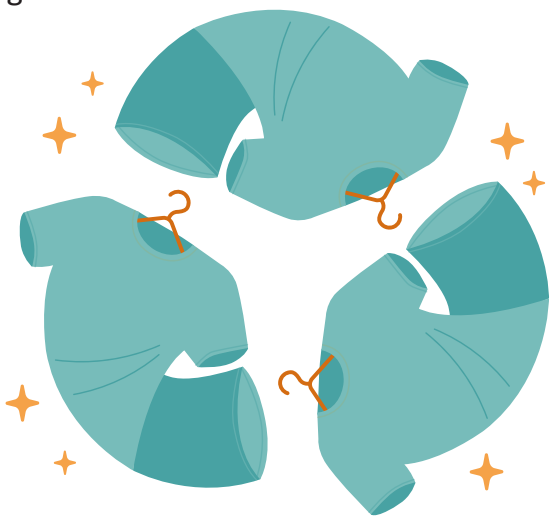
Recycling of Textile

Educational Module Toolbox

Dear reader

Welcome to the toolbox of the educational module "Recycling of textile".



In these pages, you will explore the environmental impact of textiles and get equipped with the tools to make a tangible difference. It will guide you through the world of textile recycling, where every unraveling thread holds the potential for positive transformation.
These tools mix learning with hands-on activities. They will give you an opportunity to learn about different fabrics and environmental impact, engage in meaningful discussions on fast fashion and come up with sustainable alternatives.

In these tools you will explore textile recycling from production to disposal.
This toolbox is all about taking action. Flip through the pages to find workshops that will get you involved.

This toolbox is complementary to our educational module "Recycling of textile" and is aimed to deliver its content in an engaging and interactive manner. The methodology is based on principles of Non-Formal Education and experiential learning. The presented tools are mainly designed for young people aged 13-30 years old and most of them are a mixture of group work and work in pairs.They can be applied both by youth work sphere representatives as well as by active young people themselves.

To endless discoveries!
"4F- Fast Fashion? Fast Forward!" project team

Graphic Design: Lusine Ishkhanyan

Diverse World of Textile

Objective

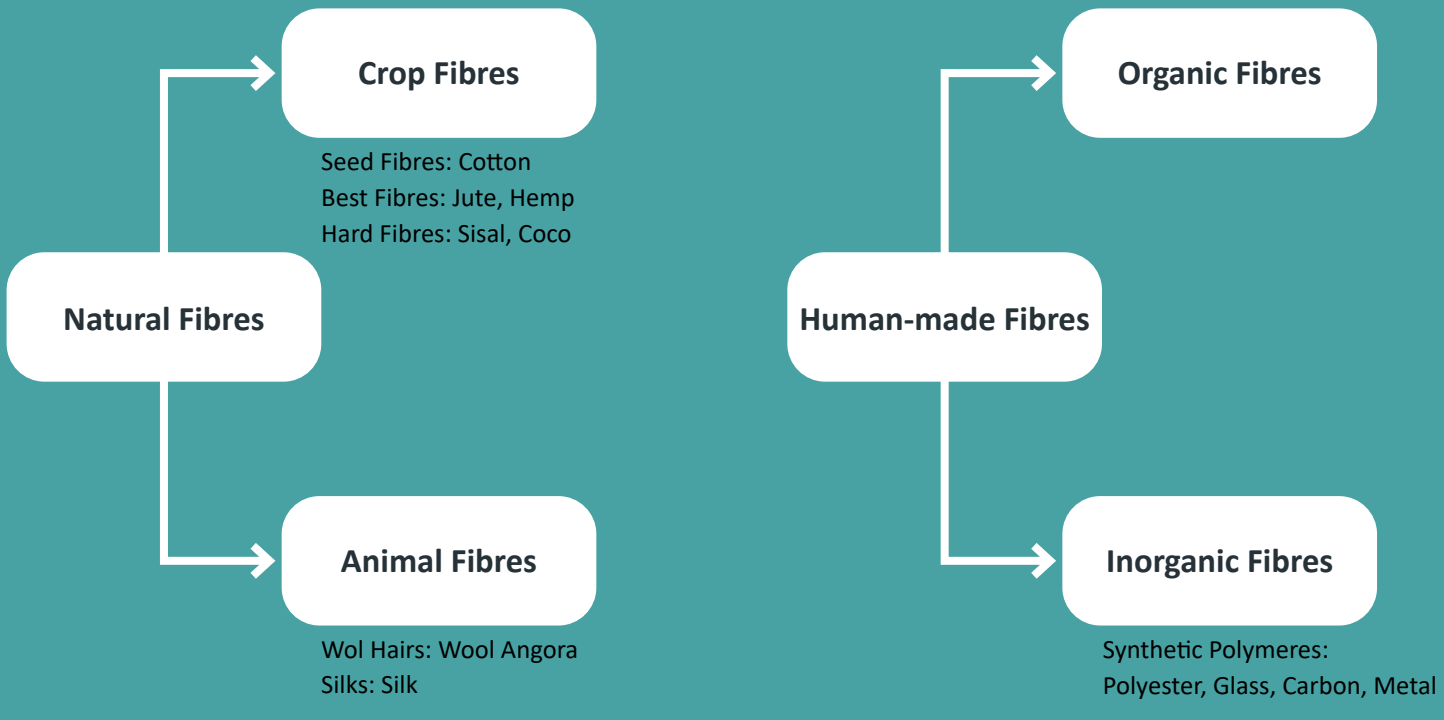
The objective of the tool is to raise learners' awareness on different types of textiles, in order to be able to identify them, understand the way of their production and the environmental impacts of it.

Context

Learning to identify different textile materials is important when making sustainable choices. You can look for labels or tags that indicate the fiber content of a product. You can also learn to recognize the characteristics of different fibers, such as the softness of cotton or the sheen of silk, to help identify the materials used.

Understanding the characteristics and environmental impact of textile materials empowers young people to make informed choices when it comes to purchasing the garments, caring for their clothes, and disposing of the textile products they do not need anymore. It encourages them to consider sustainability and the long-term effects of their choices on the environment.

The diagram below illustrates the types of natural and human-made fabrics, offering a visual guide to help you explain them to learners more clearly.



Type

Group work /starting from 10 people in total/ can be carried out by 3-6 people in each group and the maximum advised number of participants is up to 30 in total.

Instructions

Divide learners into groups. Provide each group with a set of cards with textile names. Group members' task is to categorize the fabrics into main groups, namely natural fiber and human-made fibers. After placing each card with a fabric in a specific category, in the teams it is their task to write key characteristics or facts about each textile fiber. (E.g. how the material is produced, what that specific textile fiber is used for, what environmental impacts does the production have, etc.)

Set of cards can include the following:

- natural fabrics: flax/linen, hemp, cotton, jute, ramie, sisal, cashmere, wool, mohair, silk, vicuna.
- human-made fabrics: rayon, bamboo, acrylic, nylon, polyester, spandex, vinyon, viscose, olefin.

Reflection questions could be

- How did the process in your group go?
- What was the most interesting or surprising aspect you discovered while exploring the different textile fibers?
- Were there any fabrics that caused uncertainty or debate within your group?
- Were there any surprises in terms of sustainability or eco-friendliness of the textile fibers you made a research on?
- Are you considering making different clothing purchase choices based on what you learned?

Needed Materials

Set of cards/labels with fabric names (eventually pieces of clothing made of different textile fibers), A4 papers, flipchart and flipchart papers, markers.

Timing

65-70 min. Introduction to the topic (10 min), group work (25-30 min), presentations (5 min per group, 20 min max in total), reflection and evaluation (10 min).

Recycler ME

Objective

The objective of the tool is to raise learners' knowledge on textile recycling types and recycling roots.

Context

The process of converting waste materials into new products or materials, rather than throwing them away. Its purpose is to conserve resources, reduce waste, and decrease the environmental impact of waste. Recycling plays a vital role in sustainable waste management and offers significant environmental and economic benefits.

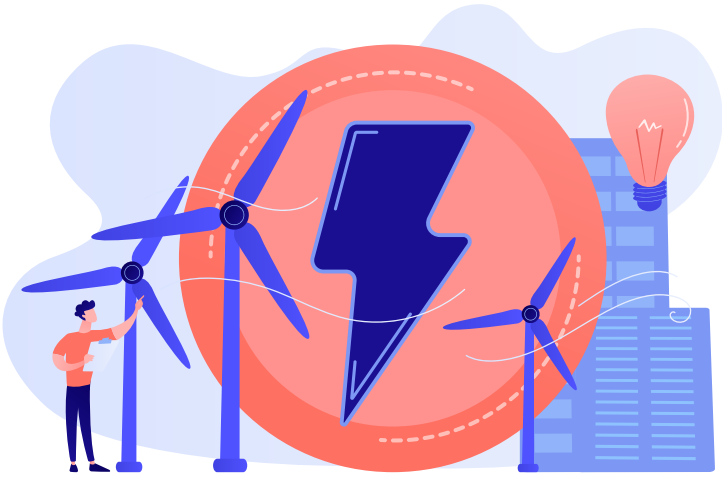
When we think about recycling, we often focus on paper, plastic, or glass. However, clothing recycling is an equally important aspect that often goes unnoticed. The production of clothes has a substantial environmental impact, yet awareness on this topic is not widespread.

Fortunately, textile recycling offers a promising solution to tackle the problem of textile waste. We'll dive deeper into the different types of textile recycling processes:

Mechanical Recycling: Mechanical recycling is a process that breaks down textiles into fibers by shredding and grinding them. These fibers can then be spun into new yarn and used to create fresh textile products.
Mechanical recycling helps to conserve resources by giving old clothes a new life, reducing the need for producing new materials. It's a great way to close the loop and contribute to a more sustainable fashion industry. However, it’s worth mentioning that if we want to keep the quality, in this case we still need raw materials.

Chemical Recycling: Chemical recycling focuses on breaking down textiles into their chemical components. This process enables the creation of new products using those components. For example, polyester fibers can be extracted from old polyester garments and used to make new polyester fabrics.
Chemical recycling is particularly useful for fabrics that cannot be mechanically recycled. It helps to reduce waste and promotes the reuse of valuable materials.

Thermal Recycling (Energy Recovery): Thermal recycling, also known as energy recovery, involves using the heat generated by burning textiles to produce energy. While this method can help reduce waste, it is not considered a sustainable solution due to the burning of valuable resources. Energy recovery is more suitable for materials that cannot be recycled mechanically or chemically, as it allows for the utilization of their energy content.



Type

Group work /starting from 10 people in total/ can be carried out by 3-6 people in each group and the maximum advised number of participants is up to 30 in total.

Instructions

Form small groups of learners (ideally 3-4 learners in each group). Provide each group with at least 3-5 samples of different textiles. Groups will have a task to sort the textiles into categories based on their composition (cotton, polyester, wool, mixed etc.) Next stage of group work will be creating a poster with the following information included:

- Definitions of recycling types
- Examples of textiles suitable for each recycling method (can be from the samples they have and much more)
- Benefits and challenges of each method
- Environmental impacts of each method
- Recycling challenges of textiles with mixed materials
- Effects of recycling of organic vs non-organic plant based fibers

Once the group work is done, organize short presentations and plenary discussion.

Reflection questions could be

- How was the process for your group?
- What new knowledge did you gain?
- What is the one key takeaway you have from this workshop about textile recycling?
- Did you have any debates in your group regarding the most suitable recycling method for an exact textile fiber?
- How might this knowledge influence your own consumer choices regarding textiles and clothing?

Needed Materials

Small samples of different textiles (each group should have 3-5 samples) flipchart and flipchart papers, markers, A4 papers, pens.

Timing

70-75 min. Introduction to the topic (10-15 min), group work (30 min), presentations (5 min per group, 20 min max in total), reflection and evaluation (10 min).

Textile Life Cycle

Objective

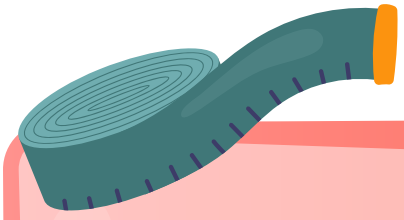
The objective of the tool is to raise awareness of the environmental and social impacts of the textile life cycle and promote sustainable practices at each stage.

Context

Have you ever wondered about the journey your clothes go through, from the moment they are made until they end up in your wardrobe, and beyond? Understanding the textile or clothing life cycle can help us make more informed choices and become conscious consumers of fashion garments. Here's an overview of the textile life cycle:

1

Raw Materials: It all begins with the raw materials used to make textiles. Fabrics can be natural like cotton, wool, and silk, or synthetic like polyester, nylon, and acrylic. These materials are grown, harvested, or manufactured.

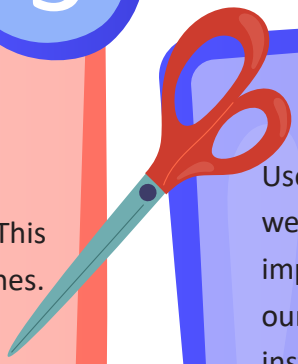


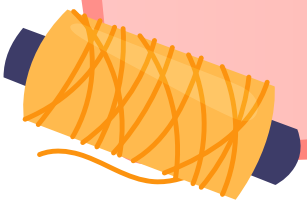
2

Production: In the production stage, the raw materials are transformed into fabrics and textiles. This involves processes like spinning, weaving, knitting, and dyeing.

3

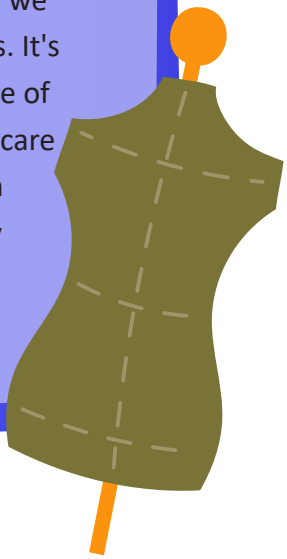
Distribution and Retail: Once the clothing items are ready, they are distributed and made available in retail stores or online platforms. This is where we usually buy our clothes.

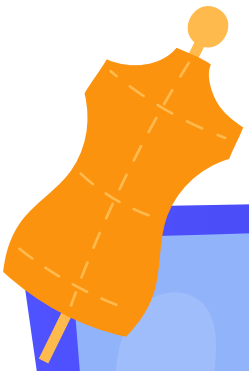




4

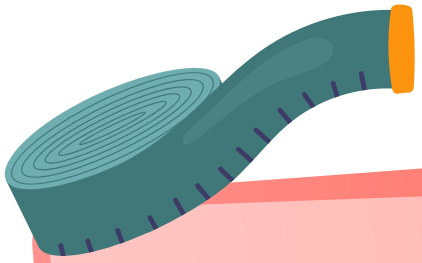
Use: The use stage is when we wear and enjoy our clothes. It's important to take good care of our garments by following care instructions, washing them properly, and repairing any damage.





5

Maintenance and Repair: Over time, our clothes may need maintenance or repairs. This can involve simple tasks like sewing buttons or fixing small tears. By maintaining and repairing our clothes, we can extend their lifespan and minimize the need for new purchases.



6

Donation and Resale: When we no longer need or want certain clothes, we can consider donating them to charities or thrift stores. Donating allows others to enjoy and use our pre-loved items. Alternatively, we can sell our clothes through online platforms or organize clothing SWAPs with friends and/or community.

We recognize open and closed loop recycling:

Closed-Loop Recycling: Closed-loop recycling refers to the recycling of materials from a product back into the same or a similar product. In closed-loop recycling, textiles are broken down into fibers, which are then purified and processed to create new textiles of comparable quality to the original material.

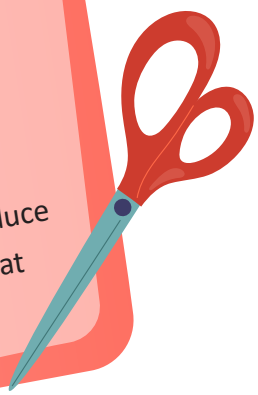
Open-Loop Recycling: Open-loop recycling involves recycling materials from a product into a different product. The resulting fibers are typically of lower quality than the original material and cannot be used to create the same type of product. Instead, they are used for alternative purposes.

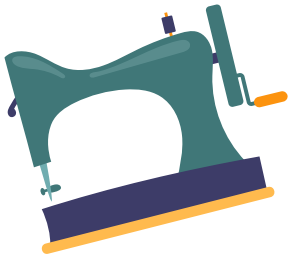
7

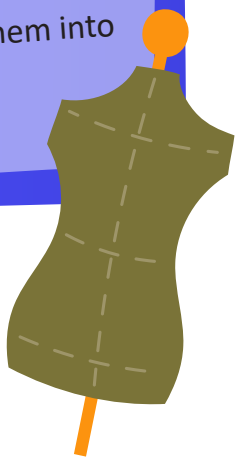
How about?
Recycling and Repurposing: If clothes are no longer usable or suitable for donation or resale, they can be recycled or repurposed. Textile recycling involves breaking down the fabrics into fibers that can be used to create new textiles or products. Repurposing means finding creative ways to use old clothes, like turning them into quilts, bags, or accessories.

8

Disposal: As a last resort, when clothes can't be donated, sold, recycled, or repurposed, they may end up as waste. It's important to dispose of clothes responsibly by using designated textile recycling bins or facilities. This helps to reduce the amount of clothing waste that goes to landfills.







Type

Group work /starting from 10 people/ can be carried out by 3-6 people in each group and the maximum advised number of participants is up to 30 in total.

Instructions

For small groups of learners. Ask group members to choose one item from their wardrobe.
They need to discuss the lifecycle of their garment. Starting with the raw material phase and production of the item:
Where does it come from? Where did they buy it? How long have they been using this item? Has it ever been repaired or remade maybe? How is it used?What happens to it after disposal? Will it be repaired, repurposed? If yes, how? Will it be sold or donated? When and why will they choose this option?
If as a last resort it should be disposed of, how will they organize it?

Let participants be creative! They can make a poster, or create a story or even if they prefer to perform while presenting their group work.
Give them space and time to present their discussion results too.

Reflection questions could be

- How was the process in your group?
- Did you ever reflect about your clothes journey before you bought them?
- What challenges and benefits did you discover while exploring the life cycle of your garment?
- What practical tips did you get for being more sustainable or maybe for giving a new life to your clothes?

Needed Materials

One wardrobe item from each participant (you can ask to bring it with them or it can be something they would be wearing that moment), flipchart flipchart papers, markers, A4 papers, pens.

Timing

70-75 min. Introduction to the topic (10-15 min), group work (30 min), presentations (5 min per group, 20 min max in total), reflection and evaluation (10 min).

Time for the Show

Objective

Objective of this tool is to inspire individuals and industry professionals to adopt more sustainable fashion practices by highlighting innovation and creativity.

Context

Organizing a Sustainable Fashion Showcase is a fantastic way to promote eco-friendly and ethical fashion practices. During such showcases, participants can explain their fashion choices, discuss the importance of sustainable fashion, and inspire their peers to make conscious fashion decisions.

Type

Group work /starting from 10 people/ can be carried out by 3-6 people in each group and the maximum advised number of participants is up to 20 in total.

Instructions

Start by introducing learners to the concept of sustainable fashion and its importance in addressing environmental and social issues within the fashion industry. Provide background information on key sustainability principles, such as eco-friendly materials, ethical production practices, and circular economy approaches.

- Divide participants into pairs or small groups.
- Provide each group with materials that can be repurposed or if it is an ideal scenario, ask them to bring with them garment items they would like to remake and/or repurpose.

Participants are tasked with designing outfits using garment materials they have at their disposal. Each group will work to create their unique fashion pieces, highlighting the creativity and possibilities of sustainable fashion.

To facilitate the process and to give the learners a bit more structure, you can integrate sections such as:

- design and prototyping /e.g brainstorming on ideas, translating ideas into sketches or digital renderings/.

- construction and production /dedicate time to show and teach learners basic sewing and garment construction techniques, emphasizing sustainable practices such as zero-waste pattern cutting, then provide access to sewing machines, tools, and other equipment necessary for garment production, either through workshops or collaborative maker spaces.

Presentations

Let the learners be creative and present their show the way they want and see it.
From your side you can advise the fashion show to be accompanied by presentations on the importance of sustainable choices in the fashion industry.

Reflection questions could be

- How was the process for you? What were the most difficult and enjoyable parts?
- What new have you learned about sustainable practices?
- What skills did you gain that you could apply later on your own?
- Do you have more garment items at home that could be remade and used fashionably? Give a few examples.

Needed Materials

Textile materials provided by organizers or brought by learners, sketchbooks, drawing materials /if possible digital design software/, sewing machines, scissors, cutting tools, access to workshops or maker spaces, and design studios with equipment and facilities to make new garments.

Timing

Take your time to prepare thoroughly!
Such an event can last from 3 up to 4 hours or can be a full day event depending on the number of participants, difficulty of their sketches and quantity of new garments they want to produce, add adequate time for breaks as you envision it, etc.
Just make sure you dedicate enough time for each stage.

Recycling: History and Evolution

Objective

This tool is aimed to raise awareness on the evolution of recycling, foster a deeper understanding of the importance of recycling and inspire individual action.

Context

Learning about the history of recycling shows how people have found new ways to reuse materials over time. It highlights how resources can be used again and again and how changes in society affect how we manage waste. Understanding this helps us see the importance of being responsible for a sustainable future.

Type

Group work /starting from 10 people/ can be carried out by 4-5 people in each group and the maximum advised number of participants is up to 20 in total.

Instructions

Start with a small discussion about recycling and what learners know about it. Later divide learners into working groups (4-5 people in each).
Assign certain tasks and challenges to each team.
Below you will find examples of tasks for 3 groups.
Afterwards make space for learners to present their group works, organize plenary discussion and reflection about the activities.
The respective Handout can be found on the last page of this document.

1

- Explore how ancient civilizations recycled materials (e.g., Rome's lead recycling, Egyptian reuse of papyrus, etc).
- Research a historical figure or event related to recycling.
- Design a recycling symbol for Ancient times (you can choose a specific period and country).
- Brainstorm solutions to recycling challenges in your communities.

2

- Research a specific ancient recycling technique and demonstrate how it could be adapted for modern use.
- The Birth of Modern Recycling: Find out about pioneers like Henry Dunster and the development of recycling infrastructure.
- Design a new recycling symbol for nowadays.
- Brainstorm solutions to recycling challenges in your communities.

3

- Compare and contrast recycling practices in different historical periods (e.g., ancient Rome vs. 1970s America).
- Explore the impact of recent wars, economic crises, and environmental movements on recycling practices.
- Design a new recycling symbol for the 22nd century.
- Brainstorm solutions to recycling challenges in your communities.

Reflection questions could be

- What surprised you about the recycling history?
- How has recycling changed over time?
- What modern challenges do you think could be addressed using these ancient techniques?
- What inspired your design for the recycling symbols?
- What challenges do we still face in terms of recycling?
- What can individuals do to promote recycling?
- What did you find most interesting or valuable about these activities?

At the end present the “Personal recycling action plan”. This will encourage learners to take responsibility for their own recycling habits and empower them to apply what they’ve learned in their daily lives. Give the learners time to reflect and fill in their plans.

Needed Materials

Flipchart papers, markers, A4 papers, pens, “Personal recycling action plan” handout.

Timing

75-80 min. Introduction to the topic (10 min), group work (35-40 min), presentations (5 min per group, 20 min max in total), reflection and evaluation (10 min).

Name:
Date:

My Recycling Goals	
• Short term goal (1-2 weeks)	
• Mid term goal (1-2 months)	
• Long term goal (3+ months)	
“Reduce”actions I could take	
How can I consume less clothes?	
What are the garments I could avoid or buy less?	
“Reuce”actions I could take	
What are the items in my wardrobe I could reuse?	
How can I reuse them? (mention a few examples)	
“Recycle”actions I could take	
Which garments from my wardrobe I could give to recycling?	
What recycling facilities exist near me?	
“Educate”actions I could take	
Who are the people I can talk to about this topic?	
How will I spread awareness?	

Tracking my progress	
When can I say that I have made progress? (mention a few examples, e.g skill development, goal achievement, positive feedback from peers etc.)	
How will I reward myself for completing this action plan? (mention a few examples, e.g buying a chocolate, getting a massage, buying a recycled garment, etc.)	

Remember: Small steps can make a big difference!

Recycling Footprint and My Clothing Choices

Objective

This tool aims to raise learners' awareness on the environmental impacts of the recycling processes and shape conscious consuming attitudes and behaviors based on the recycling options the purchased garments will have in the future.

Context

Textiles, encompassing clothing, fabrics, and other textile products present unique challenges for recycling due to their diverse composition and the complexity of their production processes. Sometimes recycling of certain textiles can even have a bigger environmental impact than its production.

Pros of Textile Recycling

Reduces landfill waste: Diverts textile waste from landfills, conserving space and reducing methane emissions.
Conserves resources: Reduces the need for virgin materials, water, and energy used in textile production.
Energy savings: Recycling textiles often requires less energy than producing new fabrics.
Environmental benefits: Can help mitigate pollution caused by textile dyeing and finishing processes.
Economic opportunities: Creates jobs in the textile recycling industry.

Cons of Textile Recycling

Complex process: Sorting and separating different fiber types can be challenging and labor-intensive.
Lower quality: Recycled fibers often have a lower quality compared to virgin fibers, limiting their applications.
Limited end markets: There's currently a limited demand for recycled textiles compared to virgin materials.
Economic viability: Textile recycling can be economically challenging due to high processing costs and low-value end products.
Contamination: Textile waste often contains contaminants like buttons, zippers, and other materials, which can complicate the recycling process.

Type

/Group work /starting from 10 people/ can be carried out by 4-5 people in each group and the maximum advised number of participants is up to 20 in total.

Instructions

Start with a small discussion about pros and cons of textile recycling. Next, invite learners to form small groups of 3-4 people in each. Each team will have a worksheet to work on.
After the work in groups, provide time and space for learners to present their work and organize plenary discussion and reflection.

Group work tasks:

1. Natural fibres
2. Synthetic fibres
3. Blended combinations of natural and synthetic fibers

A worksheet example can be found on the last page of this tool.

Reflection questions could be

- How has this activity influenced your clothing choices?
- What surprised you the most about the complexities involved in textile recycling?
- How can your personal clothing choices contribute to reducing the environmental impact of the fashion industry?
- What do you think is the most significant challenge facing the textile recycling industry?
- What kind of changes would you like to see in the fashion industry to make it more sustainable?

Needed Materials

Flipchart papers, markers, A4 papers, pens, the “Environmental impact of recycling” worksheet.

Timing

70-80 min. Introduction to the topic (10-15 min), group work (30-35 min), presentations (5 min per group, 20 min max in total), reflection and evaluation (10 min).

“Environmental impact of recycling”Worksheet

Types of textiles		
• **Natural**	• **Synthetic**	• **Blends**
Exact type (e.g cotton, wool, silk, linen)	Exact type (polyester, nylon, acrylic, spandex)	Specific mixtures (e.g 20% cotton and 80% polyester)
1._____ 2._____ 3._____ 4._____	1._____ 2._____ 3._____ 4._____	1._____ 2._____ 3._____ 4._____

Impact	
Resource consumption	
Chemical pollution	
Landfill burden	
Microplastic pollution	

Challenges in Textile Recycling
(e.g fiber separation, quality degradation, limited end markets, economic viability etc.)

Potential solutions

Textile Transformation: Turning Waste into Art

Objective

Objective of this tool is to raise awareness about textile waste and inspire creativity by using scraps and recycled textiles to create unique art pieces.

Context

Textile waste is a growing environmental issue. By transforming old fabrics into art, we can highlight the potential of repurposing and encourage sustainable practices. This activity aims to make participants aware of the impact of textile waste while fostering creativity and problem-solving skills.

Type

Group workshops starting from 10 people/ can be carried out by 4-5 people in each group and the maximum advised number of participants is up to 20 in total.

Instructions

Start with a brief discussion about the issue of textile waste and the importance of recycling. To make it more interactive and fun, show examples of textile art to inspire the participants (e.g., fabric collages, tapestries, sculptures). One example can be found here: https://fox.build/member_project/textile-art-from-fabric-scraps/.

Ask learners to reflect for a few minutes individually what topics they would like to raise with their waste art. Next, ask everyone to share their ideas and form groups according to the similarities of their topics. If someone prefers to work alone it's also completely fine. Once groups are formed provide a brief overview of the materials and tools available and allow participants to select their materials from the provided scraps and textiles.

Assist learners during their creative workshops with techniques such as sewing, gluing, or layering fabrics, and encourage experimentation with textures and colors.

After creation of art pieces, learners organize a “show time” where each group and/or individuals will display their completed artworks.
At the end of the workshop organize a discussion and reflection where each participant can share their creative process, the inspiration behind their piece, and any challenges they faced.

If resources permit, consider inviting an experienced textile artist who can guide participants in creating their own pieces.

Reflection questions could be

- Why did you choose that particular topic? Why is it important to you?
- What inspired your artwork? How did you choose your materials?
- What challenges did you encounter while creating your piece, and how did you overcome them?
- In what ways do you think your art can influence others to think differently about textile waste?
- What message or story do you think your artwork conveys about textile recycling or sustainability?
- How can you apply what you learned today to your everyday life or community?

Needed Materials

Old fabric scraps (clothes, linens, towels, etc.), scissors, glue guns and glue sticks, sewing kits (needles, thread, buttons), fabric paint and brushes, canvas or large paper sheets, decorative items (beads, buttons, ribbons, etc.), aprons or old shirts (to protect clothing) and anything else you think fits in here!

Timing

115-120 min. Introduction to the topic (15-20 min), forming groups and preparation (20 min), creating art pieces (60 min), sharing and discussion (20 min).