

# 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



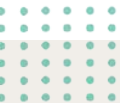
**FABRIC** Cambodia



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



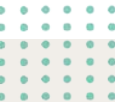
**CHUON VICHHEKA**

**Garment & Sustainability  
Consultant**  
Sevea



**CHANCHHAYA CHHOM**

**Garment & Sustainability  
Consultant**  
Sevea



## Meet the GIZ Team



**KRISTIN SOMMER**

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



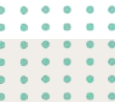
**SOKCHEA LAY**

**Private Sector  
Development Advisor**  
GIZ-FABRIC



**BUNLONG OU**

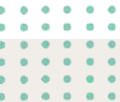
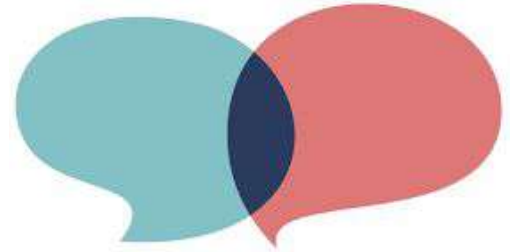
**Environmental  
Sustainability Advisor**  
GIZ-FABRIC



## Who are you ?

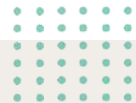
Turn around and take **5 minutes** to discuss with the person behind you:

- 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



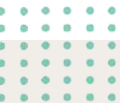
Prepare your facility for standard requirements  
Higg FEM / GRS



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 ?

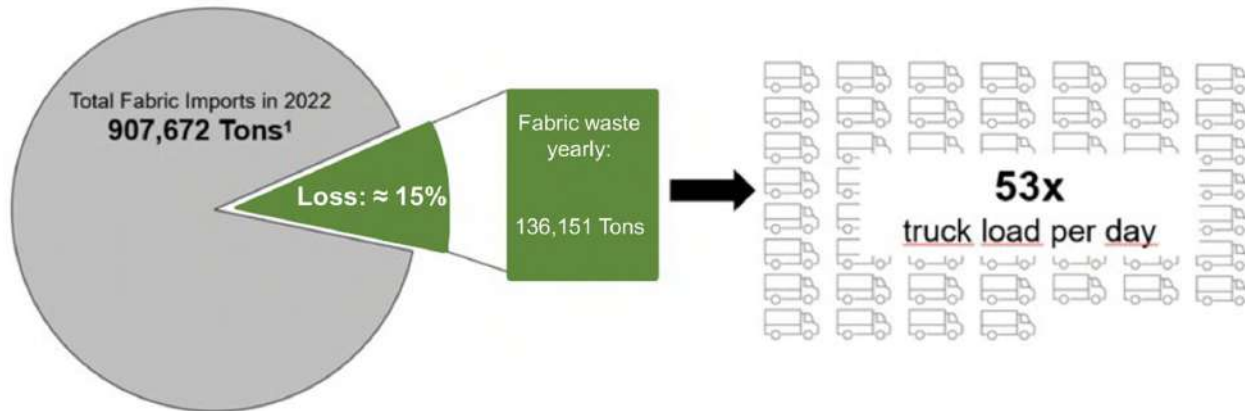
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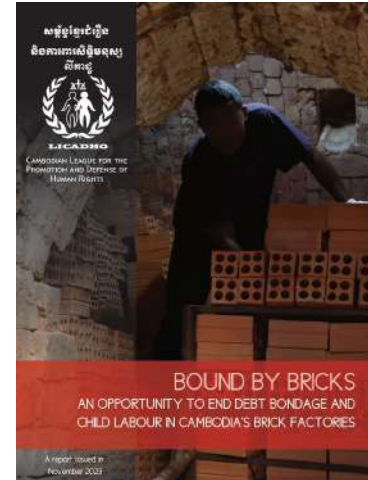
# **1. Introduction of the Textile Circularity Pilot Project (WIP4C)**

# 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](#)

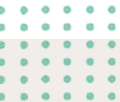


Waste Stream Study - Cambodia

# Objective of the Textile Circularity Pilot

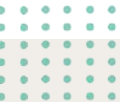
**Collective action** between brands, factories and recyclers to:

- 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

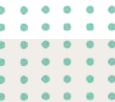


Recycling partners

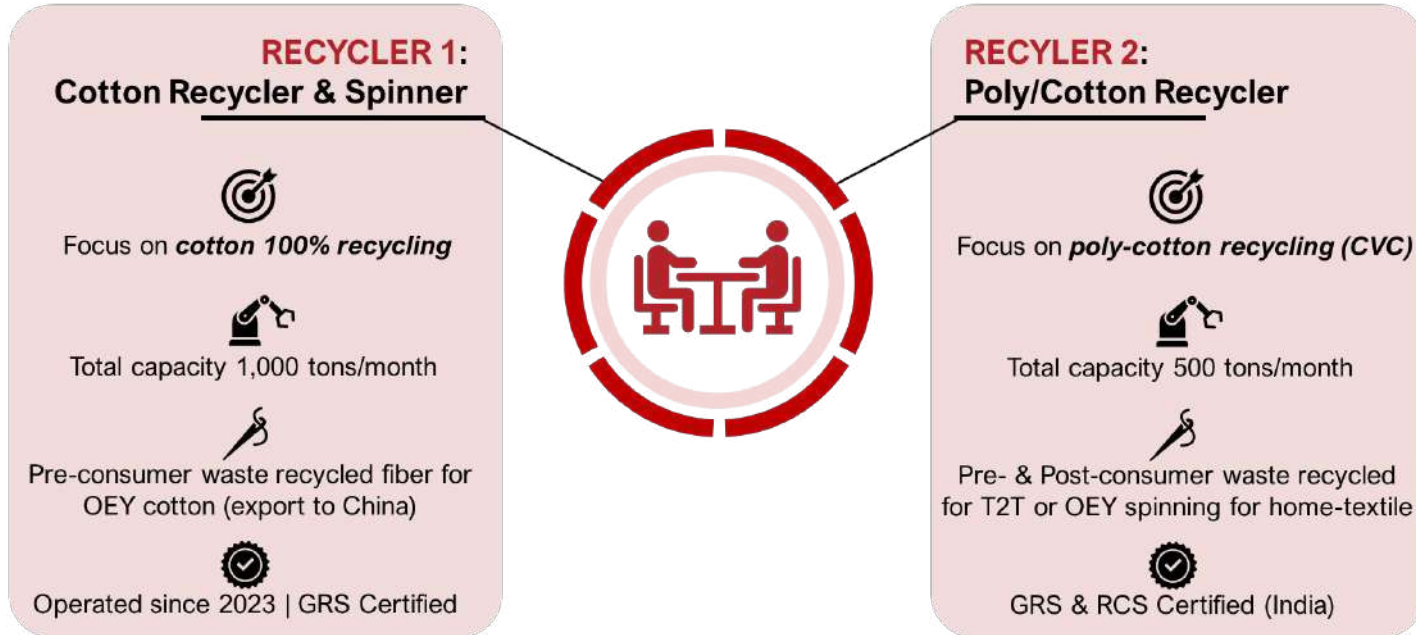
TAFTAC & Govt



Project Supporters



## 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.



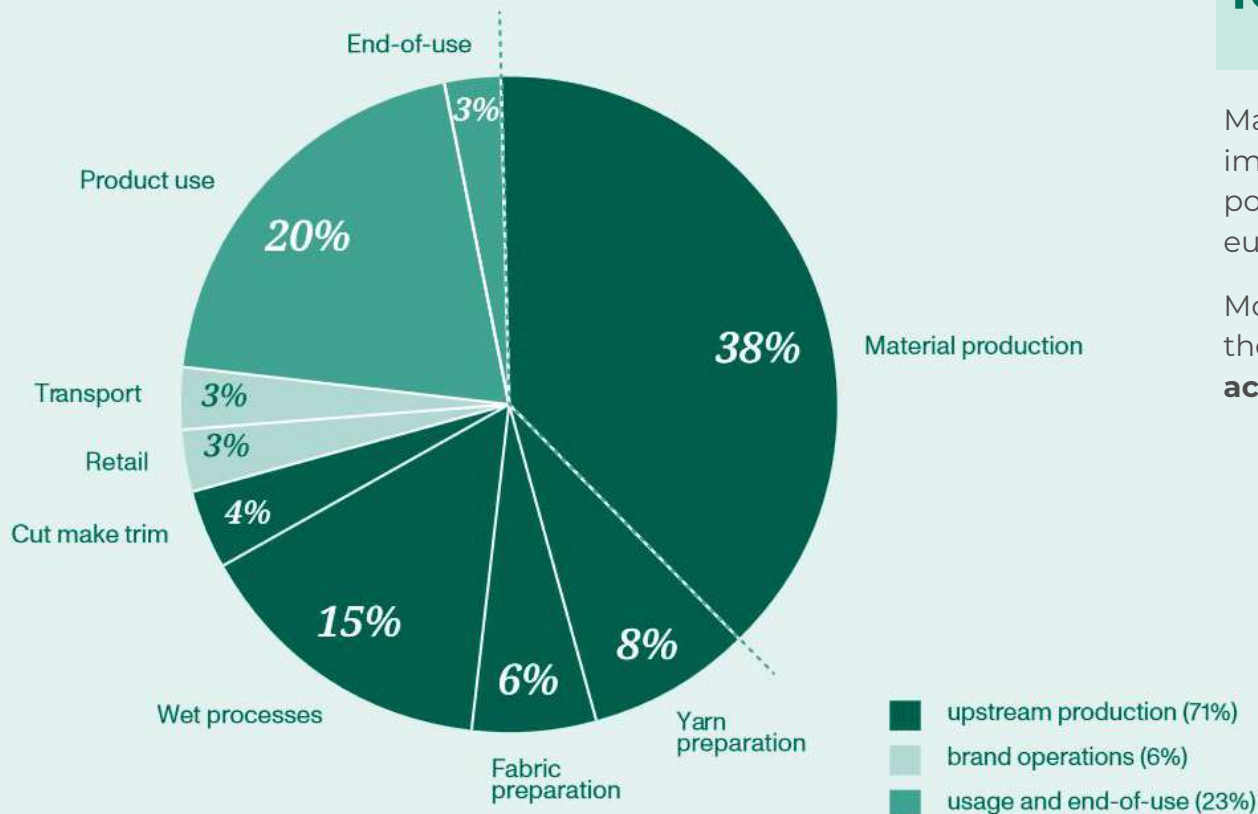
## **Fiber-to-fiber recycling solutions not at a commercial scale**

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

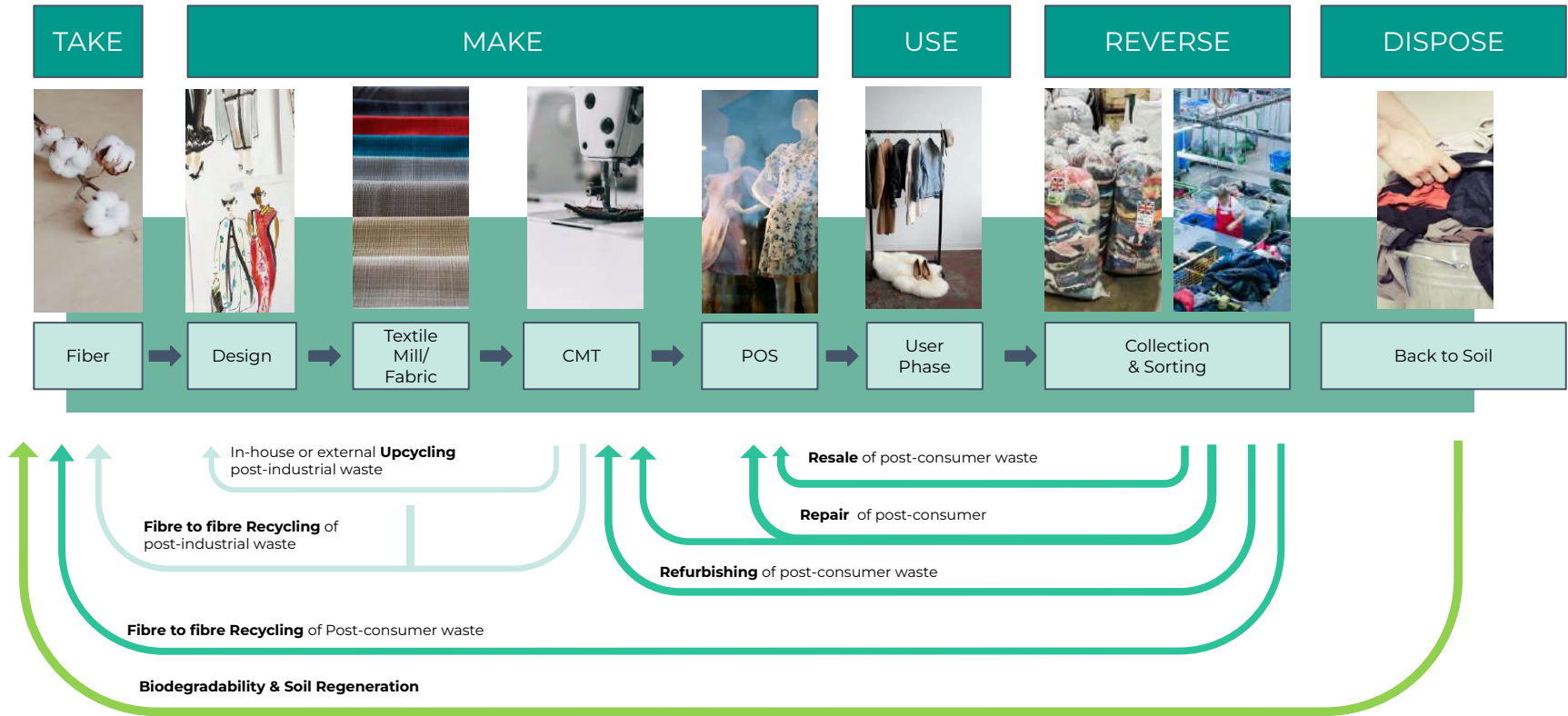


## Environmental footprint

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

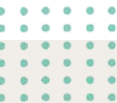
## INDONESIA WASTE VOLUME BY SUB-PROCESS

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> , RECOVER, FERRE	● 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, EVR <sup>3</sup> NU, SA <sup>4</sup> XCELL, IONCELL, Spinnova	○ 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 <sup>5</sup> EO2, grēn, CARBIO <sup>6</sup>	○ 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, P <sup>7</sup> LYLANA	● 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	BOOK <sup>8</sup> TEXX, irc, worn <sup>9</sup> again	○ Several technologies tested at pilot scale, need to improve purity and drive scale to improve economics

# 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

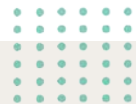
# EU Waste hierarchy



## EU-Waste Framework Directive

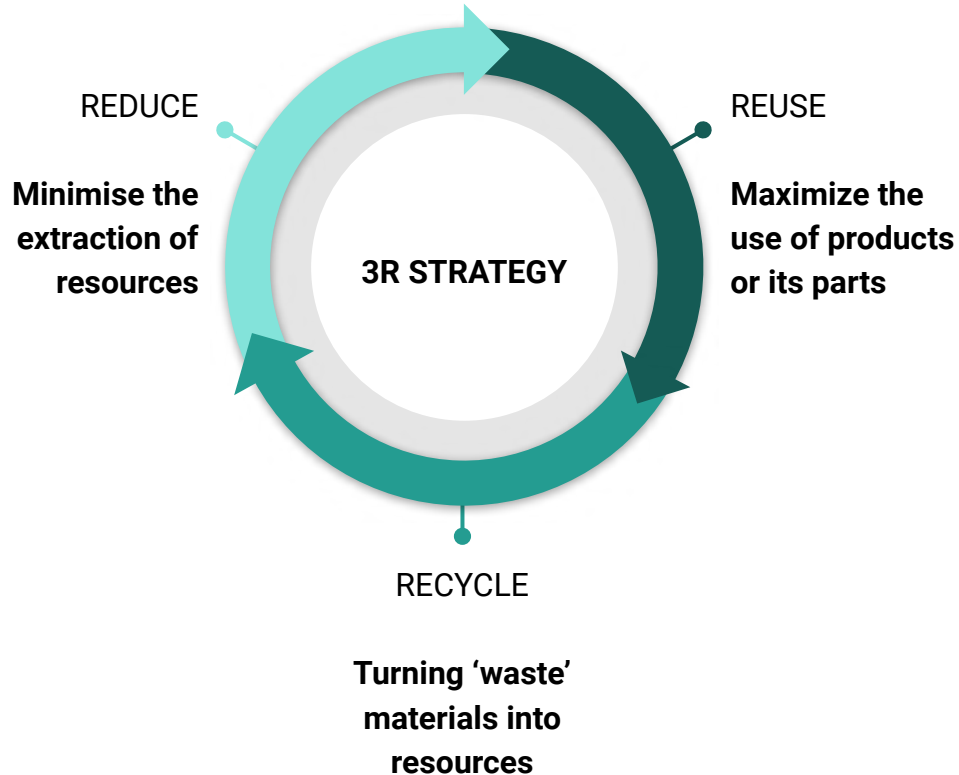
the new Directive expected by March 2024

- 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**

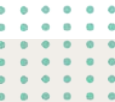
# Cambodian 3R Strategy



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

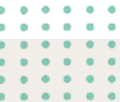


Law



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](#)]

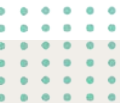
**Purpose:** to manage solid waste by introducing measures to eliminate solid waste from the site to the final landfill to ensure environmental protection, biodiversity conservation, and public health protection.

### **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:

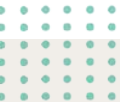
- Article 26 of the Customs Law and Regulations
- MEF Prakas 105 on Management of Goods Exempt Duties and Taxes
- GDCE 0059/20 on Wastage Disposal under 20T without Inspection
- WTO Guide

#### Under 20 tons around 3 months:

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

#### Over 20 tons over 3 months:

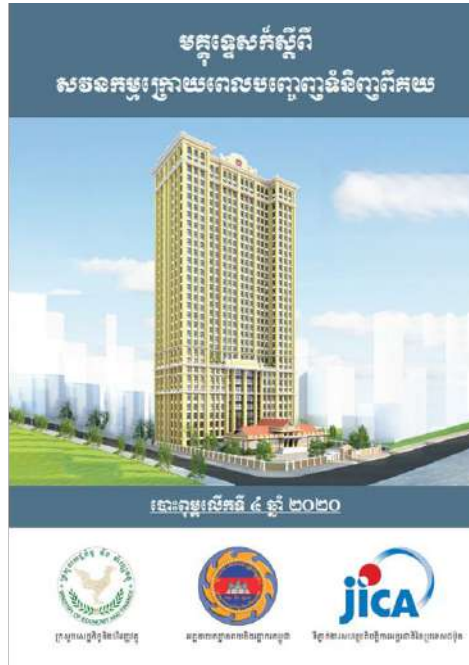
- inspection from GDCE
- the factory need to store the waste until inspection



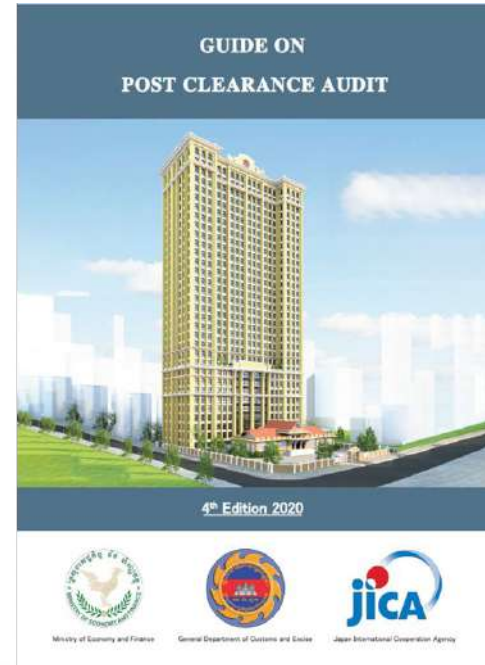
# Customs regulation



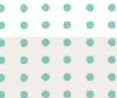
ភាសាខ្មែរ [[តំណាង](#)], English [[Link](#)]



ភាសាខ្មែរ [[តំណាង](#)]



EN Version [[Link](#)]



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



# PART 1: Q&A

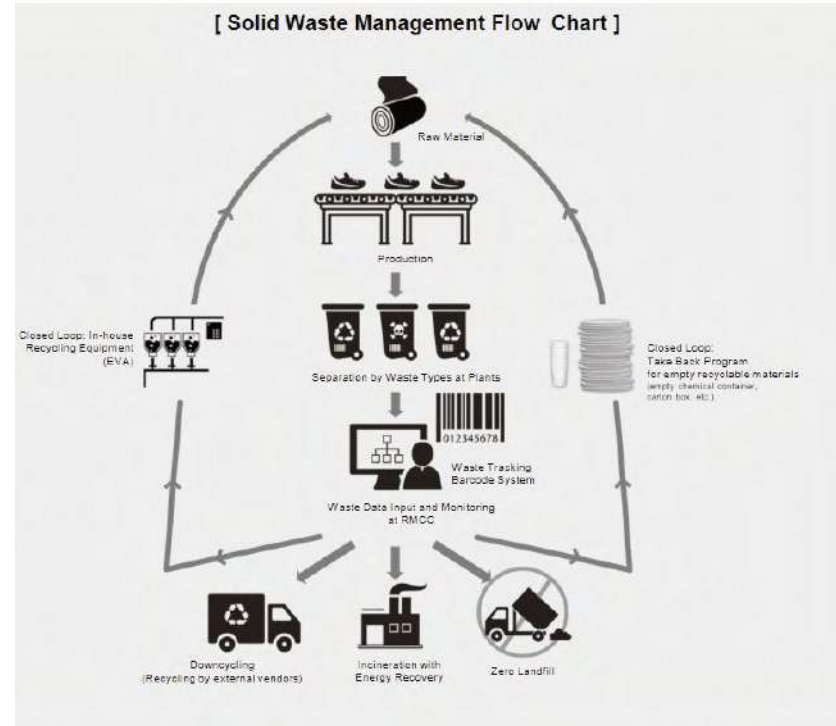
Waiting for responses ...



# **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:

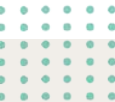


- **Identify the types** of wastes that are generated at your facility.
- Ensure the appropriate **waste management** onsite (e.g., storage and disposal).
- Understand how your wastes are **treated/disposed** of after leaving your facility.
- **Track and report** the quantity of wastes generated at your 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.



# 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**

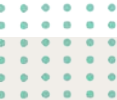
Do you pass waste on to a waste handler or trader? **Yes**

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?



## Best-practices - waste collection



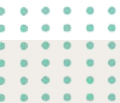
Collection of waste from **automatic cutting table** into three units: Fabric scraps, Paper, Plastics



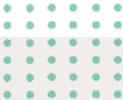
Fabric waste

Paper waste

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



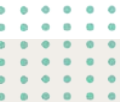
## Best-practices - Segregation / Sorting



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)



# Best-practices - Storing of waste

Weighing and labeling before storing waste streams



No smoking  
No drinking  
No eating



Clearly labeled interim storage area



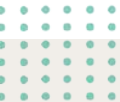
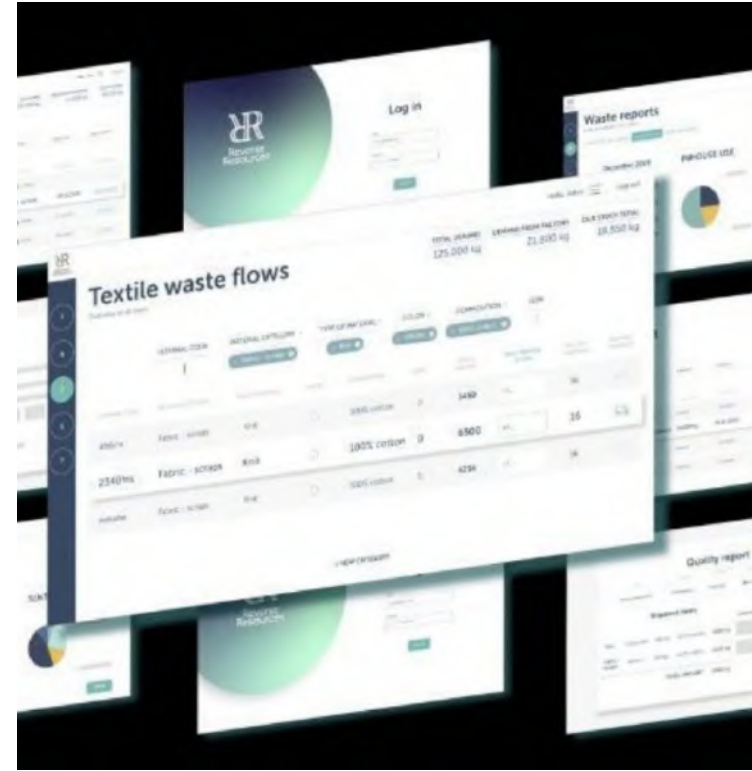
Clear marked and clean final storage area for 'Fabric Scraps'



# 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.



Join at [menti.com](https://menti.com) | use code 5594 6646



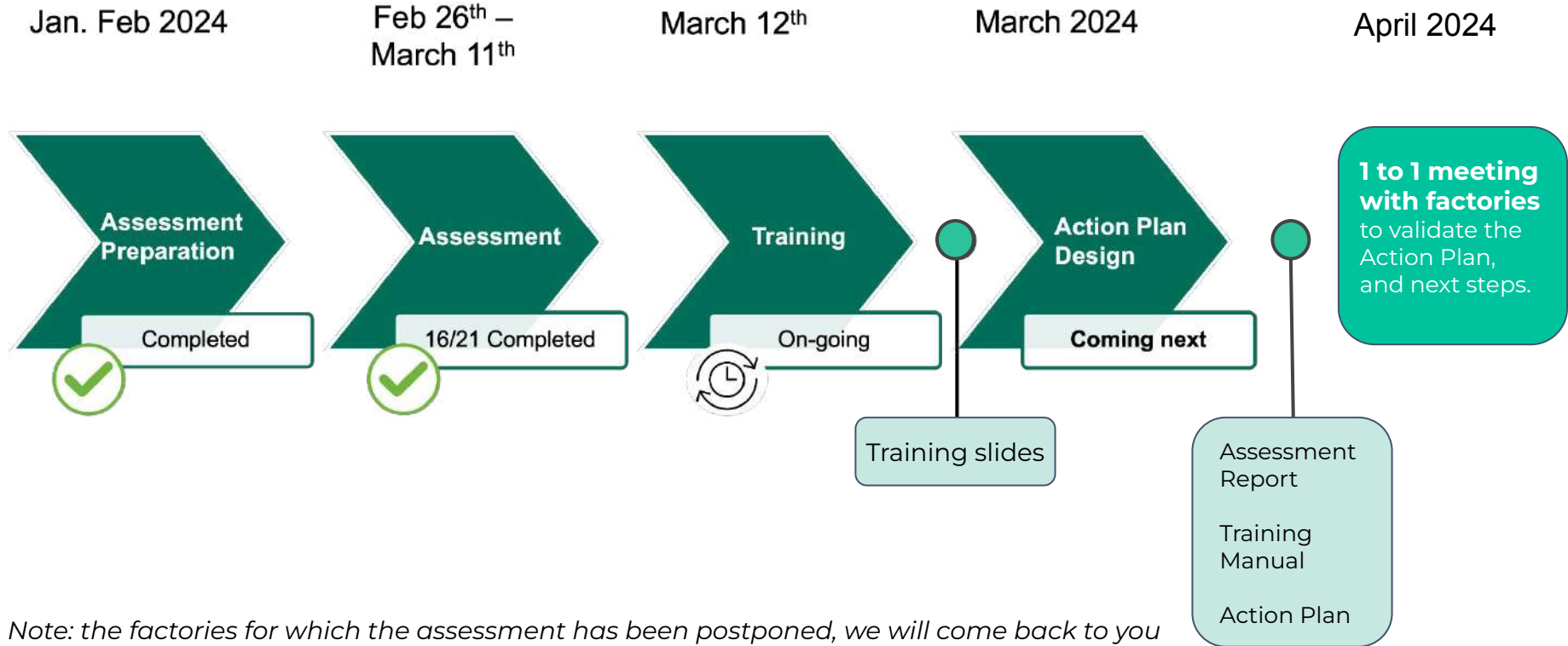
# PART 2: Q&A

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

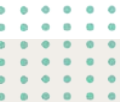
### **Set an internal Task Force**

- 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



# Contact Details



**CHUON VICHHEKA**

**Garment & Sustainability  
Consultant**  
Sevea

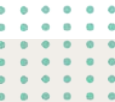
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