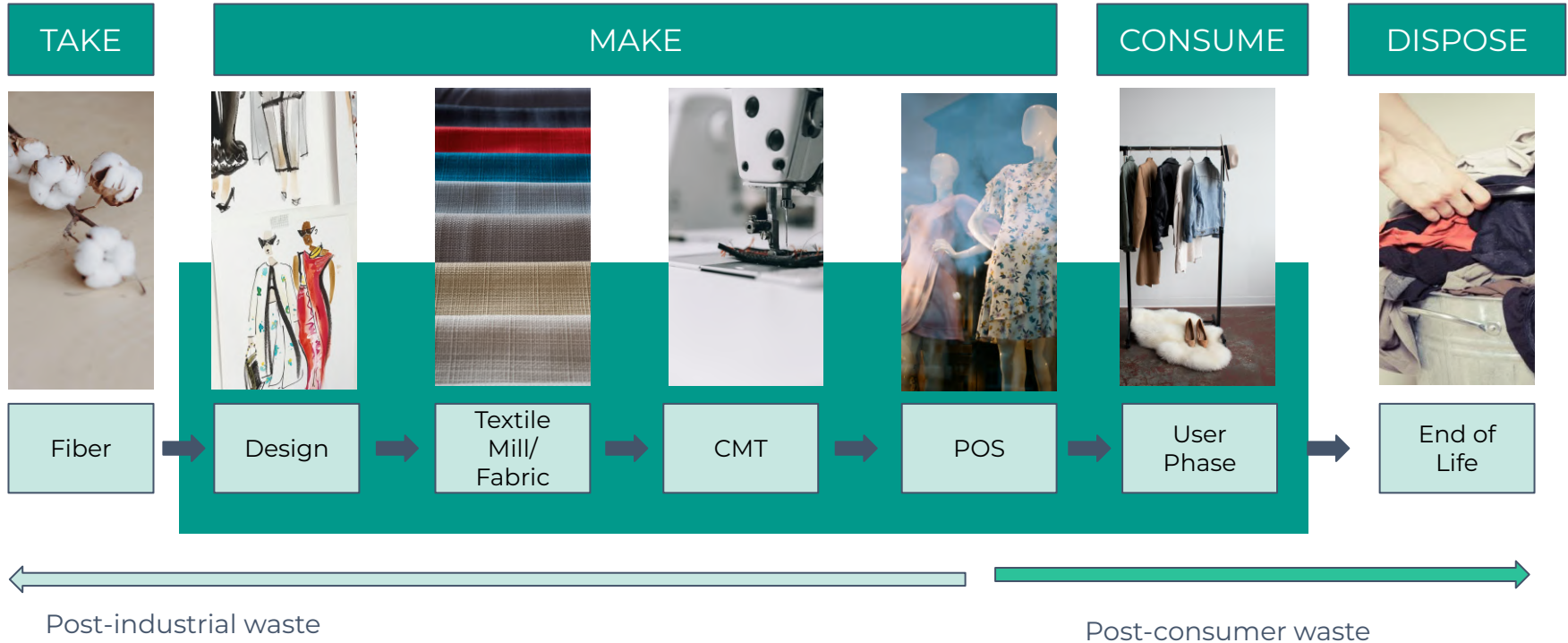


## RECYCLING PARTNERS



## **2. Circular Economy principles**

# Linear Economy vs. Circular Economy





# Textile industry challenges



**Textile industry major contributor to global warming**

The textile industry in general applies very pollutive practices and is estimated to be responsible for about 10% of global carbon emissions <sup>1</sup>



**One garbage truck of textiles is landfilled or incinerated every second <sup>2</sup>**

Following the current business-as-usual scenario, more than 150 million tonnes of clothing would be landfilled or burned in 2050.



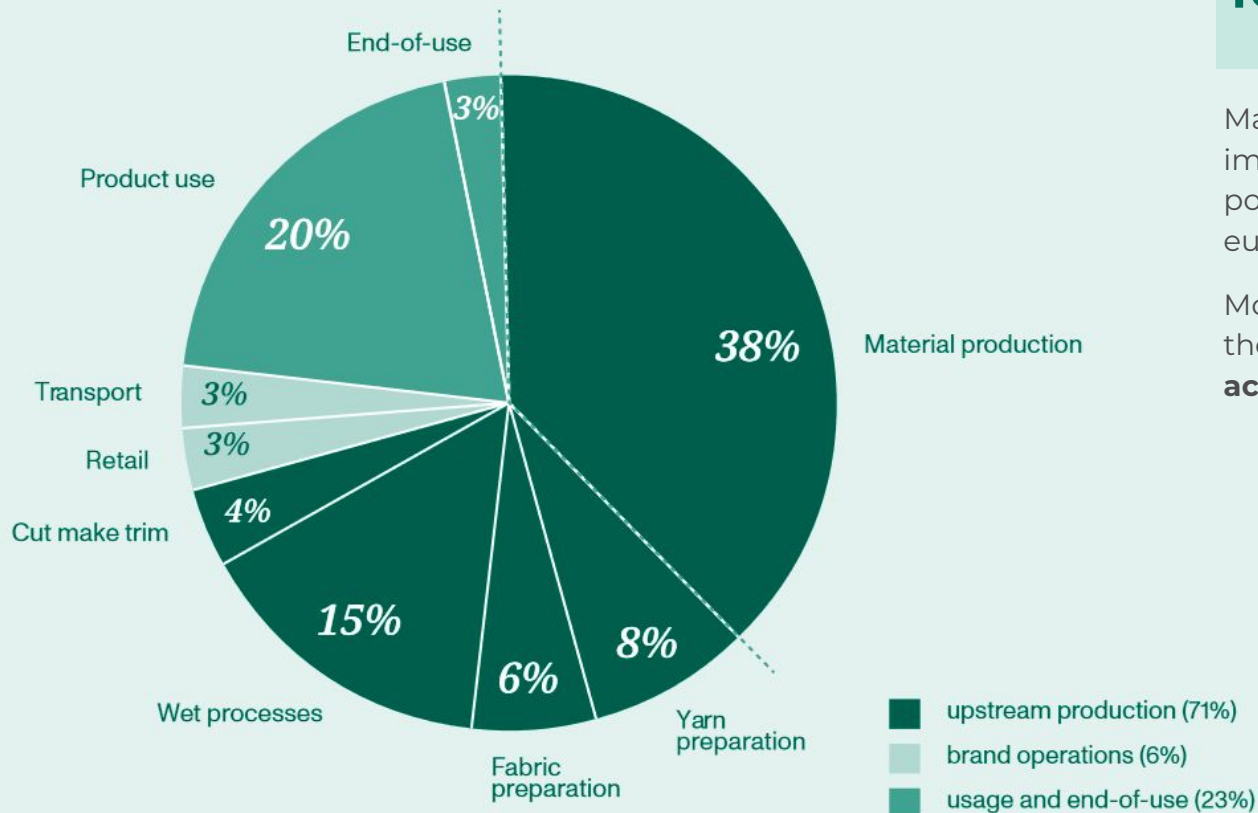
**Fiber-to-fiber recycling solutions not at a commercial scale**

Today less than 1% of textile waste is fiber-to-fiber recycled <sup>3</sup>. PET bottles should be used to make new bottles, which can be recycled again, rather than polyester



## Apparel & footwear value chain GHG emissions

2018, 100% = 2,106 Mn ton CO<sub>2</sub>eq

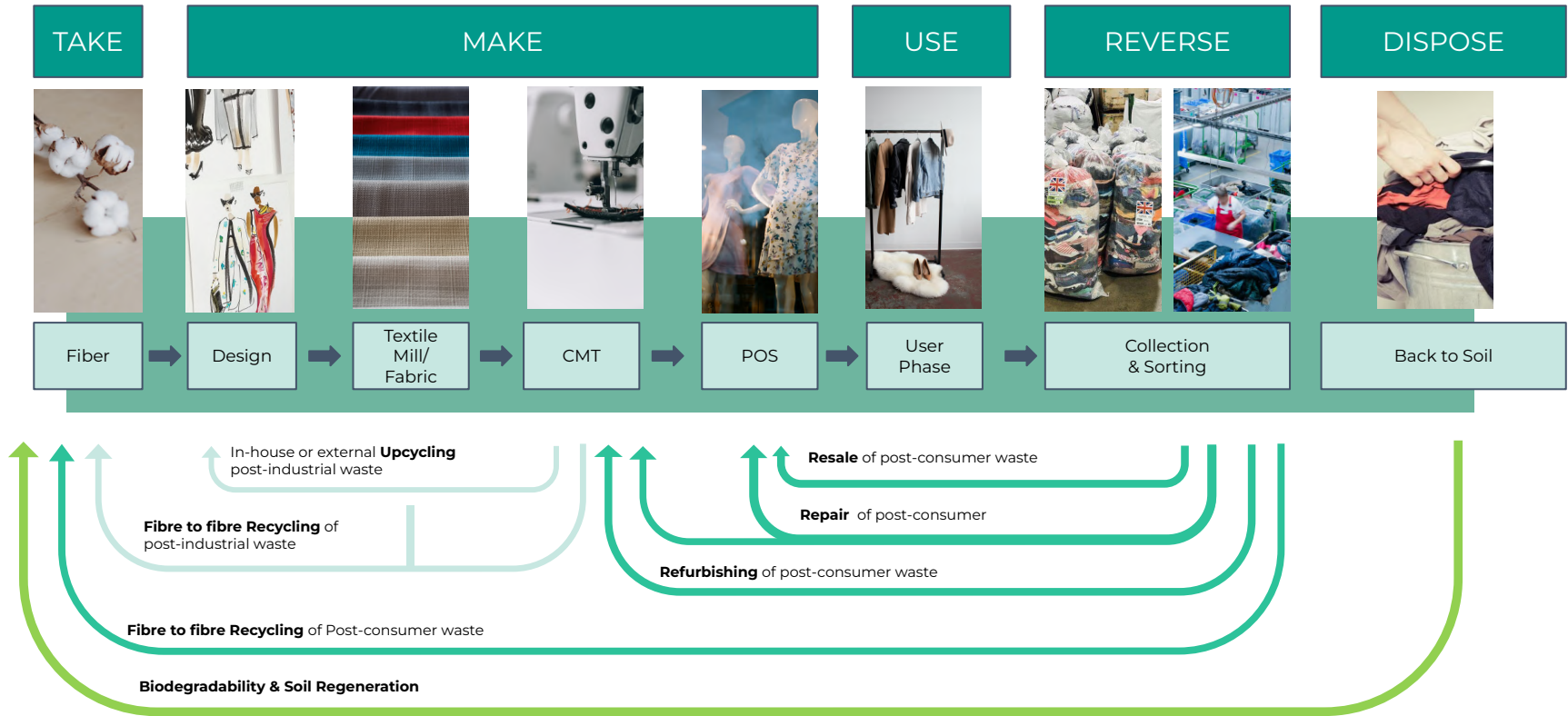


## Environmental footprint

Material production has the highest impact on water consumption, water pollution, land and fertilizer use, and eutrophication.

Most potential lies in decarbonising the upstream operations as this **accounts for more than 70%**.

# Linear Economy vs. Circular Economy



# Textile Waste in Production countries

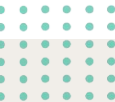
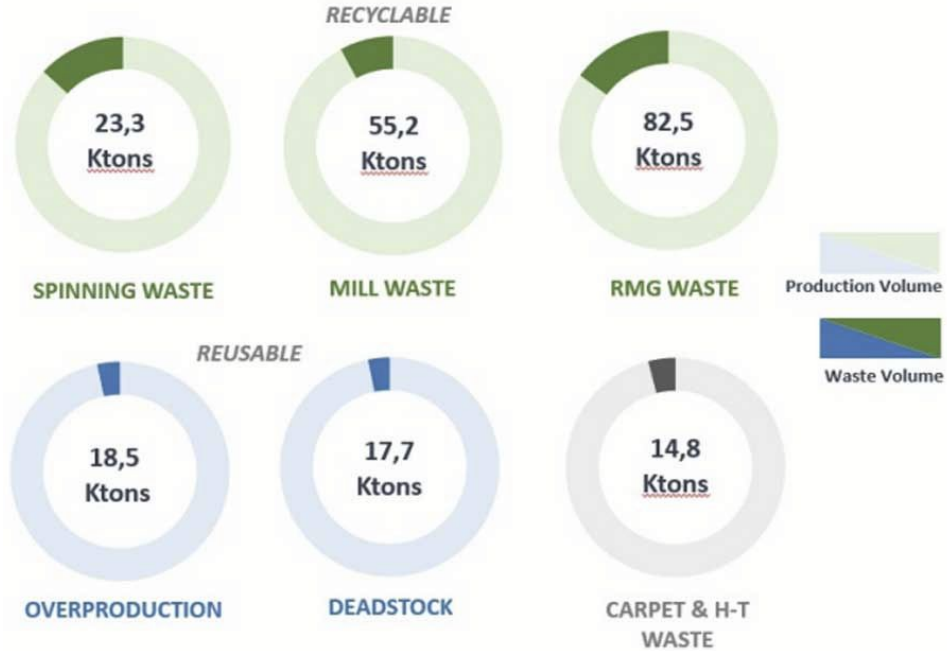
## INDONESIA WASTE VOLUME BY SUB-PROCESS

Ktons= thousand tons



## EGYPT WASTE VOLUME BY PROCESS

Ktons= thousand tons



# Circular Economy targets Recyclers

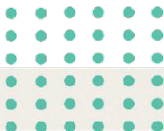
There are five types of recycling technologies that will be at the heart of a circular fashion system and combined, could achieve an 80% closed loop<sup>1</sup>:

1. mechanical fibre-to-fibre recycling for cotton and viscose
2. thermo-mechanical recycling
3. chemical cellulosic recycling
4. chemical synthetic mono recycling for polyester, nylon
5. chemical blended recycling

*Five types of recycling technologies will be at the core of the circular fashion system*

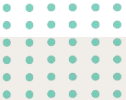
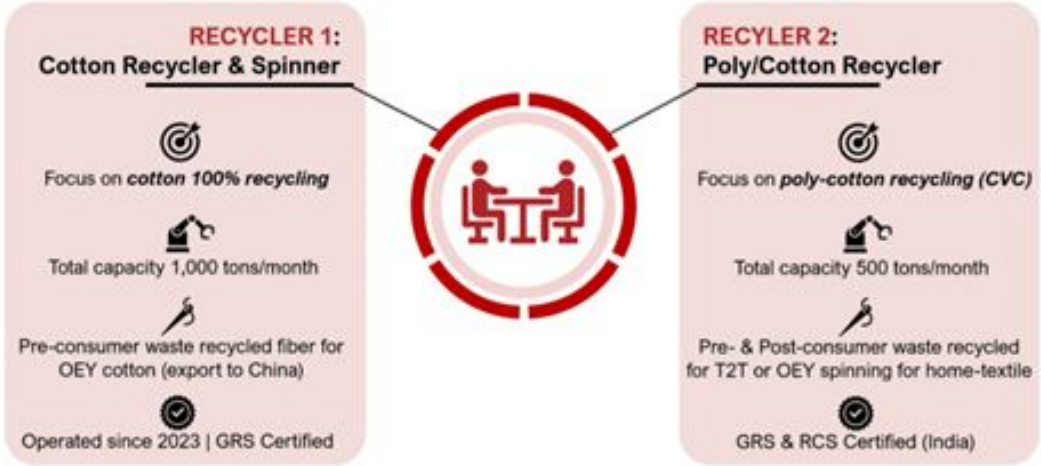
○ Pilot    ○ Commercially ready

RECYCLING TYPE	INPUT/ FEEDSTOCK	OUTPUT	EXAMPLE PLAYERS	READINESS TO SCALE
Mechanical fibre-to-fibre	100% cotton (textile waste), solid colours and denim	Lower quality cotton – needs to be mixed with virgin cotton for most uses	CYCL <sup>2</sup> , MILITERRA <sup>3</sup> , recover	○ Commercial at scale today – however focused on pre-consumer fabric from production waste
Regenerative cellulosic	Man-made cellulosic fibers and cotton fabric (>80%)	Man-made cellulosic – has the same quality as virgin and can have cotton-like properties	RENEWCELL, WAVE OF BLUE, Spinnova, EVRNU, SA <sup>4</sup> XCELL, IONCELL	○ Technology is commercially scalable – however capacity is still limited
Regenerative synthetic	>80% Polyester (textile waste); solid colours, knits and woven	Polyester with same quality as virgin polyester	EASTMAN, loop, I/EO2, grēn, CARBIO2	○ Promising technologies at pilot scale Challenge to scale rapidly given “catch 22” (no demand until cost is down; higher cost than virgin until scale is up; risk of scaling due to technology uncertainty and uncertainty of feedstock supply)
Thermo mechanical synthetic	PET bottles	Polyester with same quality as virgin polyester	Toray Group, UNIFI, POLYLANA	○ Recycling of PET-bottles done at scale today – lack of feedstock to further scale
Regenerative blended recycling	Blended fabrics, i.e. printed, multi-coloured textiles	Cellulose powder/pulp and PET pellets/fiber/monomers	Block <sup>5</sup>   TEXX, irc, worn again	○ Several technologies tested at pilot scale, need to improve purity and drive scale to improve economics





## RECYCLING PARTNERS



# 3. EU Regulations & Legislation

# EU Strategy for Sustainable & Circular Textiles

## Key actions in the Textiles Strategy



Set **design requirements for textiles** to make them last longer, easier to repair and recycle, as well as requirements on minimum recycled content



Introduce clearer information and a **Digital Product Passport**



**Tackle greenwashing** to empower consumers and raise awareness about sustainable fashion



Reverse **overproduction and overconsumption**, and **discourage** the destruction of unsold or returned textiles



Propose mandatory **Extended Producer Responsibility for textiles with eco-modulation of fees**



Address the **unintentional release of microplastics** from synthetic textiles



Restrict the **export of textile waste** and promote sustainable textiles globally



Incentivise **circular business models**, including reuse and repair sectors



Encourage companies and Member States to **support the objectives** of the Strategy



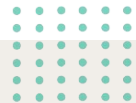
# EU Waste hierarchy



## EU-Waste Framework Directive

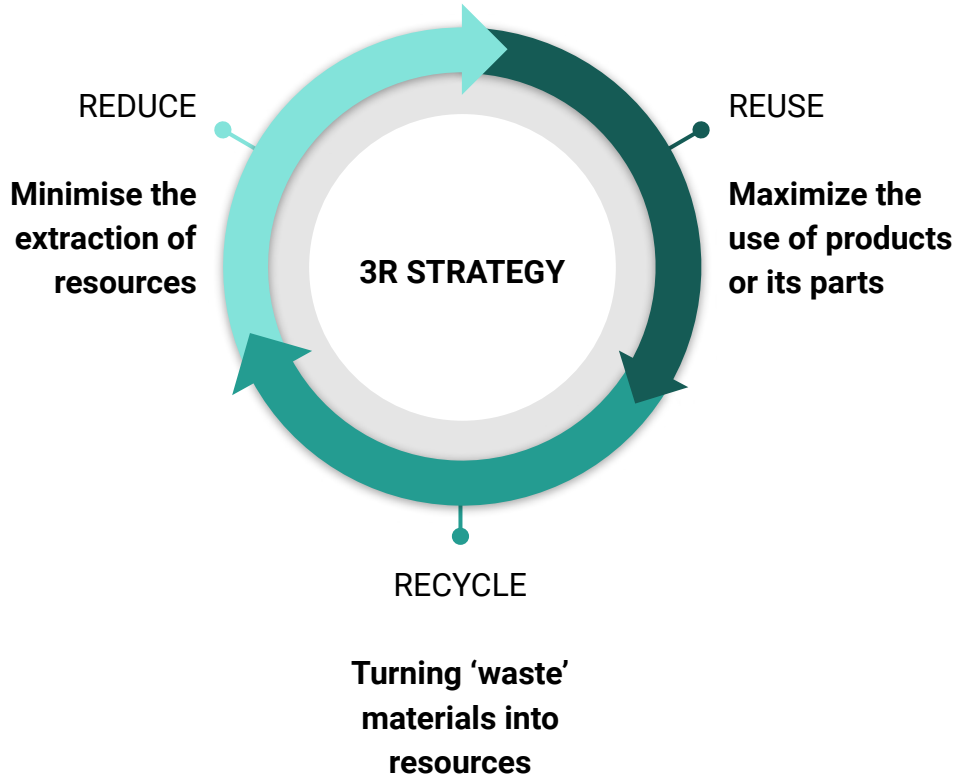
the new Directive expected by March 2024

- By 1st January 2025: **Separate collection of spent textiles**. Responsibility with public waste authorities.
- **Extended Producer Responsibility (EPR)** policies: producers responsible for end-of-use phase.
- **Polluter Pays Principle (PPP)**: responsibility related to environmental dangers. It will probably be linked to EPR.



# **4. Cambodian Waste Management Strategy - Policy & Regulations**

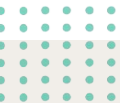
# Cambodian 3R Strategy



The national strategy on 3Rs for waste management in Cambodia was prepared by the Ministry of Environment in 2008 and supported by UNEP

The Strategy on 3R for Waste Management aims to:

1. Develop waste management system effectively
2. Provide job opportunities
3. Increase daily incomes
4. Reduce waste amounts at dumpsite
5. Intercept and minimize risks and hazards to the environment, biodiversity and public health



# Laws and Regulations

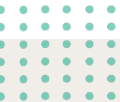


Law



Sub  
Decree

- **Environmental Protections and Natural Resources Management (24. December 1996)**
  - Framework for environmental impact assessment, pollution control, and natural resource management
- **Sub-Decree No 36 on Solid Waste Management (27. Apr. 1999)**
  - Fibrous & clothing waste materials from textile & garment industry is **non-hazardous** solid waste (**unless it is burnt**)



## 2023 - Recent updates

June 29<sup>th</sup>, 2023

The Ministry of Environment announced its **Environmental & Natural Resources Code** (will be effective on June 1<sup>st</sup>, 2024) [[Link](#)]

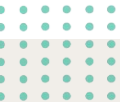
**Purpose:** to manage solid waste by introducing measures to eliminate solid waste from the site to the final landfill to ensure environmental protection, biodiversity conservation, and public health protection.

### **Export of solid waste or raw materials from solid waste recycling:**

- Fabric waste can export out of Cambodia as long as the importing country allows it.
- License, permit and other requirement need to check with relevant ministries.

### **Import of solid waste to Cambodia:**

- The import of solid waste from abroad into Cambodia is prohibited, except for solid waste which is the subject of import in addition to domestic waste recycling investment projects
- There shall be approval from Royal Government of Cambodia in accordance with the procedures in force



# 2023 - Recent updates

## August 2023

Royal Government of Cambodia announced its **Pentagonal Strategy - Phase 1 for Growth, Employment, Equity, Efficiency and Sustainability**. Pentagon 4 – side, ensuring environmental sustainability and readiness for responding to climate change, as well as promoting of green economy.

## November 15<sup>th</sup>, 2023

The Ministry of Environment announced its **Circular Strategy for Environment 2023-2028** focusing on 3 main strategies: Clean, Green, and Sustainable.

## November 23<sup>rd</sup>, 2023

TAFTAC's advisory note to its members on **strengthening and monitoring the collection of solid industrial waste** from factories.



**Advisory Note to Members  
On**

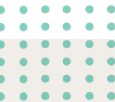
**Strengthening and monitoring the collection of solid industrial waste from factories**

In compliance with the environmental protection-related law, all of our TAFTAC factory members have contracted licensed industrial waste collectors to collect their industrial wastages. Those industrial waste collectors carry obligation to dispose those wastages, especially fabric waste at legally designated areas. However, in certain circumstances beyond the control of factories and collectors, a small portion of those fabric waste has leaked out and has been used inappropriately causing harm to the environment. To avoid this problem, TAFTAC advise all members to take more possible precautionary measures with your industrial waste collectors to make sure the waste is properly disposed.

A small number of factories might be able to sell their fabric waste to recyclers. In the same spirit above, TAFTAC advise you to make sure that your waste won't be used inappropriately against the environmental protection-related law. In case traceability system cannot be developed, TAFTAC advise you to not sell those wastages at all.

Thank you for your attention and kind cooperation.

Phnom Penh, 23 November 2023  
Textile, Apparel, Footwear & Travel Goods  
Association in Cambodia.



# Customs regulation

## According to the Law on Customs

**All factories must declare the volumes of waste** in kg to the General Department of Customs and Excise (GDCE) to check that imported raw material volumes correspond to output volumes (waste and products).

### Regulation related:

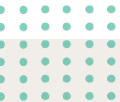
- Article 26 of the Customs Law and Regulations
- MEF Prakas 105 on Management of Goods Exempt Duties and Taxes
- GDCE 0059/20 on Wastage Disposal under 20T without Inspection
- WTO Guide

#### Under 20 tons around 3 months:

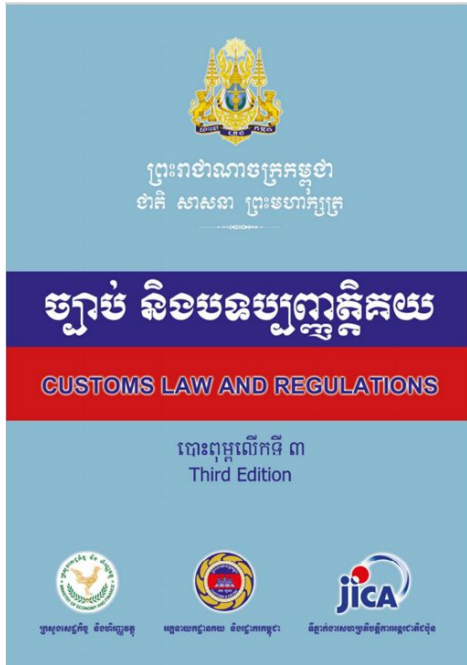
- Daily disposal & submit disposal letter later
- no inspection required

#### Over 20 tons over 3 months:

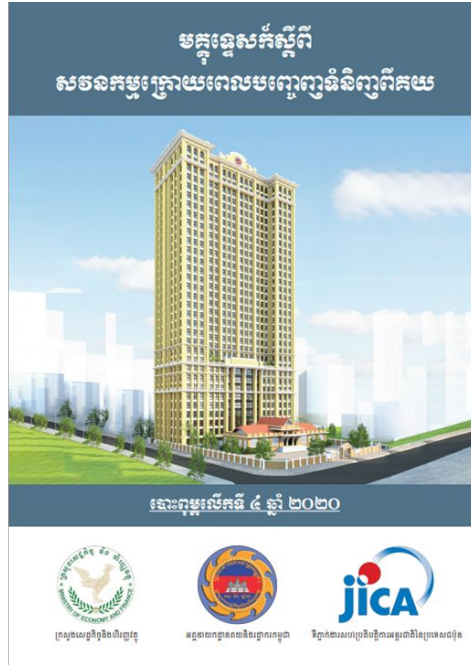
- inspection from GDCE
- the factory need to store the waste until inspection



# Customs regulation



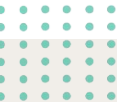
ភាសាខ្មែរ [តំណ], English [Link]



ភាសាខ្មែរ [តំណ]



EN Version [Link]





Join at [menti.com](https://menti.com) | use code **5840 0474**



# PART 1: Q&A

Waiting for responses ...



សម្រាក !

30-minute coffee break



Join at [menti.com](https://menti.com) | use code **5840 0474**



# What is currently your biggest challenge with Textile Waste Management?

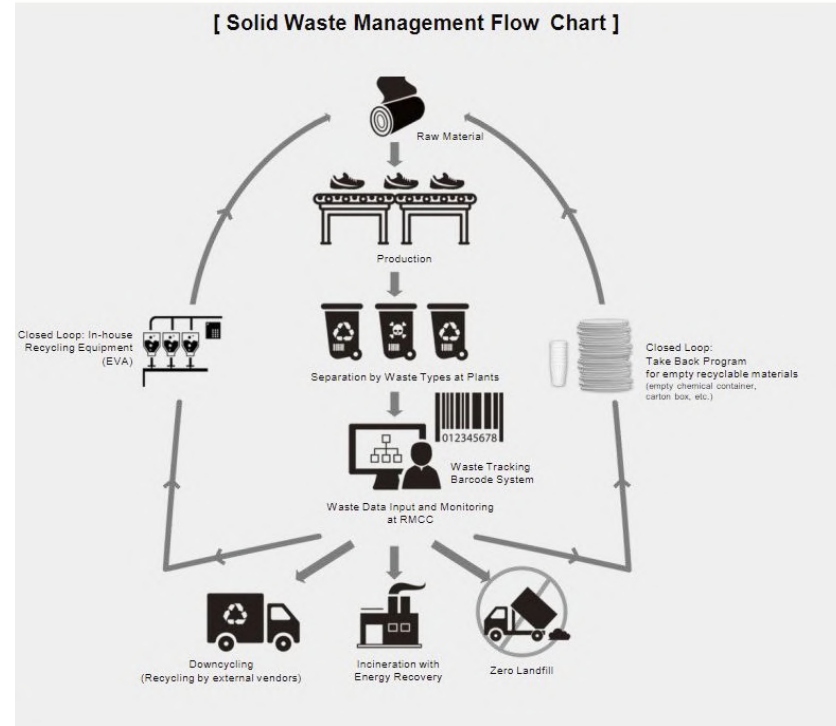
Waiting for responses ...



# **5. Textile Waste Management Standard (TWMS) by Closed Loop Fashion**

# TWM - Why it is important

- Improving on waste reduction and minimize negative impact of environmental aspects
- Defined, established and enforced Waste Management System
- Transparency and traceability through improved monitoring and reporting of waste flow
- Improved waste practices to report to customer brands
- Standard compliance with GRS and HIGG FEM 4.0
- Increased value of textile waste as material feedstock for recycling
- Preferred waste disposal methods: e.g. from landfilling to recycling
- Monetizing waste materials



# Textile Waste Management Higg FEM & GRS

## Higg FEM 4.0 Waste section:

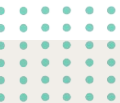


- **Identify the types** of wastes that are generated at your facility.
- Ensure the appropriate **waste management** onsite (e.g., storage and disposal).
- Understand how your wastes are **treated/disposed** of after leaving your facility.
- **Track and report** the quantity of wastes generated at your facility.
- **Evaluate, plan for, and adopt solutions to reduce waste.**
- **Implement leading practices** to divert wastes from landfill and into the circular economy.

## GRS Waste section:

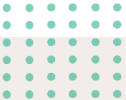
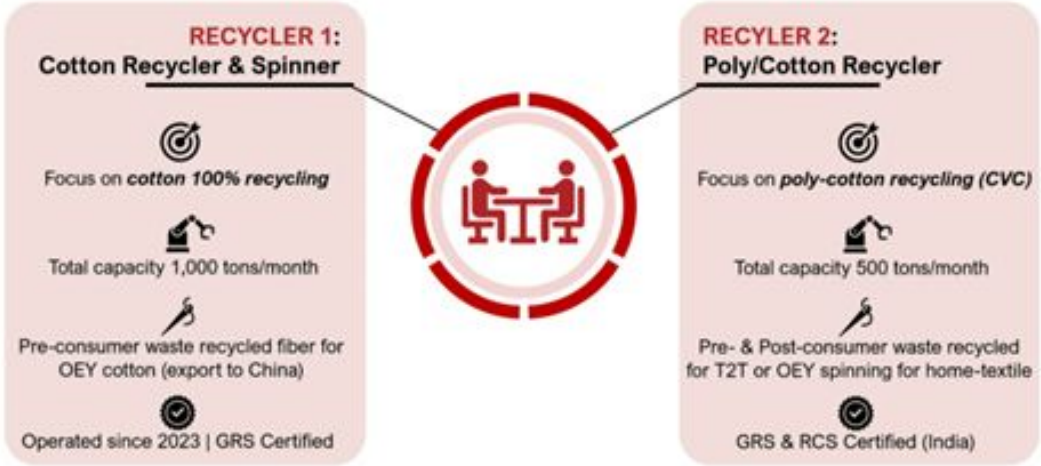


- Check of **general handling of waste** at your facility and **representatives**.
- Highlights the importance of **Waste handling trainings**.
- Separation & handling of **non-hazardous & hazardous waste**.
- **Documentation** of waste generation and handling for GRS productions.





## RECYCLING PARTNERS



# Textile Waste Management



## 1. Waste Prevention



Design out waste

Reduce

## 2. Preparing for & Reuse



Collect, Sort, Store

Reuse/Resell

Further use

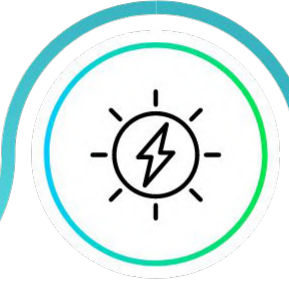
## 3. Recycling



In house Recycling

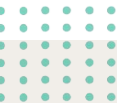
External Recycling

## 4. Recover



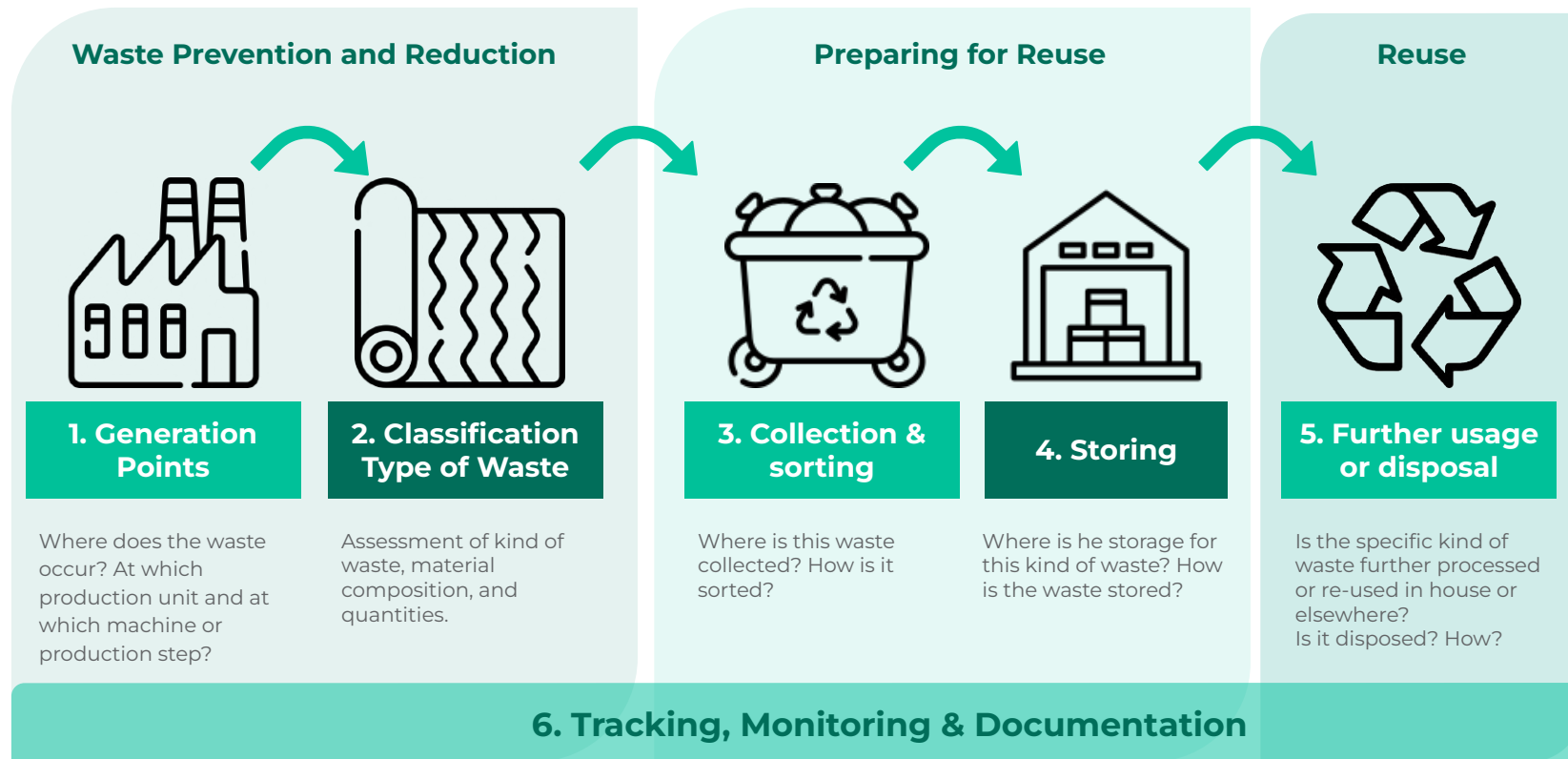
Waste to energy

Disposal





# Textile Waste Mapping by Closed Loop Fashion



Factory name: .....

Participant name: .....



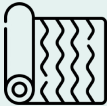
### 1. Generation Points



### 3. Collection & Sorting



### 5. Further Usage



### 2. Waste Classification



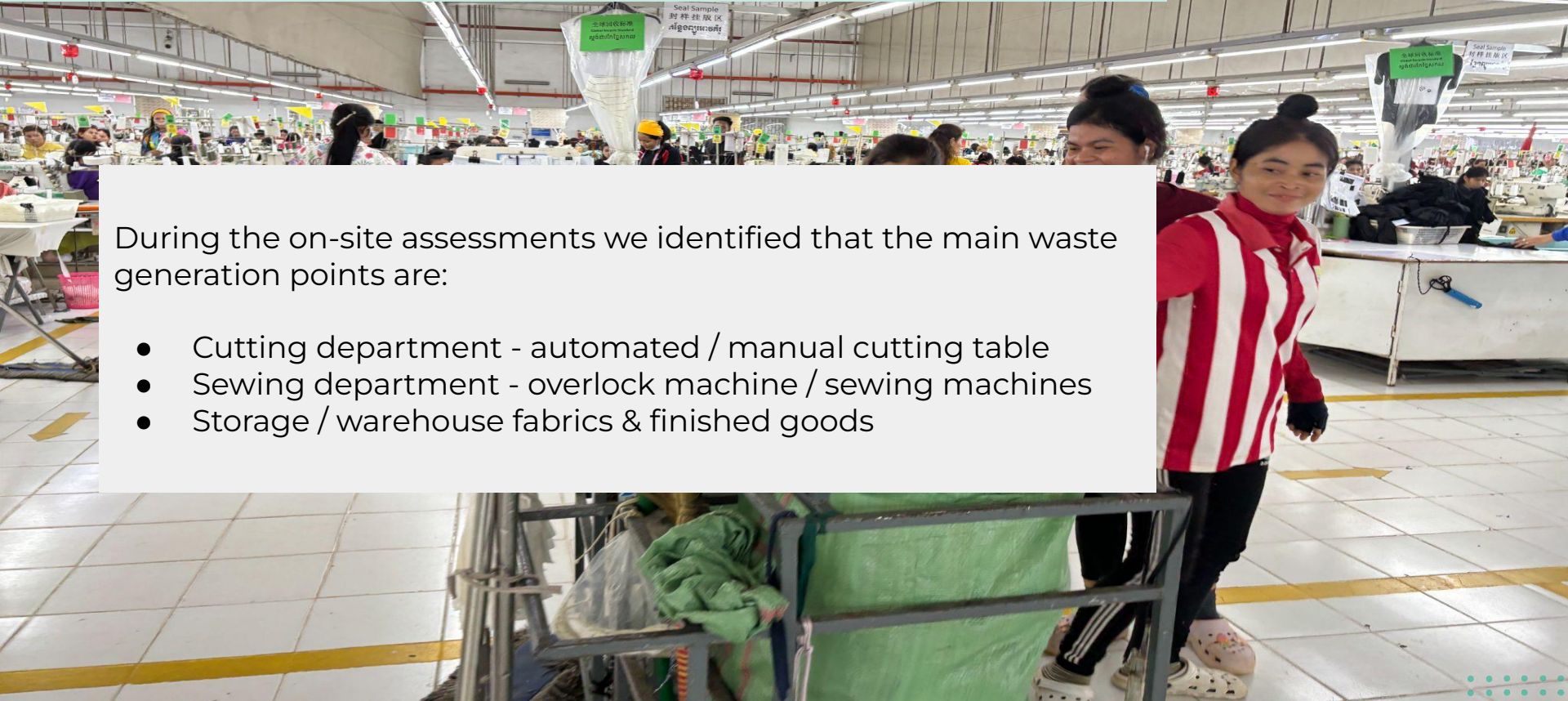
### 4. Storing

### 6. Tracking & Monitoring

## Step 1: Generation points - Key assessment findings

During the on-site assessments we identified that the main waste generation points are:

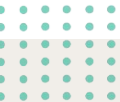
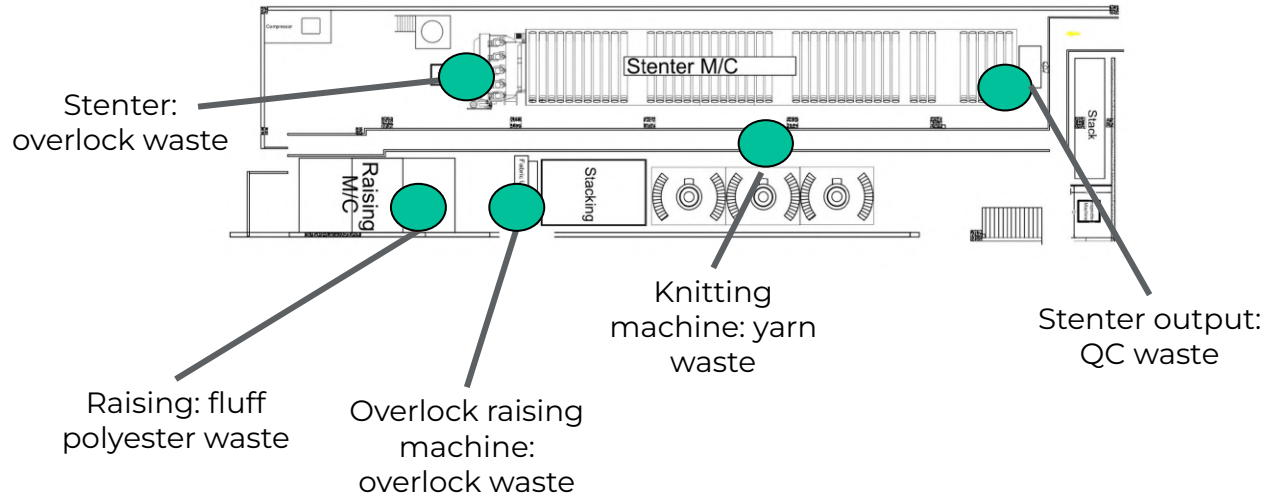
- Cutting department - automated / manual cutting table
- Sewing department - overlock machine / sewing machines
- Storage / warehouse fabrics & finished goods



# Step 1: Generation points

Identification of waste generation points and their waste streams.  
Reduce the operational cost in manufacturing by eliminating the process waste.

## Raising, Knitting and Stenter Layout



# HOW TO: Generation Points & Tracking

Checklist here!

## Step by Step identification of TW Generation Points & Tracking

- ❑ Create a **new document for Textile Waste Management Strategy (TWMS) = policy. HIGG FEM 4.0**
- ❑ Start inserting the layout of your production floor. **Map all the points where waste is generated** with a sign/sticker.
- ❑ **Identify waste streams:** From which machines is which kind of waste generated?
- ❑ Mark if the waste is hazardous or non-hazardous. **GRS & HIGG FEM 4.0**
- ❑ **Create the excel sheet document for your Textile Waste Mapping** and write down the information about generation points. Add as annex the production layout.
- ❑ Walk through the production, take pictures of waste generation at the different points, and **add observations of waste generation to the excel document.**
- ❑ Investigate with your team into why the waste streams occur in the first place. Can they be reduced or avoided? (e.g: with more efficient machines, training for workforce, etc...) Create a **written textile waste reduction plan with defined targets. GRS & HIGG FEM 4.0**
- ❑ Check on site if there is any tracking or record of waste generation (it could be in different forms, from manually filled lists to automatically generated reports from the machines).
- ❑ If NOT → Create a **system to track and report the yearly generation of waste** (including following information: generation point, kind of waste, quantity, unity of measure, quality, collection). Use a record data system that is easy to be used and read (e.g: Excel document) **GRS and HIGG FEM 4.0**



## What are your main challenges in this Textile Waste Management step?

→ Write them down on your working sheet.

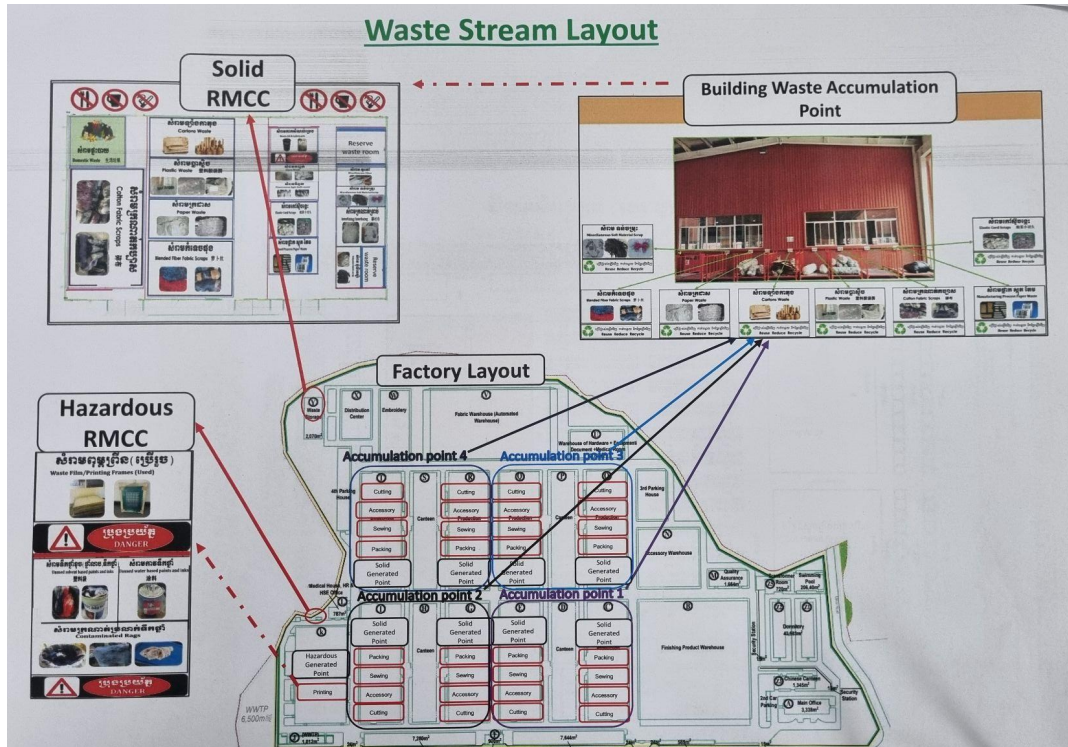
# របៀបដាក់ពិន្ទុ និងតាមដាន

## ការកំណត់ និងតាមដានពីកាកសំណល់វាយនភណ្ឌពីមួយជំហានទៅជំហាន

- បង្កើតឯកសារយុទ្ធសាស្ត្រសម្រាប់គ្រប់គ្រងកាកសំណល់វាយនភណ្ឌ
- គូសផែនទីនៃចំណុចទាំងអស់នៃទិសដៅរបស់កាកសំណល់ដោយប្រើសញ្ញា រឺស្លីត
- កំណត់ច្បាស់ថាម៉ាស៊ីនណាបញ្ចេញសំណល់ប្រភេទណា
- សម្គាល់ថាតើណាកាកសំណល់មានគ្រោះថ្នាក់ ឬមិនមានគ្រោះថ្នាក់ **GRS & HIGG FEM 4.0**
- បង្កើតឯកសារ Excel Sheet សម្រាប់កំណត់សំណល់វាយនភណ្ឌ ហើយសរសេរព័ត៌មានចូល។
- ត្រួតពិនិត្យការផលិត ចំពោះការបញ្ចេញកាកសំណល់តាមចំណុចផ្សេងៗ ហើយបន្ថែមការសង្កេតលើការការបញ្ចេញកាកសំណល់ទៅក្នុងឯកសារ Excel ។
- តាមសង្កេតក្រុមការងារថាតើកាកសំណល់ចេញមកពីចំណុចណាខ្លះ ហើយពួកគេគួរធ្វើយ៉ាងណាដើម្បីកាតបន្ថយ។ សរសេរផែនការកាត់បន្ថយកាកសំណល់វាយនភណ្ឌ **GRS**
- ត្រួតពិនិត្យថាតើមានការតាមដានចំនួនកាកសំណល់នៅតាមកន្លែងដាក់សំរាមដើរទេ មិនថាតាមវិធីសាស្ត្រណាក៏ដោយ ( បញ្ជីដែលបំពេញដោយដៃ រឺដោយម៉ាស៊ីនស្វ័យប្រវត្តិ )
- ករណីមិនមាន គួរបង្កើតប្រព័ន្ធតាមដាន និងរាយការណ៍ពីការបង្កើតកាកសំណល់ប្រចាំឆ្នាំ **GRS and HIGG FEM 4.0**

តើអ្វីជាឧបសគ្គជំនួយសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភណ្ឌ ?  
→ សូមសរសេរចូលសន្លឹកកិច្ចការ.

# Best-practices - Waste Stream Layout at Marvel



## Step 2: Classification of Types of Waste - Key assessment findings

During the on-site assessments we identified that most factories classify in the following waste types:

- Cutting waste
- Sewing waste - overlock / sewing waste
- Deadstock and rejects
- Overstock finished products

No classification by material composition in place!



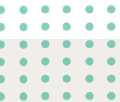


## Step 2: Classification of Types of Waste

As basis for an effective Textile Waste Management, a **pre-classification of different waste types** is needed.

This assessment of all textile waste streams generated by the factory operations alongside the whole production process **should include detailed information about the different types of textile wastes, their material compositions, quantities, and possible more granular characteristics (such as color, certifications, etc..)**.

Regular textile waste mappings should be realized on the basis of this pre-classification.



# HOW TO: Classification of waste streams

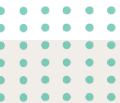
Checklist here!

## Step by Step Classification of waste streams

- ❑ For the waste streams pre-classification you can start from your list of textile waste generation points and **expand the excel adding the details of the different types of waste**, so that you have all the relevant information in one document.
- ❑ This assessment should be done on the basis of production data as well as on the basis of available information regarding textile waste (e.g: using the textile waste generation records). Remember that these data must be provided as proof of compliance with both **GRS & HIGG FEM 4.0**
- ❑ Try to be as granular as possible in including all relevant details about your textile waste streams: material composition, quantity, measurement unit, measurement time frame, color, size, etc.. **HIGG FEM 4.0**
- ❑ **Add in the table all waste characteristics that are needed for your partnering recycler/ waste contractor.**

**What are your main challenges in this Textile Waste Management step?**

**→ Write them down on your working sheet.**



# របៀបការចាត់ថ្នាក់នៃកាកសំណល់

## ការចាត់ថ្នាក់នៃកាកសំណល់ពីមួយជំហានទៅជំហាន

- សម្រាប់ការចាត់ថ្នាក់ទុកមុននៃសំណល់ អ្នកអាចចាប់ផ្តើមពីបញ្ជីចំណុចបញ្ចេញកាកសំណល់វាយនភ័ណ្ឌ ហើយបន្ថែមព័ត៌មានលម្អិតនៃប្រភេទកាកសំណល់ផ្សេងៗក្នុង Excel
- ការវាយតម្លៃនេះគួរតែធ្វើឡើងដោយឈរលើមូលដ្ឋាននៃទិន្នន័យផលិតកម្ម ក៏ដូចជានៅលើមូលដ្ឋាននៃព័ត៌មានដែលមានទាក់ទងនឹងកាកសំណល់វាយនភ័ណ្ឌ។ សូមចងចាំថាទិន្នន័យទាំងនេះត្រូវតែផ្តល់ជាកសុតាងនៃការអនុលោមតាម GRS និង HIGG FEM 4.0
- ព្យាយាមលម្អិតតាមដែលអាចធ្វើទៅបាន ដោយរួមបញ្ចូលព័ត៌មានលម្អិតពាក់ព័ន្ធទាំងអស់ដូចជា៖ សមាសភាពសម្ភារៈ បរិមាណឯកតារង្វាស់ រយៈពេលវាស់វែង ពណ៌ ទំហំ។លដោយស្របតាម HIGG FEM 4.0
- បន្ថែមព័ត៌មាននូវលក្ខណៈសំណល់ទាំងអស់ចូលក្នុងតារាងដែលអ្នកកែច្នៃ រឺអ្នកម៉ៅការសំណល់ដែលជាដៃគូរបស់អ្នកត្រូវការ។

តើអ្វីជាឧបសគ្គជំនួយសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភ័ណ្ឌ?  
→ សូមសរសេរចូលសន្លឹកកិច្ចការ.

# Best-practices



English

Hello, Arianna Nicoletti!

Textile Waste Improvement Programme For Circularity (WIP4C)

## Manufacturer profile



Users



Manufacturers



Handlers



Recyclers

- FACILITY
- PRODUCTION
- WASTE**
- OTHER

### Handling and disposal of textile waste\*

Do you internally reuse or recycle any of your waste? **No**

Do you internally incinerate any of your waste for energy? **No**

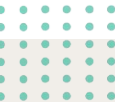
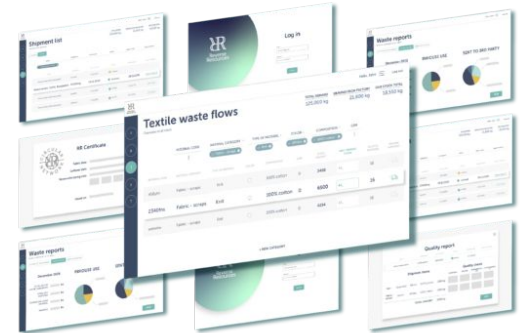
Do you pass waste on to a waste handler or trader? **Yes**

100 % of total waste      We pay the company for disposal

Do you pass on your textile waste or leftover textile material to a company who recycles it? **No**

Do you segregate your textile waste by colour or fibre composition? **No**

How much waste could you potentially store in your premises?



## Step 3: Waste Collection - Key assessment findings

- Main challenge with manual cutting machines is that all waste is collected unsegregated in one bin: paper and fabric waste together
- There is no labelling or signage used for bins at manual cutting tables
- For automated cutting machines we saw different collection compartments with marked units 'paper', 'plastic', 'fabric'. However there was still contamination found in the waste bags
- Only one factory collected their overlock waste separate from the other sewing waste
- Some factories did not have an ergonomic waste collection system e.g. *cleaner pulling a carton box on a string through the production line collecting all sewing waste; no sufficient PPE in place*

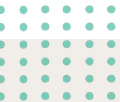


## Step 3: Waste Collection

Effective collection strategies are essential for the implementation of an efficient waste management system. All further TWM steps, such as sorting and storing depend on how textile waste is collected in the first place during and after production cycles.

- 1. Collect directly at the point of waste generation**
- 2. Create a clear system for the points of collection:** The bags, bins, containers or trolleys used for the accumulation of textile waste must have clear signages and be strategically positioned (e.g: overlock waste collection can be collected with a bag affixed under the machine)
- 3. Pre-sorting** (eg. separate paper and plastic from textile waste) and **clear labeling of collected content.**
- 4. Weighing the waste bags and labeling them correctly.** All information related to each waste bag should be reported either digital or manually (= daily waste record).
- 5. Create a drying area for wet textile waste:** to avoid the creation of hazardous/contaminated waste.

Pics: Closed Loop Fashion at Nizam



# HOW TO: Waste Collection

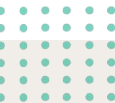
Checklist here!

## Step by Step Implementation of efficient waste collection practices

- ❑ **First Assessment:** Check on site how waste is currently collected (At which production stage? By whom? Where is the collection happening? In which types of containers? Is the waste already segregated at the time of collection? How? ...).
- ❑ **Add these information on the excel document. Higg FEM 4.0**
- ❑ **Create a plan for improvement and implementation** of efficient waste collection practices, including: strategic positioning of collection containers, type of containers, signage pre-segregation systems at the collection point, training of involved personnel. Include in the TWMS document.
- ❑ **Create an identification system for the collected waste.** E.g.: A labelling system printed on adhesive paper that can be affixed to the textile waste bags. The identification system has to be aligned with possible needs and/or preferences of the waste contractor/recycler. The collected waste could be weighted at this stage, the weight will have to figure on the label. Implement the use of the labelling system and regularly check correct use. **GRS and Higg FEM 4.0**
- ❑ **Create a tracking system to record internal movements of the collected waste** (e.g: from the collection point to the warehouse unit), including types and quantities. This document could be in printed form (to be filled out by the workers and retained by the management) or it could be prepared in digital form for quicker traceability (e.g: as extra Tab in the TWMS excel) **Higg FEM 4.0**

**What are your main challenges in this Textile Waste Management step?**

**→ Write them down on your working sheet.**



# របៀបប្រមូលសំរាម

## ការប្រមូលសំរាមប្រកបដោយប្រសិទ្ធភាពពីមួយជំហានទៅជំហាន

- ❑ ការវាយតម្លៃដំបូង៖ ពិនិត្យលើកន្លែងថាតើសំណល់ត្រូវបានប្រមូលយ៉ាងដូចម្តេច ( នៅដំណាក់កាលផលិតកម្មមួយណា ? ដោយអ្នកណា ? ការប្រមូលនៅទីណា ? នៅក្នុងធុងប្រភេទណា ? តើកាកសំណល់ត្រូវបានបំបែករួចនៅពេលប្រមូលរឺយ៉ាងណា ? ដោយរបៀបណា ? ... ) ។
- ❑ បន្ថែមព័ត៌មានទាំងនេះនៅលើឯកសារ Excel **Higg FEM 4.0**
- ❑ បង្កើតផែនការសម្រាប់កែលម្អ និងអនុវត្ត
- ❑ បង្កើតប្រព័ន្ធកំណត់អត្តសញ្ញាណសម្រាប់កាកសំណល់ដែលប្រមូលបាន **GRS and Higg FEM 4.0**
- ❑ បង្កើតប្រព័ន្ធតាមដានដើម្បីកត់ត្រាសកម្មភាពក្នុងពេលចេញនៃកាកសំណល់ដែលប្រមូលបានឧ ៖ ពីចំណុចប្រមូលទៅឃ្នាំរួមទាំងប្រភេទ និងបរិមាណ **Higg FEM 4.0**

តើអ្វីជាឧបសគ្គជំនួយសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភ័ណ្ឌ ?  
→ សូមសរសេរចូលសន្លឹកកិច្ចការ.





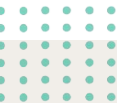
## Best-practices - waste collection



Collection of waste from **automatic cutting table** into three units: Fabric scraps, Paper, Plastics



No benchmark example of pre-sorted collection of cutting waste from **manual cutting table**. If these bins would have been labelled it would suffice



# Best-practices - waste collection/ weighing



# Best-practices

Waste Identification Nr.  
XXYY2024

Date:  
27/02/2024

Type of waste: *Cutting-Table Scraps*  GRS?

Material Composition:

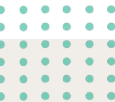
- 100% Cotton
- 100% CVC
- 100% Polyester
- .....

Color/Color Shade: *Dark blue.....*  
From costumer order nr.: *Adidas\_2024xyyWQQ300X*  
Weight (kg): *6.kg.....*  
Collection point: *Cut-Make-Trim Unit, Area 2*  
Destination: *Textile Waste Warehouse*  
Waste Collector ID: *Kakkor.Recycling.....*  
Signed by: *Name of responsible worker in the shift*

*Signature*

## WASTE CLASSIFICATION AND COLLECTION AND SORTING

TYPE OF WASTE	Is the waste collected?	Is the waste sorted?	PICTURES
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	



### Step 3: Waste segregation - Key assessment findings

- At **all** factories we identified that cutting waste was contaminated with other waste types such as paper and plastics
- When done properly all paper waste should be segregated from the fabric waste
- Sewing waste often contaminated with PET bottles and other waste
- Overlock mostly collected separately, but then mixed with sewing waste
- Currently no segregation by material composition, color etc



## Step 3: Segregation / Sorting



Collection & sorting

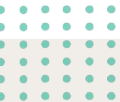
Textile waste will be sorted & stored looking at the **end-of use strategies** that the factory & clients want to adopt.

- 1. Material Content**  
Recycling Re-use Re-sale Correct Disposal
- 2. Colour shades**  
Recycling Re-use, Re-dyeing  
Upcycling
- 3. Waste size**  
Upcycling, Re-sale



### Customer Needs

Re-sale to specific customers:  
Recyclers,  
Designers, etc..



# Non-Hazardous // Hazardous Wastes



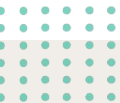
## Non-Hazardous waste

- Non-hazardous production waste such as **textile**, leather, plastic, paper, metal, or packaging waste, etc.
- Domestic waste such as food waste and sanitary wastes including household waste from the office and/or dormitory areas (e.g., toilet paper, yard/garden waste, glass, and food packaging), etc.

## Hazardous:

- Hazardous production waste such as used chemicals, chemical containers/drums, waste oils, contaminated materials (e.g. materials that contain other substances that are hazardous waste such as rags containing solvents), etc.
- Waste from facility operations such as wastewater treatment sludge if hazardous, fly ash, fluorescent light bulbs, electronic waste, batteries, etc.

**For both programmes the separation & correct handling of waste streams are important  
→ Training of personnel in waste handling is requested !**



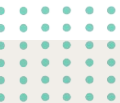
## Best-practices - Segregation / Sorting



Waste types are segregated at source in clearly identifiable waste bins



After collection, cutting waste segregated into waste bag for paper and waste bag per fabric type (however resource intensive)



## Step 4: Storing of waste - Key assessment findings

- Only few factories had a designated and clear temporary storage space for textile waste bags
- Some storage areas were in good condition, clear signage of waste types and no contamination
- Other waste storage areas were in less good conditions e.g. *no segregated waste areas, no clear signage, no fire detectors, unclean floors, etc.*
- Signs of “No eating” and “No drinking” were missing at most storage areas at factories





## Step 4: Storing of waste

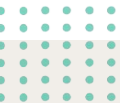


Storing

After collection & sorting, the textile waste will be brought to the waste facility for non-hazardous waste. It is extremely important for both GRS and Higg FEM 4.0 that this area is separated from other waste yards or hazardous waste warehouses.

The main best-practices are:

- 1. Keep your waste clean!** In order to avoid contamination and mold, the textile waste should be stored inside, in a preferably dry and covered warehouse area.
- 1. Pack it smart!** Choose the right packaging (fabric bales, foil bales, reusable bags, etc.) so that contamination of fibers is avoided. Containers must be closed and dry.
- 1. Use clear labels.** In order to be sure of the bales content once the material is packed stored and for tracking purposes. Store different material compositions separately.
- 1. Separate textile waste from other non-hazardous waste.** Set up different warehouses or storing areas.
- 1. Place waste storages strategically.** Waste warehouses can be multiple and can be placed in strategic points depending on the end-of-use of waste to facilitate material flows between units.



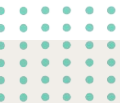
# HOW TO: Storing of Textile Waste

## Step by Step Implementation of compliant Waste Storage practices:

- ❑ **First Assessment:** Check on site how waste is currently stored and add these information on your excel Textile Waste Mapping document.
- ❑ **Create a plan for improvement and implementation** of compliant textile waste storing practices: the non-hazardous waste storage area must be dry and ventilated, protected from the weather and fire risk (**Higg FEM 4.0**); the area is clearly marked (**GRS & Higg FEM 4.0**); Flammable substances are kept away from sources of heat or ignition (**GRS & Higg FEM 4.0**); Employees must use appropriate personal protective equipment (PPE) when in these areas (**GRS & Higg FEM 4.0**). Document the plan in the TWMS document and in trainings.
- ❑ Implement **storage containers that are compliant** with **Higg FEM 4.0**: good condition, appropriate for their contents, closed and clearly labelled with their contents. Containers must be secured to prevent falling and safely stacked. Also, according to **GRS**, the container must include the “GRS” specification.
- ❑ Create a **tracking system with records of incoming and outgoing textile waste**. Specifically for GRS certified contractors/recyclers you need to fill out Material Declaration Forms for outgoing orders and retain these documents for at least 5 years. **GRS and Higg FEM 4.0**

**What are your main challenges in this Textile Waste Management step?**

**→ Write them down on your working sheet.**

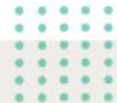


# របៀបរក្សាទុកកាកសំណល់វាយនភ័ណ្ណ

## ការអនុវត្តការរក្សាទុកកាកសំណល់ពីមួយជំហានទៅជំហាន

- ❑ ការវាយតម្លៃដំបូង៖ ពិនិត្យមើលនៅទីតាំងអំពីរបៀបដែលកាកសំណល់ត្រូវបានរក្សាទុកនាពេលបច្ចុប្បន្ន ហើយបន្ថែមព័ត៌មានទាំងនេះនៅលើឯកសារ Excel។
- ❑ បង្កើតផែនការសម្រាប់កែលម្អ និងអនុវត្តការអនុវត្តការរក្សាទុកកាកសំណល់វាយនភ័ណ្ណដែលអនុលោមតាម៖ កន្លែងស្តុកកាកសំណល់ដែលមិនមានគ្រោះថ្នាក់ត្រូវតែស្ងួត និងមានខ្យល់ចេញចូល ការពារពីអាកាសធាតុ និងហានិភ័យភ្លើង (**Higg FEM 4.0**) ; តំបន់ត្រូវបានសម្គាល់យ៉ាងច្បាស់ (**GRS & Higg FEM 4.0**) ; សារធាតុងាយរងគ្រោះត្រូវបានរក្សាទុកនៅឆ្ងាយពីប្រភពនៃកំដៅឬការបញ្ជោះ (**GRS & Higg FEM 4.0**) ; និយោជិតត្រូវប្រើឧបករណ៍ការពារផ្ទាល់ខ្លួនសមស្រប (**PPE**) នៅពេលដែលនៅក្នុងតំបន់ទាំងនេះ (**GRS & Higg FEM 4.0**) ។ រៀបចំផែនការនៅក្នុងឯកសារ TWMS និងក្នុងការបណ្តុះបណ្តាល។
- ❑ ប្រើកុងតឺន័រផ្នែកសំរាមដែលអនុលោមតាម **Higg FEM 4.0**៖ ស្ថានភាពល្អ សមរម្យ បិទ និងដាក់ស្លាកយ៉ាងច្បាស់លាស់។ យោងទៅតាម **GRS** កុងតឺន័រត្រូវតែរួមបញ្ចូលការបញ្ជាក់យ៉ាងច្បាស់លាស់ពី "**GRS**"
- ❑ បង្កើតប្រព័ន្ធតាមដានជាមួយនឹងកំណត់ត្រានៃកាកសំណល់វាយនភ័ណ្ណចូល និងចេញ

តើអ្វីជាឧបសគ្គធំសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភ័ណ្ណ ?  
→ សូមសរសេរចូលសន្លឹកកិច្ចការ.



# Best-practices - Storing of waste

Weighing and labeling before storing waste streams



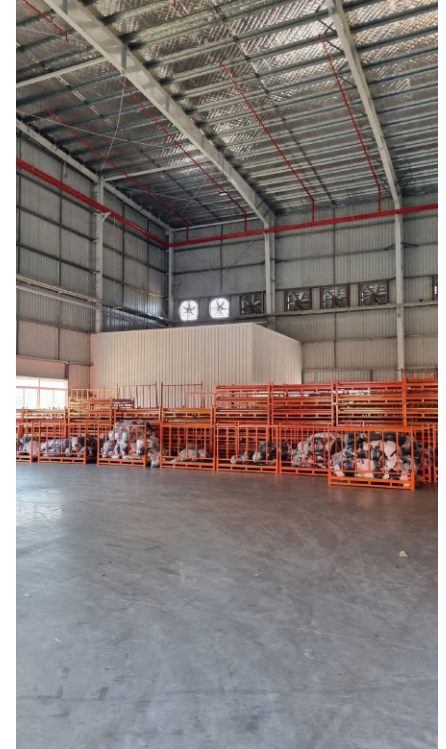
No smoking  
No drinking  
No eating



Clearly labeled interim storage area

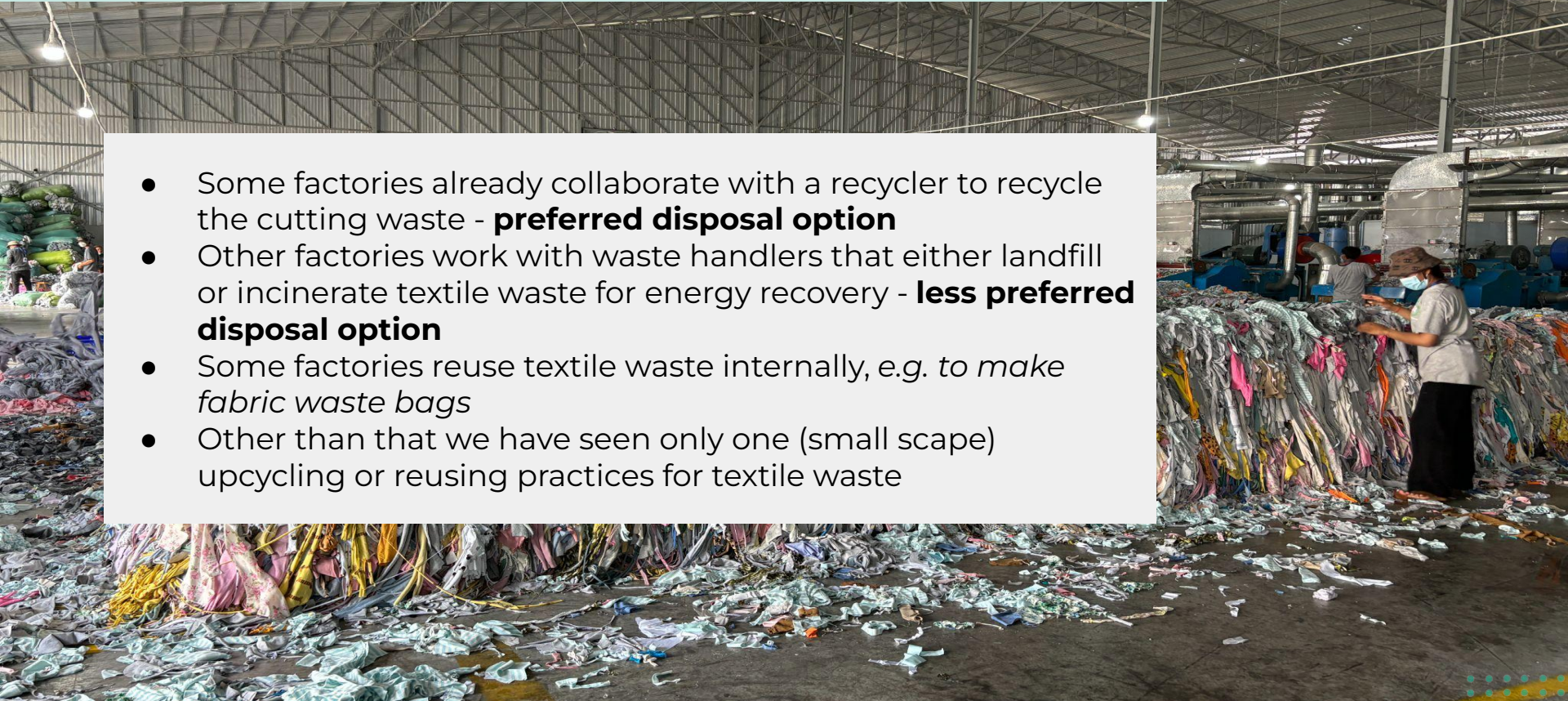


Clear marked and clean final storage area for 'Fabric Scraps'



## Step 5: Further usage - Key assessment findings

- Some factories already collaborate with a recycler to recycle the cutting waste - **preferred disposal option**
- Other factories work with waste handlers that either landfill or incinerate textile waste for energy recovery - **less preferred disposal option**
- Some factories reuse textile waste internally, e.g. *to make fabric waste bags*
- Other than that we have seen only one (small scale) upcycling or reusing practices for textile waste



# Higg FEM Material Recovery Options



Further usage  
or disposal

## Reuse



Pre or post-consumer wastes are reused to make new or second hand products without modification or additional manufacturing steps before using the waste.

## Recycle



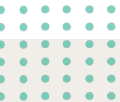
Including Upcycling!

Pre or post-consumer wastes are reprocessed to produce new items of equal (or better) quality (e.g., textile to textile recycling or processing plastic bottles into fabric).

## Downcycling



Pre or post-consumer wastes are recycled and processed to produce material or products of lesser economic value (e.g., rags, carpet padding, or sound insulation products).



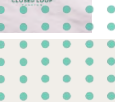
## How to put criteria into practice - Example

*Pakistan: 100% polyester blanket waste recycled into high thermal insulation:*

**Higg FEM Level 3: Do you or are you willing to work on circular economy systems?**

Some examples include:

- Textile waste that is recycled into a new material and then used for a new production run.
- Redesign and Upcycling
- Recovering ash/ dust to make bricks.
- Aluminium recycling to produce cans.



# Best-practices: Fibre-to-fibre recycling with other manufacturers





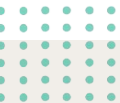
# HOW TO: Recirculate through Further Usage Strategies & EPR

## Step by Step Implementation of Further usage strategies

- ❑ Analysing your textile waste types and quantities and evaluating possible solutions on the market,, **identify the most suitable Further Usage opportunities** for your factory.
- ❑ Create a **Further Usage strategy plan** (to be included in your TWMS) specifying **Higg FEM 4.0** Preferred disposal methods you want to apply and including defined actions for implementation. Define budgets and timelines for your implementation plan. **Higg FEM 4.0**
- ❑ Implement these strategies keeping **record of all waste movements, sales, transports**, etc... (e.g.: this part can be added to the TW Mapping file as separate tab) as well as all **working permits, signed contracts and invoices with waste contractors, recyclers, and designers** you are going to work with. **Higg FEM 4.0 & GRS**
- ❑ In order to assess the efficiency of the Further Usage strategy, as well as to verify the real use of the sold textile waste, request **periodic assessment reports/ evaluations to your waste contractors/partners**. **Higg FEM 4.0**
- ❑ The staff working with TWM should know about the Preferred disposal methods in use at the factory and should be trained on this topic. **Higg FEM 4.0 & GRS**
- ❑ **Verification of end-of-use or disposal method** of non-hazardous waste is crucial. Facilities should evaluate their waste contractor(s) during the contractor selection process and conduct regular assessments (every 3 years). Documentation of proof of end-of-use must be requested and retained. **Higg FEM 4.0**

### What are your main challenges in this Textile Waste Management step?

→ Write them down on your working sheet.



# របៀបបញ្ជូនបន្តនៃយុទ្ធសាស្ត្រប្រើប្រាស់បន្ថែម

## ការបញ្ជូនបន្តនៃយុទ្ធសាស្ត្រប្រើប្រាស់បន្ថែមពីមួយជំហានទៅជំហាន

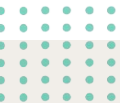
- ❑ ការវិភាគប្រភេទ និងបរិមាណសំណល់វាយនភ័ណ្ឌ និងវាយតម្លៃដំណោះស្រាយដែលអាចកើតមាននៅលើទីផ្សារ កំណត់ឱកាសប្រើប្រាស់បន្ថែមដែលសមរម្យបំផុតសម្រាប់រោងចក្ររបស់អ្នក។
- ❑ បង្កើតផែនការយុទ្ធសាស្ត្រប្រើប្រាស់បន្ថែមជាពិសេសទៅលើ **Higg FEM 4.0**។ វិធីសាស្ត្របោះចោលដែលគួរជាទីពេញចិត្តដែលអ្នកចង់អនុវត្ត និងរួមបញ្ចូលសកម្មភាពដែលបានកំណត់សម្រាប់ការអនុវត្ត។ កំណត់ថវិកា និងពេលវេលាសម្រាប់ផែនការអនុវត្ត **Higg FEM 4.0**
- ❑ អនុវត្តយុទ្ធសាស្ត្រទាំងនេះរក្សាកំណត់ត្រានៃចលនាកាកសំណល់ទាំងអស់ ការលក់ ការដឹកជញ្ជូន ក៏ដូចជាលិខិតអនុញ្ញាតការងារទាំងអស់ កិច្ចសន្យាដែលបានចុះហត្ថលេខា និងវិក្កយបត្រជាមួយអ្នកម៉ៅការសំណល់ អ្នកកែច្នៃសំរាម
- ❑ ដើម្បីវាយតម្លៃប្រសិទ្ធភាពនៃយុទ្ធសាស្ត្រប្រើប្រាស់បន្ថែម ក៏ដូចជាដើម្បីផ្ទៀងផ្ទាត់ការប្រើប្រាស់ពិតប្រាកដនៃសំណល់វាយនភ័ណ្ឌដែលបានលក់ សូមស្នើសុំរបាយការណ៍វាយតម្លៃ/ការវាយតម្លៃតាមកាលកំណត់ទៅកាន់អ្នកម៉ៅការសំណល់របស់អ្នក **Higg FEM 4.0**
- ❑ បុគ្គលិកដែលធ្វើការជាមួយ TWM គួរតែដឹងអំពីវិធីសាស្ត្របោះចោលដែលត្រឹមត្រូវហើយកំពុងអនុវត្តនៅរោងចក្រ ហើយគួរតែត្រូវបានបណ្តុះបណ្តាលលើប្រធានបទនេះ: **Higg FEM 4.0 & GRS**
- ❑ ការផ្ទៀងផ្ទាត់នៃការប្រើប្រាស់ ឬវិធីចោលសំណល់គ្មានគ្រោះថ្នាក់ គឺជារឿងសំខាន់

តើអ្វីជាឧបសគ្គជំនួយសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភ័ណ្ឌ?  
 → សូមសរសេរចូលសន្លឹកកិច្ចការ.

# Tracking & Monitoring

Records of the quantities of reused, recycled, resold and disposed waste are **fundamental KPI's** for a TWM system that enables circularity and can be transformed into environmental data related to natural resources and emission savings.

A **detailed inventory** provides the opportunity to identify new customers and target groups as well as suitable waste trading platforms.



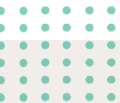
# HOW TO: Tracking & Monitoring

## Step by Step Implementation of Tracking & Monitoring of textile waste

- ❑ Using the **Textile Waste Mapping excel sheet**, as suggested all along the 5 TWM steps, is the beginning when building up a Tracking & Monitoring system for your TW. This document includes all relevant information about waste generation points, type of waste, quantities, etc..
- ❑ The next step is to **establish procedures to collect and track waste data**:
  - Examples include tracking of on-site movements through internal lists, waste invoices, receipts for waste materials that are sold, etc.
  - If estimation techniques are used to calculate the amount of waste, the methodology should be clearly defined and be supported by verifiable data.
  - Record data (e.g., daily, weekly, monthly waste quantities) in a format that is easy to use and review.
- ❑ In the long term it is advisable to implement an **electronic system for the monitoring and tracking of textile waste**, so that data from different waste points of generation, sorting stations and waste warehouses can be easily merged, analysed and an automatic system for inventory can be implemented.
- ❑ The tracking of waste should be carried out at different stages: waste generation points, collection points, waste warehouse, waste yard.

**What are your main challenges in this Textile Waste Management step?**

**→ Write them down on your working sheet.**



# របៀបតាមដាន

## ការអនុវត្តវិធីសាស្ត្រតាមដានពីមួយជំហានទៅជំហាន

- ❑ ការប្រើប្រាស់ Excel Waste Mapping ដូចដែលបានណែនាំទាំងអស់តាមជំហាន 5 TWM គឺជាការចាប់ផ្តើមនៅពេលបង្កើតប្រព័ន្ធតាមដាន និងត្រួតពិនិត្យសម្រាប់ TW
- ❑ ជំហានបន្ទាប់គឺបង្កើតនីតិវិធីដើម្បីប្រមូល និងតាមដានទិន្នន័យសំណល់
  - ឧទាហរណ៍រួមមានការតាមដាន តាមរយៈបញ្ជីផ្ទៃក្នុង វិក្កយបត្រសំណល់ បង្កាន់ដៃសម្រាប់សម្ភារៈសំណល់ដែលត្រូវបានលក់។ល។
  - ប្រសិនបើបច្ចេកទេសប៉ាន់ស្មានត្រូវបានប្រើប្រាស់ដើម្បីគណនាបរិមាណសំណល់ វិធីសាស្ត្រគួរតែត្រូវបានកំណត់យ៉ាងច្បាស់ និងត្រូវបានគាំទ្រដោយទិន្នន័យដែលអាចផ្ទៀងផ្ទាត់បាន។
  - កត់ត្រាទិន្នន័យ ( ឧ. ប្រចាំថ្ងៃ សប្តាហ៍ ប្រចាំខែ ) ក្នុងទម្រង់ដែលងាយស្រួលប្រើ និងពិនិត្យ។
- ❑ ក្នុងរយៈពេលវែង គួរតែអនុវត្តប្រព័ន្ធអេឡិចត្រូនិកសម្រាប់ត្រួតពិនិត្យ និងតាមដានកាកសំណល់វាយនភ័ណ្ឌ។
- ❑ ការតាមដានកាកសំណល់គួរតែត្រូវបានអនុវត្តនៅដំណាក់កាលផ្សេងៗគ្នា៖ ចំណុចបញ្ចេញកាកសំណល់ ចំណុចប្រមូលសំរាម កន្លែងដាក់កាកសំណល់។

តើអ្វីជាឧបសគ្គជំនួយសម្រាប់អ្នកក្នុងការគ្រប់គ្រងកាកសំណល់វាយនភ័ណ្ឌ ?  
→ សូមសរសេរចូលសន្លឹកកិច្ចការ.



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# PART 2: Q&A

Waiting for responses ...



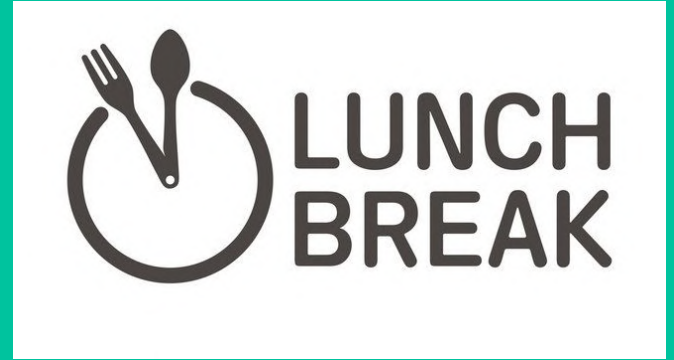


Before going for lunch break, tell us how do you feel after the first 2 sessions !

There's no correct answer!



សម្រាក !



60-minute lunch break



# 6. How to improve your Higg FEM - Waste score

# Preparing for Higg FEM 4.0



## Higg FEM 4.0

### Main takeaways:

- Higg FEM 4.0 has an increased focus on textile waste and circular economy systems
- Important is to track different hazardous and non-hazardous waste streams and start with setting a baseline
- Focus is on reducing waste amounts and improving waste disposal methods

### Checklist

#### How can your facility get started:

- Track facility's hazardous and non-hazardous waste streams
- Set baseline for hazardous and non-hazardous waste streams
- Set targets to reduce waste
- Set targets to improve waste disposal methods
- Baseline to monitor progress
- Develop an implementation plan
- Segregate waste by material composition and type
- Store waste materials separately
- Map waste flows
- Provide TWM trainings to employees
- Track and report waste streams digitally to offer information to waste solution providers

# Higg FEM Waste - Improving scores

## Level 1

When the facility:

- **Separates** hazardous and non-hazardous waste streams
- **Tracks** these waste streams
- Segregate and store the waste streams separately
- **Have well marked** waste storage areas
- **Provides training** to employees regarding segregation
- **Forbid waste disposal actions** including open burning, open dumping, burying waste

## Level 2

When the facility:

- **Set baselines** for hazardous and non-hazardous waste streams and waste disposal methods
- **Set targets to reduce** hazardous and non-hazardous waste and **improving** waste disposal methods
- **Has an implementation plan** to improve waste disposal methods
- **Reduced** hazardous and non-hazardous waste generation and improved waste disposal methods
- **Validate the final disposal** and treatment of all **hazardous** wastes

## Level 3

When the facility:

- **Validate the final disposal** and treatment of all **non-hazardous wastes**
- Disposes waste through **Preferred disposal methods**
- Is willing to work on a **circular economy system**



# Improve waste disposal methods

## Least Preferred Options

- Energy recovery ((e.g., Incineration with energy recovery for Recyclables);
- Landfill/dumping with no control measures
- Onsite incineration without energy recovery for recyclables
- Offsite incineration without energy recovery for recyclables;
- Other

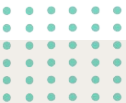
## Less preferred options -

Energy Recovery or  
Non-valorized Disposal

- Incineration with energy recovery for non-recyclables only
- Residual management (physical, chemical, biological treatment)
- Onsite incineration without energy recovery for non-recyclables
- Offsite incineration without energy recovery for non-recyclables
- Other treatment
- Responsibly managed landfills

## Preferred options - Material Recovery

- Reuse
- Recycle (including Upcycle)
- Downcycle



# **7. Recyclers Introduction and Requirements**

# Recycler introduction #1



# Recycler introduction #2



**SHUN WEI**

# Shun Wei Requirements - Segregation

## 1. Waste sources:

- Textile waste from **cutting table**.
- Textile waste from overlock/sewing process can be collected **if and only if** factory gives 100% assurance that there are **no metal contamination** (needle or needle fragment).

## 2. Contamination Removal: No foreign objects (textile only and separate by process)

- Thoroughly inspect and remove any foreign particles, such as paper, plastic, food, food wrapper, etc. from the textile waste to **maintain quality and cleanliness**.
- higher price would be offered to the factory able and willing to fulfill the above criteria.

## 3. Segregation criteria:

### Material type includes:

- 1 knits
- 2 woven
- 3 denim

### Material pattern includes :

- 1 solids
- 2 prints

### Composition include:

- 1. 100% Cotton
- 2. CVC (more than 30 % cotton )
- 3. 100% Polyester
- 4. \*Other

### Packing:

- 1 bag = 1 composition = 1 color



# Shun Wei Requirements - Marking

## 4. Marking:

- Mark **each fabric waste bag** with its composition, material type, pattern, and color information. Use identification stickers on packaging of fabric rolls for easy reference.
- In permanent marker manually write the information onto the bags.
- QR code system will be provided by us, please inquire for more details.
- **Quantity (in kg) must be mentioned.**

### Label example

Quantity: 20kgs  
Composition: 100% cotton  
Source: Factory XYZ  
Pattern: solid  
Colour: White  
Material type: Knit

### Sticker



### Traceability Reporting

Web version – for participating factory

- Under development
- Reports exportable in pdf format
- Data integrity 5 years minimum
- Release date : JUNE 2024

App version – for Shun Wei ONLY

- Under development
- Customizable reports, rich with features
- Release date : APR 2024

# Shun Wei Requirements - Packing

## 5. Packing:

- Use your own bags, or we can also provide you with PP bags.

Acceptable:

### **Polybag (preferred)**

- Transparent & Reuseable
- Weather proof



**Fabric bags made from end roll**  
recyclable  
sticker doesn't stick



**PP bag (least preferred)**  
cheapest option  
not good for the environment



## 6. Storage:

- Store fabrics in a way that prevents mixing and contamination with other materials, maintaining the integrity of each type. These guidelines aim to streamline the sorting process, ensure product identification, and uphold the quality of the stored fabrics.

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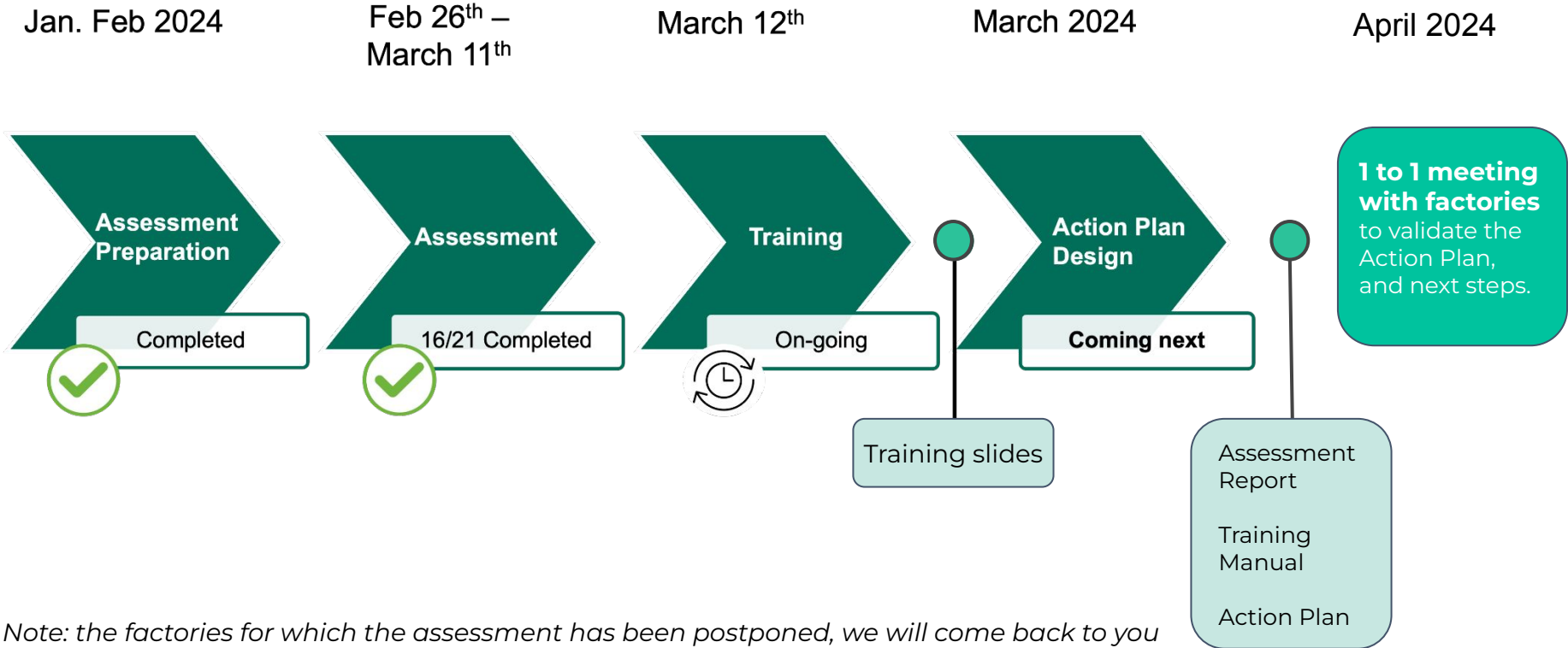
# PART 3: Q&A

Waiting for responses ...



## 8. Next steps

# Overall timeline



*Note: the factories for which the assessment has been postponed, we will come back to you shortly to agree on a new assessment date in April.*

## From the Action Plan Onwards

1

### **Understand and approve your TWM Action Plan**

- waste reduction and diversion objectives;
- set of measures with timeline, responsibilities and people assign
- indicative and doable investment and operation plan
- guidelines to ensure traceability using RR Platform

2

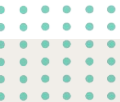
### **Set an internal Task Force**

- form a team to handle the planning, implementation and monitoring of the action plan
- utilize the knowledge gained during the training today

3

### **Implement your TWM Action Plan**

- online meeting between Sevea National Expert, GIZ and the Task Force every 2 weeks
- visit after 2 months to assess overall progress



## Next steps - March/April 2024

### Assessment

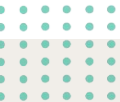
1. Closed Loop Fashion (CLF) will provide their **assessment reports**

### Training

2. A **training manual** will be designed and translated in Khmer

### Action Plan

3. Based on the Assessment results, CLF will design **tailored made action plan** for each factory;
4. This action plan will be presented, discussed and validated during a **individual meeting with each factory**;
5. A **task force** inside the factory will be assigned to implement the action plan. This task force will be **supported by the Project Team**.



# Contact Details



**CHUON VICHHEKA**

**Garment & Sustainability  
Consultant**  
Sevea

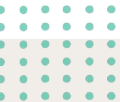
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# PART 3: Q&A

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**Closing remark**

សូមអរគុណ !