



A European Roadmap of innovation in learning methodologies to foster sustainability

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Date: 16. 6. 2025

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In4Sustain - Innovative learning methodologies to foster sustainability, through digital tools & entrepreneurial mindset among T&C employees

Project number: 2024-1-IT01-KA220-VET-000254304

KA220-VET - Cooperation partnerships in vocational education and training (KA220-VET)

The In4Sustain Consortium consists of: CIAPE – Centro Italiano per L'apprendimento Permanente, LINK Campus University, STEP Institut, zavod za psihologijo dela in podjetnistvo, CITEVE – Centro Tecnológico das Indústrias Têxtil e do Vestuário de Portugal, MATERIALLY Impresa Sociale S.R.L, GREMI TEXTIL DE TERRASSA, TITERA technically Innovative technologies.

Co-funded by the Erasmus+ programme of the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the National Agency Erasmus+ INAPP. Neither the European Union nor INAPP can be held responsible for them.



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Introduction

The **In4Sustain** project aims to empower the textile and clothing (T&C) industry to lead the green transition by bridging the skills gap in sustainability through innovative vocational education and training (VET). By upskilling VET providers and equipping T&C employees with interactive digital tools and an entrepreneurial mindset, the project supports the development of sustainable products, services, and business models aligned with consumer needs and environmental responsibility.

In4Sustain offers a comprehensive learning journey that will, in later stages, include a Methodological Handbook, a gamified e-learning platform, video lectures, and Open Educational Resources. Through a "Train the Trainers" initiative and a Mini-Accelerator programme, the project will enable hands-on innovation, resulting in real-life prototypes showcased during Sharing Days and Travelling Exhibitions.

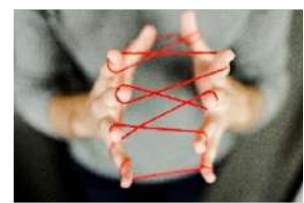
The project promotes a systemic, inclusive, and participatory approach, involving VET providers, T&C companies, and consumers to co-create solutions that respond to real-world sustainability challenges. In4Sustain also contributes to EU priorities on climate action, circular economy, and consumer empowerment, while supporting the TCLF Pact for Skills and fostering a lifelong learning culture across the sector.

With implementation across Italy, Spain, Portugal, Germany, and Slovenia, In4Sustain addresses both the urgent environmental impact of fast fashion and the need to modernise T&C training systems.

Ultimately, it strives to shape a resilient, innovative, and sustainable future for the industry and its workforce.

The booklet in front of you presents the **"European Roadmap of Innovation in Learning Methodologies to Foster Sustainability."** It compiles the outcomes of focus groups conducted with VET trainers, T&C companies, and start-ups, and integrates innovative methodologies identified in previous projects along with expert contributions from In4Sustain partners.

This roadmap serves as a strategic guide to inspire and inform the future of sustainability-driven training across the T&C industry.



Methodology

The In4Sustain European roadmap is a strategic document that provides actionable recommendations on fostering innovative teaching and learning practices within the textile and clothing (T&C) sector, with a focus on sustainability, digitalisation, and entrepreneurship. Its ultimate aim is to empower VET (Vocational Education and Training) providers to better equip T&C employees for the green and digital transformation of the sector.

This roadmap is based on focus groups conducted in the following countries:



Italy



Portugal



Spain



Germany



Slovenia

These sessions gathered insights from VET professionals, industry representatives, and stakeholders in the T&C sector. The objective was to identify:



Innovative learning and teaching approaches that align with sustainable development.



Strategies to foster an entrepreneurial and digital mindset among T&C workers.

This document synthesises the results to highlight commonalities, divergences, and key patterns that emerged across contexts. This comparative approach ensures that the roadmap can serve as a transnational guide, offering both localised relevance and broad applicability.

The focus group discussions informed the development of:

- 

Recommendations for redesigning classroom learning (e.g., incorporating real business cases, gamified approaches, experiential learning).
- 

Approaches to enhance entrepreneurial thinking and digital readiness in VET curricula.
- 

Visual elements of the roadmap that convey suggested pathways for teaching innovation and sustainable upskilling

Despite differences in format - ranging from physical workshops to entirely virtual sessions - a few key themes and patterns emerged:



Collaborative and Interactive formats

All sessions leaned heavily into interactive methods to spark engagement and co-creation. Italy used post it mapping, card-based skill matching, and a traffic-light activity; Spain integrated Kahoot! quizzes and Miro boards to build shared understanding; Portugal's "mix & match" role-reversal activity enabled companies and trainers to walk in each other's shoes. Slovenia and Germany leveraged Mentimeter for real-time input and breakout sessions for targeted discussions.





Common Challenges Identified

Across countries, participants highlighted the gap between training curricula and industry sustainability needs. There was strong consensus that:

- 1** VET curricula lack key sustainability knowledge and soft skills.
- 2** Digital learning tools are underused.
- 3** Collaboration between training institutions and companies is often fragmented or reactive.



Shared Best Practices

Several innovative educational practices were shared:

- 1** Flipped classrooms, gamification, and project-based learning were frequently cited (Italy).
- 2** MOOCs and blended in-house training methods are being explored (Italy, Portugal).
- 3** Active efforts are being made to incorporate student support systems and mentorship (Italy, Slovenia).



Bridging the Academia–Industry Gap

The most productive sessions were those where both sectors exchanged roles or debated ideas jointly. Portugal's role-reversal exercise and Spain's joint "wishlist" activity were particularly effective in building mutual understanding and concrete action points. Many groups concluded that training organisations must adopt a more pragmatic approach, while companies need to offer more structured and open forms of collaboration.

METHODOLOGIES USED

Brainstorming & Post- it notes

A brainstorming activity is a creative group session where participants freely share ideas without judgment to solve a problem or generate new concepts. It encourages open thinking and collaboration to spark innovation.



Menti Meter

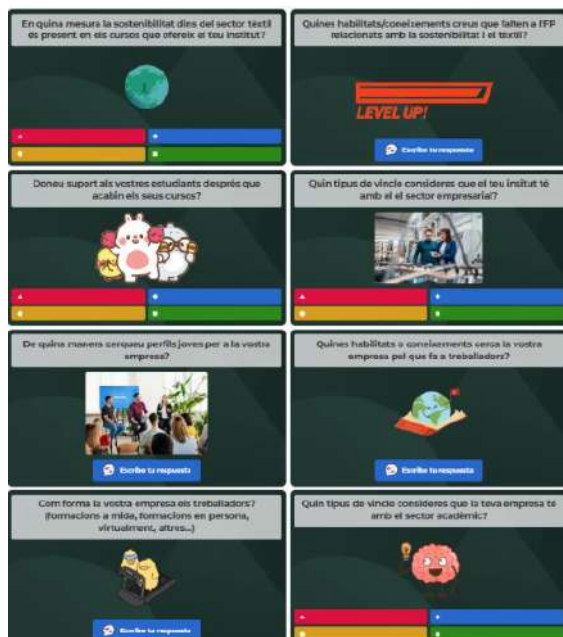
A Mentimeter word cloud gathers participants' words or short phrases in real-time, visually displaying the most popular responses as larger words. It's an engaging way to capture collective thoughts instantly.

What is sustainability for you?

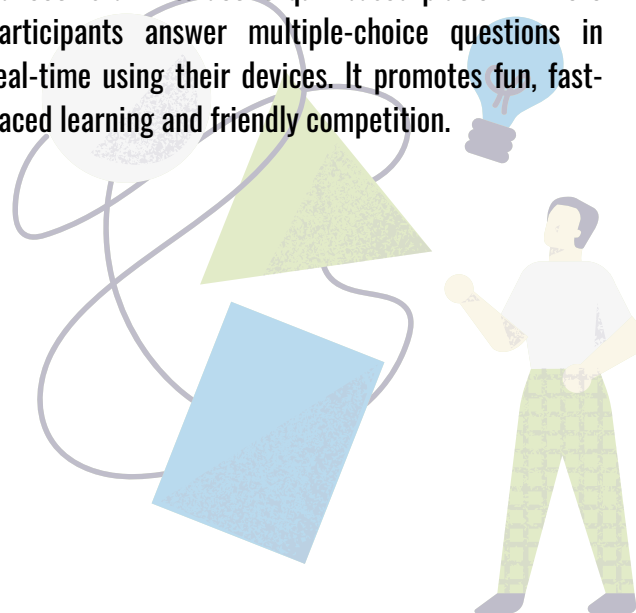
27 responses



Kahoot



Kahoot! is an interactive quiz-based platform where participants answer multiple-choice questions in real-time using their devices. It promotes fun, fast-paced learning and friendly competition.



Role reversal Exercise

A role reversal exercise involves participants swapping roles to see a situation from another's perspective. It builds empathy, improves communication, and deepens understanding in group dynamics or conflicts.



Break-out room Sessions



Breakout room sessions divide participants into smaller groups for focused discussions or activities. They encourage deeper engagement, collaboration, and personalized interaction within larger meetings or workshops.

Recommendations for innovative approaches to teaching and learning to foster sustainability

In the following chapters, a concise summary of the results collected for each country is presented.

ITALY



EDUCATIONAL PROVIDERS: STRENGTHS, GAPS, AND STRATEGIC RECOMMENDATIONS

STRENGTHS AND PRACTICES:

- **Sustainability as a transversal theme:** Integrated across curricula to develop awareness, critical thinking, and responsibility.
- **Project-based learning:** Widely implemented with real-world tasks, often in collaboration with companies.
- **Hands-on engagement:** Use of waste materials, site visits, trade fairs, and real company briefs.
- **Gamification:** Encourages motivation and understanding of complex concepts.
- **Alumni support:** Structured internships and ongoing check-ins to connect education with employment.

GAPS IDENTIFIED:

- Lack of a cohesive sustainability culture in the curriculum.
- Insufficient focus on circular business models and environmental certifications.
- Fragmentation of certification systems and unclear sustainability standards.
- Need for deeper industry immersion beyond observational company visits.

RECOMMENDATIONS:

- Embed a sustainability mindset across disciplines, not just content.
- Clarify the definition of sustainability in educational materials.
- Increase collaboration with companies: Real briefs, co-designed projects, and deeper mentorships.
- Promote active learning through practical work, gamification, and immersive visits.
- Improve education on circularity and certification systems with harmonized standards.

COMPANIES: CHALLENGES, SKILLS, NEEDS AND RECOMMENDATIONS



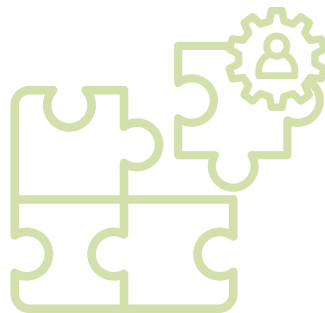
CHALLENGES:

- Mismatch between education and company needs, especially on sustainability.
- Confusion around norms, certifications, and directives.
- Lack of awareness in traceability and transparency across the supply chain.

SKILL GAPS:

Hard Skills Needs:

- Supply chain management
- Eco-design principles
- Environmental certifications



Soft Skills Needs:

- Critical thinking
- Teamwork
- Adaptability to change

TRAINING METHODS IN USE:

- **Internal learning platforms:** Offer self-directed and structured online training, including sustainability modules.
- **Experiential learning:** Employees participate in trade fairs and knowledge exchanges.

RECOMMENDATIONS:

- 1 Immersive visits:** Move beyond tours to deeper engagement with real sustainability practices.
- 2 Active learning is key:** Includes project-based methods, practical training, gamification.
- 3 Mindset shift:** Sustainability should be a foundational value, not a single subject.

PORTUGAL



EDUCATIONAL PROVIDERS: STRENGTHS, GAPS, AND STRATEGIC RECOMMENDATIONS

STRENGTHS AND PRACTICES:

- Emphasis on combining theoretical knowledge with practical application for meaningful learning experiences.

Some practices are already in use and show positive results such as:

- **Curricular internships:** Connect learners with real-world business environments.
- **Ideas competitions and exchanges:** Foster creativity and international collaboration.
- **Flipped classroom approach:** Promotes student autonomy and active participation.
- **Gamification and on-site visits:** Enhance engagement and understanding.

GAPS IDENTIFIED:

- Insufficient workload: Sustainability topics are present but lack the depth and instructional time needed.
- Limited consumer education: Key concepts such as lifecycle thinking, textile labelling, and recycling need more visibility.
- Need for pragmatic implementation: Training organisations must move from theory to structured, actionable delivery.

RECOMMENDATIONS:

- 1 **Strengthen the theory-practice balance** through immersive, hands-on learning (e.g., field visits, gamified content).
- 2 **Enhance consumer literacy** on sustainability-related issues: label reading, sorting textiles, and understanding the product life cycle.
- 3 **Early education integration:** Propose introducing sustainability concepts at the primary school level through sensory, playful, and socially contextualised learning experiences.

COMPANIES: CHALLENGES, SKILLS, NEEDS AND RECOMMENDATIONS



CHALLENGES:

- Need for more structured training: Even as sustainability is present, both depth and time allocated are insufficient.
- Dissemination of best practices is still limited, requiring broader awareness and replication across the sector.

RECOMMENDATIONS:

- 1** Encourage company-education partnerships: Through internships, co-created content, and practical projects.
- 2** Support free, targeted training programs: Companies appreciate cost-free upskilling opportunities for their workforce.
- 3** Invest in engaging methods: Prefer training formats that mix practical learning, visual aids, and interaction.



SPAIN



EDUCATIONAL PROVIDERS: STRENGTHS, GAPS, AND STRATEGIC RECOMMENDATIONS

STRENGTHS AND PRACTICES:

- **One hour per week specifically dedicated to sustainability** due to recent curriculum update.
- **Sustainability embedded** across multiple subject modules—not treated as a stand-alone topic.
- **Use of gamification**, project-based learning (PBL), and challenge-based learning to enhance engagement, especially for low-performing students.
- Significant time allocated to **laboratory and sewing workshops**.
- Frequent field **visits to textile industries** for real-life exposure.
- Existing practice is oriented towards financing a professional training project of an educational center together with a company, to promote the vocational training.
- Growing interest in teacher and student exchanges.

GAPS IDENTIFIED:

- Need for clearer, more unified guidelines to avoid fragmented sustainability instruction.
- Observed drop in students' academic competencies affecting their grasp of sustainability topics.
- Lack of updated occupational profiles aligned with current industry needs.

RECOMMENDATIONS:

- 1** **Integrate sustainability** deeper into curricula using active, engaging methods across all training modules.
- 2** **Boost collaboration with companies** through dual projects, internships, and joint curriculum design.
- 3** **Support system-wide change** via national promotion, updated job profiles, and flexible curriculum updates.

COMPANIES: CHALLENGES, SKILLS, NEEDS AND RECOMMENDATIONS



CHALLENGES:

- Energy management to become energy-neutral and reduce costs.
- Waste management, focusing on reduction and proper handling.

SKILL GAPS:

- Employee alignment with sustainability and greenwashing awareness.
- Tools and knowledge for sustainability implementation.

TRAINING METHODS IN USE:

- **Sustainability actions in companies include** renewable energy purchasing, solar panel installation, R&D projects, and plastic reduction.
- Employee training currently emphasises awareness raising, internal procedures, and collaboration with external partners.

RECOMMENDATIONS:

- 1** Integrate sustainability deeper into curricula using active, engaging methods across all training modules.
- 2** Boost collaboration with companies through dual projects, internships, and joint curriculum design.
- 3** Support system-wide change via national promotion, updated job profiles, and flexible curriculum updates.

SLOVENIA



EDUCATIONAL PROVIDERS: STRENGTHS, GAPS, AND STRATEGIC RECOMMENDATIONS

STRENGTHS AND PRACTICES:

- **Hands-on workshops** (repair, reuse), clothes swaps, sustainability-focused exhibitions.
- Sustainability integrated into curricula to some extent.
- Active involvement of museums in sustainability education through exhibitions.

GAPS IDENTIFIED:

- Slow mindset change towards sustainability.
- Insufficient support for innovative teaching methods (e.g. small group work limitations).
- Limitations in collaboration between VET providers and companies.

RECOMMENDATIONS:

- 1 Need to promote **experiential learning** environments (labs, real-life projects).
- 2 Promote **early sustainability education** and cross-subject curriculum integration, deeper understanding that sustainability expands beyond textiles.
- 3 Encourage **local school-business networks** for mutual learning and innovation.



COMPANIES: CHALLENGES, SKILLS, NEEDS AND RECOMMENDATIONS



CHALLENGES:

- High costs of sustainable transformation.
- Mindset inertia: preference for cheap solutions.
- Limited systemic and financial support.

SKILL GAPS:

- Understanding of sustainable materials and design for longevity.
- Eco-certifications, circular economy, and marketing of sustainable products.
- Entrepreneurial and interdisciplinary thinking.

TRAINING METHODS IN USE:

- Occasional collaboration with schools or local projects.

RECOMMENDATIONS:

1

Involve companies into educational process to provide real-life case studies.

2

Offer **tailored training for staff** on sustainability concepts and certifications.

3

Support **collaboration networks to share best practices** and innovation in the sector.



GERMANY



EDUCATIONAL PROVIDERS: STRENGTHS, GAPS, AND STRATEGIC RECOMMENDATIONS

STRENGTHS AND PRACTICES:

- **Holistic curriculum development** embedding sustainability across subjects.
- Campaigns and events focused on responsible consumption and zero-waste practices.

GAPS IDENTIFIED:

- Limitations in teaching innovations and slow curricula updates.
- **Fragmentation of sustainability topics** across multiple fields.

RECOMMENDATIONS:

- 1 Foster interdisciplinary and **applied, practical sustainability education**.
- 2 Increase systemic support (policies and funding) for innovative teaching formats.
- 3 Strengthen **emotional and storytelling approaches** to inspire behaviour change in different age groups.

COMPANIES: CHALLENGES, SKILLS, NEEDS AND RECOMMENDATIONS



CHALLENGES:

- Cost barriers to sustainable investment.
- Regulatory rigidity hindering flexible workforce training.
- Difficulty accessing trained staff with sustainability knowledge.

SKILL GAPS:

- Facing challenges for the in-depth **understanding and application** of textile sustainability, circular economy, and innovation.
- **Skills related to recycling technologies and sustainable production methods.**
- Green entrepreneurship and marketing.

RECOMMENDATIONS:

1

Build **education-industry networks** for innovation and staff upskilling.

2

Use **real-life industry examples in education** at all levels to deepen understanding and spark interest in sustainability issues.

3

Integrate sustainability into **everyday company practices** through targeted in-house training.



Recommendations for promoting entrepreneurial and digital mindsets

Based on the results from Focus groups, there are some common grounds across multiple topics:

Curriculum Integration

- Sustainability is embedded across subjects, including circular economy, eco-design, and certifications.
- Shared need to expand and deepen sustainability content in training programs.

Active & Experiential Learning

- Common use of hands-on, project-based learning and real-life challenges.
- Methods like gamification, flipped classrooms, and company visits enhance engagement.

Skills & Knowledge Gaps

- Companies seek both technical (e.g., waste, energy, eco-design) and soft skills.
- Gaps in understanding sustainability standards and in consumer education.

Education-Industry Collaboration

- Strong emphasis on partnerships via internships, joint projects, and real-world briefs.
- Call for deeper, more meaningful company involvement.

Company Training Practices

- Training often focuses on awareness and mindset.
- Short, interactive sessions and project involvement are preferred.
- Fragmented content, low resources, slow mindset change, and weak systemic support.

To go even further, a collaborative workshop was organized by CIAPE. The participants, consisting of project partners, were divided into two groups and were called to work through collaborative tools on:

- **Consumer Engagement strategies by T&C Companies,**
- **Skills, drivers of change and innovative methodologies.**

A range of proven strategies to foster engagement with sustainability were presented, based on insights from fieldwork and successful case studies from earlier European initiatives. One central theme was the use of storytelling as an effective means of communicating sustainability messages.

The workshop also explored the potential of gamification and consumer-oriented challenges. Additional validated approaches focused on circularity and reuse. On the tools front, the discussion highlighted the increasing importance of digital product passports, systems for traceability, and participatory methods. Co-creation and early-stage education were also strongly emphasized. These contributions will be further analyzed and will inform the development of WP2 deliverables.

Results from the collaborative workshop are presented on the following pages.



SKILLS, DRIVERS OF CHANGE AND INNOVATIVE METHODOLOGIES

EUROPEAN ROADMAP OF INNOVATION IN LEARNING METHODOLOGIES TO FOSTER SUSTAINABILITY

TECHNICAL SKILLS GAP IN THE T&C SECTORS RELATED TO SUSTAINABILITY

Material quality
international
certification
(recognised in
all countries)

How to treat
materials

Formation on
adapting clothes
for people of all
sizes

Lack of
knowledge in
specific areas
related to the
advantages of
digitalisation.

Fashion courses
must be more
practical and
provide more
laboratory time.

The connection
between digital
and physical

- 86% of respondents say their company would benefit from Sustainability training.
 - 78% of companies claim to implement improvements in their production processes, but a significant percentage does not have a Sustainability manager.
- Training topics considered most relevant:
- Circular economy
 - Certifications
 - Sustainable materials
 - Sustainable business models

Be@t project

Link Be@t: <https://bioeconomy-at-textiles.com/>

KEY DRIVERS OF CHANGES

Environmental driver of change:
Awareness on sustainability; Access
& costs of resources; Transparency.
RENAISSANCE OF THE CRAFT
SCENARIO: Wide-spread sustainable,
conscious consumer behaviour
gives rise to local
production/consumption/recycling
models based on traditional, but
technology-enhanced concepts.
Skills4Smart TCLF Industries 2030
project

Buying online

Packaging

Consumer behaviour

Consumer demands,
competition from
emerging markets, the
crisis generated by COVID-
19.

TRANSVERSAL SKILLS GAP IN THE T&C SECTORS RELATED TO SUSTAINABILITY

Communication of quality

The knowledge of the
designers (more
informations)

Fashion push for change
one season to the other

How to involve consumers
and engage them to
achieve quality and
sustainability (buy better,
not more)

Storytelling

Ability to promote "buy
locally"

INNOVATIVE TRAINING METHODOLOGIES

International online hackathon between different universities, involving students from different disciplines. The selected students were mixed by nationality and the different groups worked together to solve a sustainability challenge set by a company.

DESTEX project

Use of discarded materials

Train the fashion workers to work on local materials first, using what they have available in house.

AI use for fashion design

DATAMATS
A toolkit
<https://www.datemats.eu/>

<https://www.datemats.eu/toolkit/>

Use financial convenience as driver to use sustainable materials and processes, when possible.

Unified criteria on the digital passport information

TexUnité – Service Learning on Sustainability in Textile and Fashion Education

<https://texunit.eu/index.php/about/>

Consumer hackatons where consumers challenge companies by telling them what they would like and what would drive them to be more informed or to buy.

Formation on recover fashion waste and give it back to companies that need it.

CreativeWear – Arts and Business Hubs Revitalising Mediterranean T&C Sectors

https://ec.europa.eu/regional_policy/en/projects/italy/creativewear-arts-and-business-hubs-revitalise-mediterranean-textile-and-clothing-sectors

Green price in the classroom (suggestions from the university student)

Second Chance – Empowering Youth in Textile Design and Upcycling

<https://bravobih.com/current-projects/second-chance/>

GS4VET (Green Skills for VET)

<https://www.greenskills4vet.com/>

eLearning platform (non-immersive experience)
Metaverse Labs (immersive experience.). METASKILLS4TCLF

Hackathons
Bootcamps
Mobility experiences
ADDTEx

Link AddTex:
<https://www.addtex.eu/>

Green-Tex – Reimagining Textile Consumption in Postojna
The Green-Tex project in Postojna is a comprehensive initiative aimed at transforming textile consumption habits through community engagement, education, and innovative practices. Running from January 2024 to July 2026, and co-funded by the European Regional Development Fund, the project focuses on promoting sustainability and a culture of reuse.

<https://texcycle.com/>

<https://www.postojna.si/objava/869447>

Conclusions

Across all examined countries, there is a clear and shared commitment to embedding sustainability deeply and meaningfully within textile and clothing education and training. Stakeholders consistently emphasize the need for practical, hands-on learning experiences, stronger collaboration between educational institutions and industry, and clearer frameworks to address skills gaps and sustainability concepts. Moreover, fostering awareness, critical thinking, and responsible mindsets from early education through lifelong learning is seen as essential. Despite some challenges related to resources and systemic support, the collective efforts point toward creating more engaged, skilled, and sustainability-conscious professionals ready to meet the evolving demands of the industry.





<https://www.ciape.it/ciape/>



<https://clustertextil.pt/>



<https://institutindustrialtextil.org/>



<https://www.unilink.it/en/>



<https://www.materially.eu/>



<https://www.step-institute.org/sl/home/>



<https://www.titera.tech/en/>