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D 2.2 Digital Self Assessment Tool



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1 INTRODUCTION

1.1 Context

The main objective of the WP2 is to build a dynamic recycling textile ecosystem at the European level. The ecosystem set up and nurturing will be achieved thanks to the support of a digital platform already in place called RegioGreenTex Digital Tool (described in D 2.1), which will be scaled up and finetuned to host and support multiple tools, contents, functions and training material functional to match SMEs at EU level and to disclose new pathways for the sustainability and resilience of textile production and market. The specific objectives of the WP are:

- Build up a European recycling textile ecosystem on a digital platform
- To assess and profile each SME joining the ecosystem (via the Self-assessment tool) to provide specific coaching/training, as well as effective matchmaking
- Raise awareness and upskill SMEs on textile recycling and circular design
- Encourage the interregional debate on the future of the sector, its sustainability and green transition (policy dimension of the ecosystem)

1.2 Objectives of the self-assessment tool

The self-assessment tool (SELF ASSESSMENT TOOL – hereafter, SAT) is developed to help profile SMEs and evaluate the recycling potential of their products and processes. The self-assessment tool supports businesses by giving feedback and suggestions for the next steps to be undertaken and- the support needed to grow and match with other SMEs, as part of the ecosystem.

This tool must help the SMEs to detect their own capacities and shortcomings, identify coaching or training needs, provide links to complementary partnerships, benchmarks, and improve their strategies and approaches to eco-design, waste management and recycling.





2 TOOL DEVELOPMENT METHODOLOGY

2.1 Design stages

2.1.1 Inspiration: SMARTX

EuraMaterials, in charge of the SELF ASSESSMENT TOOL development, drew its inspiration from a similar tool developed as part of another European project: SmartX. Developed at the time by the respective partners, this tool consisted of a series of questions and visualized a company's positioning on various criteria, thanks to several radar graphs. All answers were also available in the form of an Excel file.

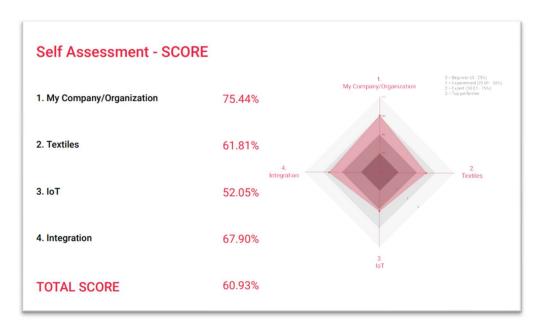


Figure 1: Radar chart, SMARTX general score

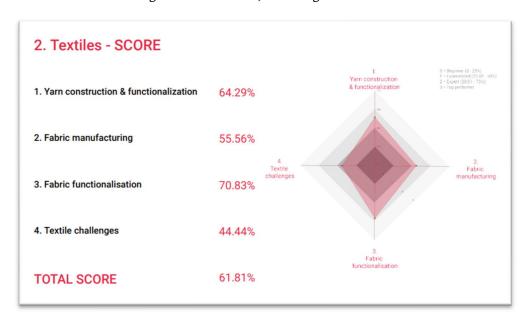


Figure 2: Radar chart, detailed textile score, SMARTX





SmartX S	Self Assessment Score E	valuation											
Name EuraMaterials													
Date 11-02-2021													
Time	09:08												
	Evaluation Relevance	e Score (in %)											
OTAL S	SCORE	60.93%											
. My Co	ompany/Organization	75.44%	2. Textiles		61.81%	3. IoT			52.05%	4. Integrat	ion	67.909	36
		83.33%	1. Yarn construction & function 6		64.29%	1. Electronic			52.00%	1. Production Design		66.679	36
		88.89%	1. Energy produc	ction & storag	83.33%	Measuring sensors			62.96%	Design for connectivity		ty 33.335	%
a. R	&D people dedicated to	3	a. Piezoelectri	c filaments (sp	2	a. Ten	nperature		1	a. Plac	ing of electronic	circu	1
b. W	Vorking in collaborative	1 2	b. Energy stora	age filaments	3	b. Pre	ssure sensors,	Humidit	2	b. Eas	y (for user) to di	smant	1
c. W	Vorking as an innovation	3	c. Heating yarr	ns	2	c. Ger	neral electroma	agnetic :	2	2. Desig	n for improved f	unctic 66.67	36
2. Stra	ategy	77.78%	d. Photovoltai	c filaments (a _l	3	d. Vib	ration		2	a. Con	trols placement	(gesti	2
a. Clearly communicated value b. Widely spread innovation c. Smart Textiles are part of 3. IP Management a. Clear strategy to manage		3	2. Signal transfe	2. Signal transfer		e. Biological parameters		eters	2	b. Sensor and actuator place			2
		n 2	a. Conductive yarns (pure m b. Plastic optical fibres (wov		1	f. Gas, VOC and pH sensors			2	3. Design adapted to end user 83.33			36
		f 2			1	g. Lightsensors (visible, UV, I		2	a. User/wearer morpholo		ology	2	
		83.33%	3. Sensors		50.00%	h. Sou	h. Sound sensors		2	b. Use conditions (rugged,		ged, re	2
		3	a. Electronic o	omponents in	2	i. Accelerometer, gyroscope		2	c. Cost/performance levels			3	
b. T	echnology or IP watch i	n 2	b. Resisitive ya	rns (temperat	2	2. Actua	ators		44.44%	d. Star	ndards/regulatio	ns (na	3
2. Mark	ket Intelligence	73.33%	c. Piezoelectri	c yarns used a	1	a. Dis	plays		1		tion Solutions	71.119	
1. Ma	arket Analysis	66.67%	d. Optical fibre	used as sens	1	b. Ala	rms		2	1. Flexib	ole Materials Cut	ting & 66.679	96
a. S1	WOT analysis of produc	t 2	4. Key technolog	gies	75.00%	c. Can	neras		1	a. Too	ls for optimizati	on of	2
b. Market study for your sm		1. 2	a. Spinning (co	a. Spinning (conjugated, mel		3. Energ	Energy consumption & sto		44.44%	 b. Joining tools for textile 		tile ar	2
		77.78%		b. Yarn winding and twisting			a. Power supply (rechargab		2	2. Embroidery & sewing for			%
 a. Customer testing with ne 		n 3	c. Yarn guimping (with a yarr		2	b. Power management (sto		ent (stor	1	a. Different conductive y		e yarn	2
b. Customer happines & wis				d. Yarn coating (with a binde		c. Energy harvesting		ing (by frict 1			b. Different ways to sew cor		r 2
	asy access/vision of end	1 2	2. Fabric manufac		55.56%		ronic Function	alities	53.33%	3. Cond	uctive yarn place	ement 77.789	%
3. Soft	Skills	66.67%	1. Weaving		55.56%		ntification		2		urate placement		3
1. Hur	man Resources	83.33%	a. Weaving co	nstruction (fla	2	b. Det	ection (detect	a prese	3	b. Acc	urate placement	of se	2

Figure 3: Detail score evaluation, SMARTX

Although fully usable, the development of this tool was carried out with standard office tools (Google form, Excel) not adapted to automation. Creating scores and graphs was therefore very time-consuming, as most of the work was done manually. It was therefore decided very early on that automation would be necessary, and that it was essential to outsource this part of the work in order to have a tool that was easy to use, efficient, and exploitable, in consultation with Ariadne Innovation (P18) in charge of the implementation of the RegioGreenTex Digital Tool.

2.1.2 Section definition

Following the example of the tool developed for the SmartX project, we decided that it would be relevant to create several sections, in order to evaluate the position of companies according to these sections. The sections initially selected were those of the circular economy pillars:

- Material impact
- Energy saving
- Water management
- Durability
- Waste management
- Recycled content
- Regulations and policies
- Knowledge about circular economy tools (LCA eco-design, and environmental management)





Thus, by obtaining a score for each pillar, the company is able to know in which section it needs to improve in order to increase its knowledge and be more involved in terms of the circular economy.

In June and July 2023, the SMARTX reference tool and the proposed themes were presented to the RegioGreenTex WP2 partners, in order to validate the spirit of the tool to be developed, as well as the topics to be covered to assess the involvement of companies in terms of their environmental approach.

2.1.3 First questions - SELF ASSESSMENT TOOL version 1

We embarked on a long period of monitoring, so as to have several documents available on the subject of the circular economy. This phase included a desktop research of questionnaires already available on the internet in this area of focus, aiming to create a library of resources that could be the back-bone of the questions developed/created for the SAT

At the same time, we looked at what was being done in terms of question types. We came up with a list of different types of questions:

- Open-ended questions: where participants are free to write their own answers
- Multiple-choice questions: participants are asked to tick the boxes where the correct answers are given.
- True/false or yes/no questions: where participants have to say whether the statement is correct or not.
- Rating scale-type questions: where participants are asked to select a value (number) that most closely matches their choice.
- Questions with "Likert scale" rating type,: where participants have to choose from 5 or 7 answers, covering the whole spectrum of opinions, from one extreme to the other.
- Ranking questions: where participants have to rank answers in order of preference
- Picture choice questions: where participants have to choose the right answer from among the illustrations.

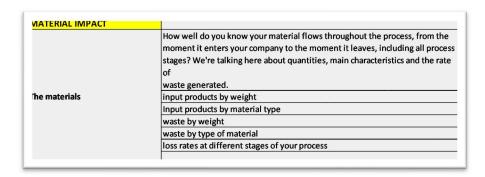


Figure 4 : Sample questions - Material impact category







Figure 5: Sample questions - regulations and policies category

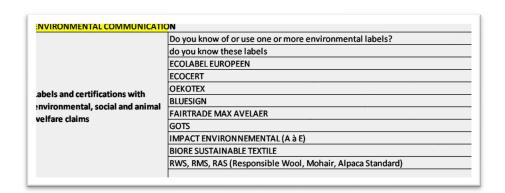


Figure 6 : Sample questions - environmental communication category

2.2 Participatory approach with stakeholders

2.2.1 Consortium presentation and feedback

A first version of the questions was presented at the Regional Cluster workshop that took place in Prato in September 2023. Initial feedback on the questions was encouraging, but a common remark was made: the needs of the companies are not clearly identified. The questions need to be revised to reflect the real needs of companies.

2.2.2 Changes to questions - SELF ASSESSMENT TOOL version 2

A new phase of reflection began, and following a staff departure at EuraMaterials, a new person joined the project. After a few weeks' reflection, a second version of the SELF ASSESSMENT TOOL was proposed.

This version is presented in 3 stages:





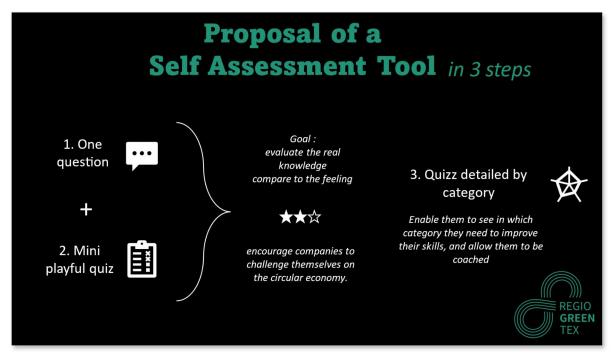


Figure 7 : Self assessment tool version 2

The first step was to ask a very general question: "How would you rate your knowledge of the circular economy? The company is then asked to position itself on a scale:



Figure 8 : Self assessment tool version 2 - step 1

The second phase consisted of asking 12 questions on the theme of the circular economy. For each question, there were 4 possible answers, but only one correct answer. Each correct answer earned 1 point. Depending on the number of points obtained, a second cursor appeared on the scale

0 to 3 points: I'm not at all familiar with the circular economy

4 to 6 points: I've heard of the circular economy, but I haven't delved into the subject yet

7 to 9 points : I have advanced knowledge of the circular economy and can explain its basic principles

10 to 12 points: I am a circular economy expert with extensive experience in implementing circular economy and sustainable development projects





Figure 9 : Self-assessment tool version 2 - step 2

The different positions of the two points highlight the difference between what the company thinks it knows, and what it actually knows.

The third phase consists of a quiz on the circular economy, the aim of which was to educate in an entertaining way, through questions divided into 8 categories: the pillars of the circular economy. The result is a radar diagram which identifies the category(ies) in which the company needs coaching. This provides:

- Visual communication: Spider charts are easy to understand for a wide audience, including people who are not familiar with complex figures. They are therefore useful for internal and external communication.
- Quick and clear visualisation: Spider diagrams offer an immediate visualisation of skills or levels in several categories. At a glance, you can see a person's strengths and weaknesses in each area.
- Decision making: They help to make informed decisions by identifying areas where improvements are needed. This can guide training, professional development or recruitment decisions

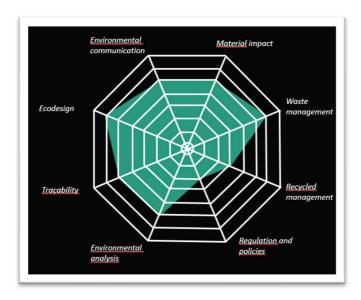


Figure 10: Example of a radar diagram - Self assessment tool version 2





2.2.3 Consortium presentation and feedback

Version 2 of the SELF ASSESSMENT TOOL was presented to part of the consortium in October 2023. The visualization of the third part was particularly appreciated, as it responded to the request to reveal needs. However, the questions were too "people" rather than "business" oriented.

It resulted to be essential to have an initial set of self-assessment questions on companies' mastery of circular economy issues. However, EuraMaterials consulted with the other partners within the RegioGreenTex project and established that it is essential to have an initial set of self-assessment questions on companies' mastery of circular economy. With the help of this tool, we can determine a start point and an end point when it comes to knowledge acquired on circular economy, with the help of the project.

2.2.4 Modifying questions - SELF ASSESSMENT TOOL version 3

Following feedback from the consortium, we proposed a third version of the tool in November 2023. We decided to divide the self-assessment tool into two parts:

- A first part to evaluate the company: about fifteen questions, each with 5 possible answers:
- o Not concerned
- o No or very little knowledge
- o Little knowledge but the company is interesting about the subject
- o Good knowledge of the subject: expertise in the company or with other players to cover part of the subject
- o Very good knowledge and mastery of the subject : at least one expert who covers most of the subject
- A second part to evaluate the company's employees. A quiz with approximately 18-15 questions in each category:
- o collecting, sorting and repairing
- o recycling
- o process
- o eco-design
- o environmental approach

Following this presentation, the following comments were made:

- categories are validated
- SELF ASSESSMENT TOOL must target the company, not just the respondent





- the questions must focus on what the company is currently doing, with the addition of a dimension on what it intends to do in the near future or what it does not intend to do.
- the SELF ASSESSMENT TOOL should be useful for coaches (WP3, WP4).

2.2.5 Modifying questions - SELF ASSESSMENT TOOL version 4 and higher

Following feedback, several modifications to the SELF ASSESSMENT TOOL were presented to the consortium in December 2023.

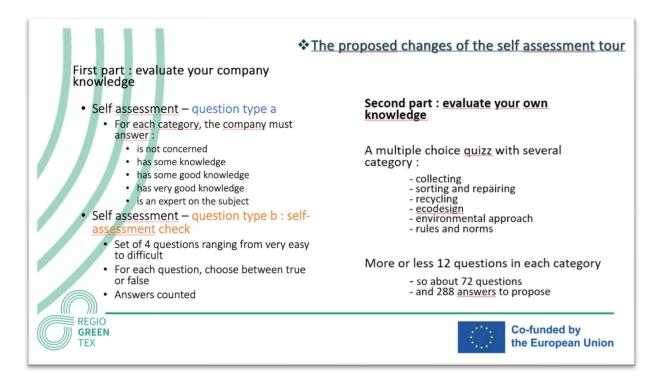


Figure 11 : Self-assessment tool version 4 -proposed changes





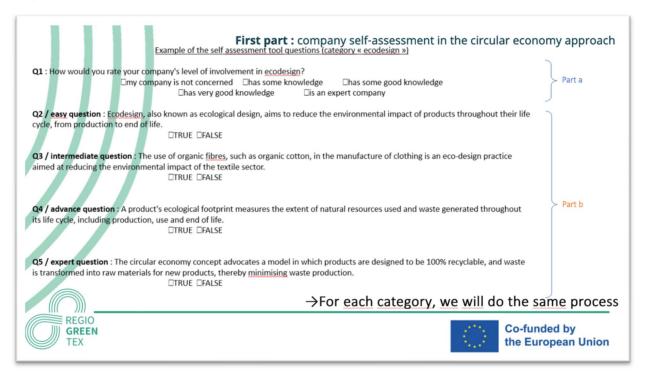


Figure 12: Self-assessment tool version 4 - first part questions

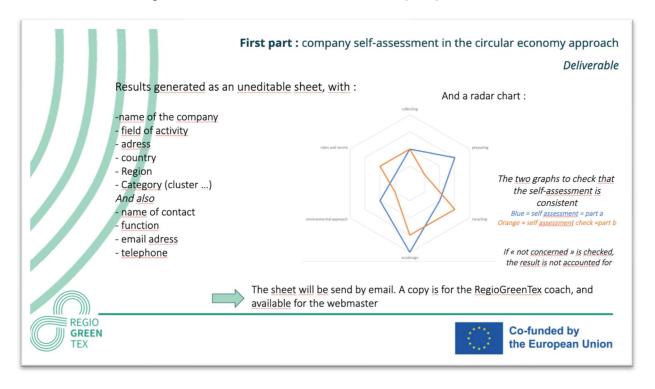


Figure 13: Self-assessment tool version 4 - results





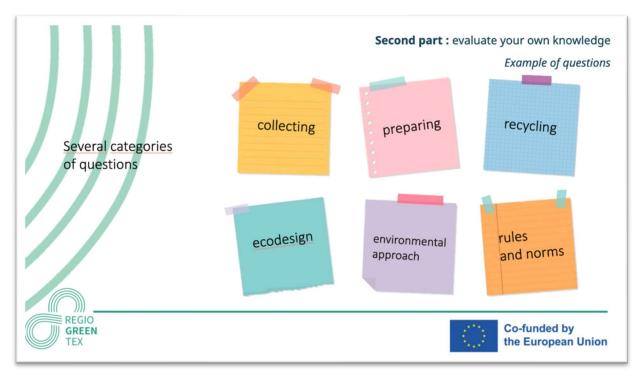


Figure 14: Self-assessment tool version 4 - second part questions

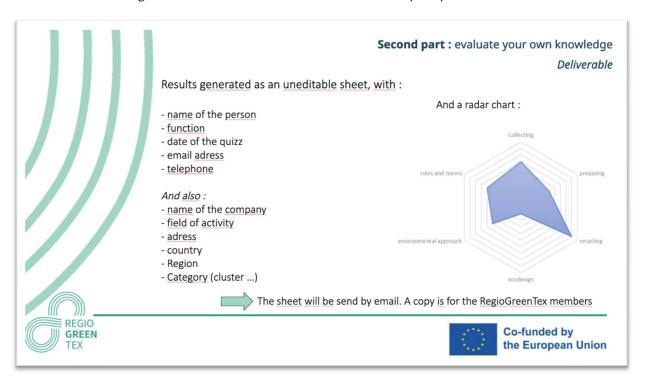


Figure 15: Self-assessment tool version 4 - second part result

The entire consortium was satisfied with the development of Self-assessment tool. However, while the second part has been validated for the educational part, the first part needs to be reworked. Indeed, there is some uncertainty as to the relevance of the first questionnaire: it is impossible to know whether the self-assessment is consistent or whether it is over- or underevaluated.



D 2.2 Digital Self-Assessment Tool



As an approach, the SAT developers consider that only one person per company is required to complete the first questionnaire.

Following multiple discussions, we came to the conclusion that the SAT should also be integrated on the digital tool and accessible to the RGT project companies.

2.3 Invitation to tender and selection of external service provider

Following the positive feedback from the consortium, we drafted a call for tender for the IT development of the tool, the generation of graphs, the automatic sending of e-mails and the visualization of results via an application. This tender was sent to 3 companies based near EuraMaterials, during the month of January 2024:

- Easy web
- Techniweb
- HD Dev

After a careful reading and evaluation of the proposals received, we chose HD Dev in February.

Discussions have begun with the company to set up the online SELF ASSESSMENT TOOL from March 2024, in order to present the tools that will be used, validate the tool specifications and set up the working methodology between Euramaterials and HD Dev.





3 STRUCTURING THE TOOL

3.1 Consortium participation (Porto)

Since the last exchanges with the consortium, in December 2023, the questions have been reworked and the answers have been oriented towards the company's positioning.

In order to test the questions, we have taken advantage of the annual meeting of the RGT project in Porto in March 2024 to get feedback from companies on the question typologies and categories.

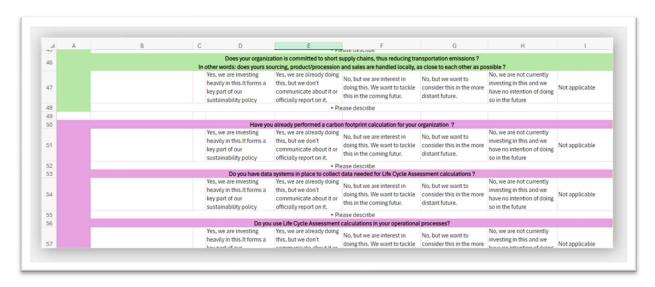


Figure 16: Questions tested during annual meeting in Porto

The feedback has been positive:

A few partners find the answers too long to read, but a large majority of respondents find the answers relevant and detailed enough to enable them to choose the correct answer.

We need to change "product" to "product/process" to make SELF ASSESSMENT TOOL suitable for all companies.

In the "production" section, we were asked to separate out the resources (water, energy, buildings, etc.), to enable the companies concerned to provide details, if necessary.

In the "production" section, we were asked to multiply the questions in order to divide the tier 1 subcontractors, and the tier 2 and 3 subcontractors.

In the "eco-design" section, we were asked to add questions to refine the results.

Following these exchanges, we reworked the questions. The number of questions is now:

For the "raw materials" section: 6

For the "production" part: 8

For the "eco-design" section: 7





For the "transparency" section: 11

Also, it was considered useful to apply the SAT not only in M18, but also at the end of the RGT project, to asses companies progress following the support measures offered in WP3 and WP4.

RGT lead partner, as well as WP2, WP3, and WP4 leaders and Task leaders will collaborate in order to ensure partner SMEs answer the SAT questionnaires in due time.

3.2 Visual aspect of the form

To make the SELF ASSESSMENT TOOL more attractive, the sections have been highlighted with new graphic elements inspired by the RegioGreenTex project:



Figure 17: Design of different parts for the online version

3.3 Question formatting

To make the SELF ASSESSMENT TOOL useful to coaches, for each question the respondent is asked to justify the answer with details.

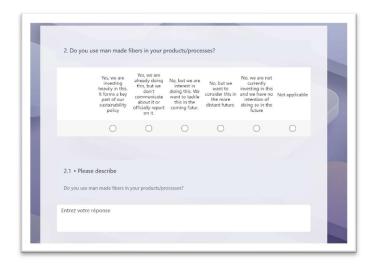


Figure 18 : Formating question





3.4 Application mock-up

A first version of the application has been set up and it is accessible via Microsoft Teams only to EuraMaterials members for the time being.

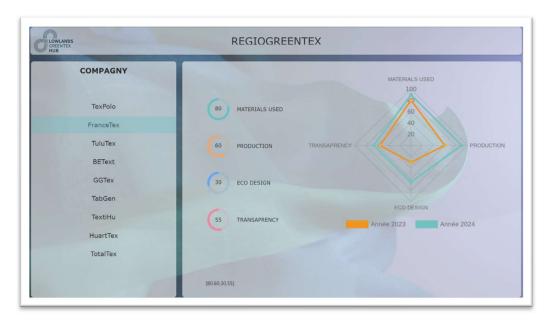


Figure 19: First mock-up of the Self-assessment tool app





4 IT DEVELOPMENT

4.1 Self-assessment Tool

4.1.1 Intro and outro text

The Self-assessment tool introduction, finalization, and automatic mailing texts have been drafted. As have the identity details requested at the start of the Self-assessment tool.





Figure 20a 20b : Intro of the Self-assessment tool

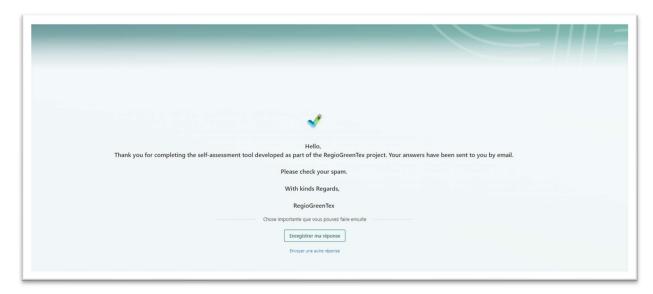


Figure 21 : Outro of the Self-assessment tool

4.1.2 Application

The application has been improved. It is now composed of 3 display pages:

Dashboard: enables rapid visualization of a company's results in the form of a radar chart. A system of filters (country/company name/date) allows you to select the company.





Entries: displays the values obtained by the company (not available at present: will allow a coach to be assigned in this section)

Company: displays the company's identity card



Figure 22: Second mock-up of the Self-assessment tool app

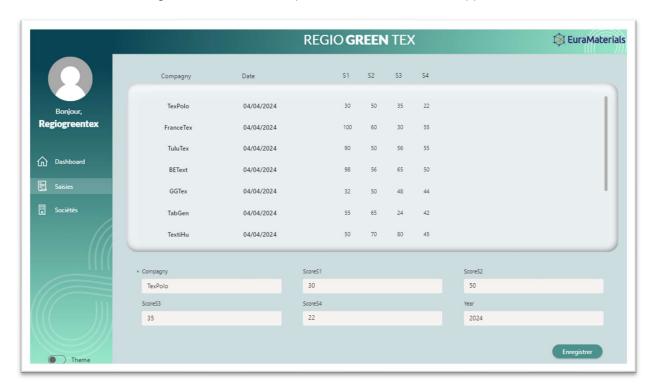


Figure 23 : Detail of the Self-assessment tool app





4.2 Development of educational quizzes

In parallel with the **Self-assessment tool**, the interactive part is also being developed. The mode chosen for development allows you to learn as you go:

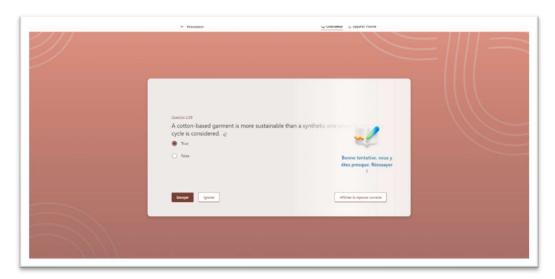


Figure 24 : Quiz part - wrong answer

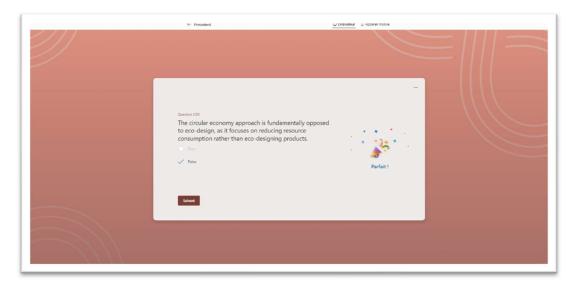


Figure 25 : Quiz part : right answer





4.3 Questions

To diversify the educational quiz, we've redesigned the questions, offering the answers in the form of images.



Figure 26: Example of images as answers



5 BETA TEST

The beta test session was launched during a Lowland Hub meeting on May 2, 2024. The Self-assessment tool and the educational quiz were sent to members of project (see screenshot below).

An e-mail was then sent to the entire consortium for feedback on the use of the tool.



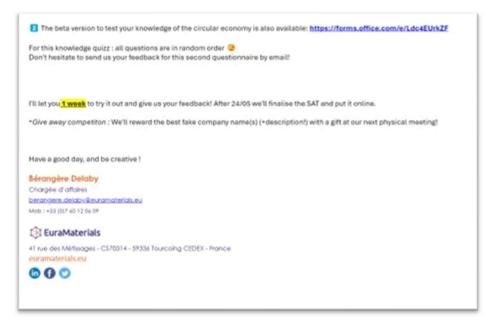


Figure 27a 27b: mailing for beta test

To date, 5 companies have participated in the beta test: Ariadne, Rise, Oostnl, Technotex, Euramaterials.







6 ON LINE

The design of SAT is in the schedule, the beta-testing will be finished by the end of June 2024, when the tool will be available on the RegioGreenTex Digital Tool.







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