



# EduZwaCE MaNaGeR

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DIAGNOSIS TOOL

Manual

# Diagnosis Tool Manual



## KEY WORDS

Self-assessment

Process

Product

Business models

Collaboration

Circularity

## ABOUT THIS MANUAL

The Manual is intended to guide the user, professionals from industrial companies on how to utilize the EduZWaCE Diagnosis Tool and to perform the assessment of the internal and external circular economy and zero waste opportunities by responding to a set of questions and self-evaluating its performance in relation to the circular economy opportunities described in the EduZWaCE Training Course manuals for Focus group 1, EduZWaCE Manager.

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## 1. Goals of the Diagnosis Tool utilization

The ZW&CE Diagnosis Tool is a useful self-assessment tool for companies (in particular SMEs) that helps them to investigate opportunities for circular economy and zero waste solutions in their specific context. The company can identify the most effective opportunities for improvements in terms of circularity as well as the overall sustainability performance, and choose the most effective leverage points and feasible measures leading to both an improvement in circularity and efficient allocation of its limited resources.

In order to optimize improvement measures and actions, it is important to review the whole system of a business in a consistent way; therefore, all levels of a company are assessed in a systematic way, including the physical level (products, production processes), as well as the governance level (business strategy, stakeholder relations and status of collaboration).

The on-line tool is available in the Collaborative Section of the Platform to be used for free by companies and circular economy experts. Apart from the Platform, the Diagnosis Tool is closely linked with the other intellectual outputs. The tool users are offered the possibility to obtain additional information by exploring the resources of the Knowledge Hub as well as to learn more about concrete topics in the On-line Course. At the same time, the Diagnosis Tool is used as one of the training materials in the Course.

## 2. Diagnosis Tool Model

In order to capture all opportunities, as well as the recommended practices for decreasing waste generation and increasing the circularity of processes, products and businesses in general, the Diagnosis Tool Model was created, consisting of two sections (Figure 2-1).

On the left hand, the internal opportunities are presented, referring to:

- ▶ **Processes** – represented by the main practices that are influencing their resource efficiency: how materials are used, how waste is generated, what is the level of technology and automation, what are the management processes, personnel training and awareness raising, and monitoring and analysis;

- ▶ **Products** – how the resource use perspective is taken into account, including possibilities for lifetime extension and recyclability, and possible product design for circularity.

On the right hand the external opportunities are presented, referring to:

- ▶ **Circular business model** opportunities from the perspective of circular design, optimal use and value recovery perspectives;
- ▶ **Collaboration models** with partners from the value chain (customers and suppliers), and other actors such as other industries and government.

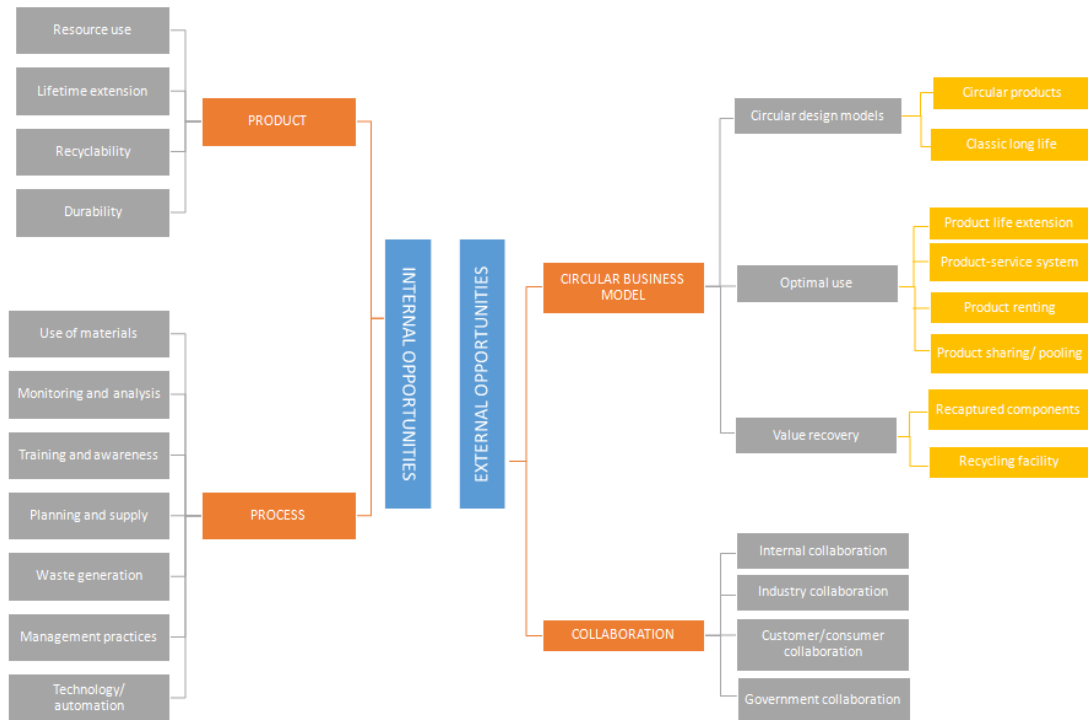


Figure 2-1 Diagnosis Tool Model

### 3. Sections of the tool

The on-line EduZWaCE Diagnosis Tool asks the user to provide qualitative and quantitative information about company's situation in the area of resource use, waste management, product, business, and circularity with focus on both internal and external aspects.

*The company's answers are evaluated, and as output, visualised results of the evaluation are provided. They include assessment of company's performance in four specific areas (processes, products, business models, and collaboration) as well as comparison against benchmarks. At this stage, benchmarks are set by us (EduZWaCE team) and represent performance of an "ideal" company. In future, the benchmarking should be provided against performance of other companies that use the Tool.*

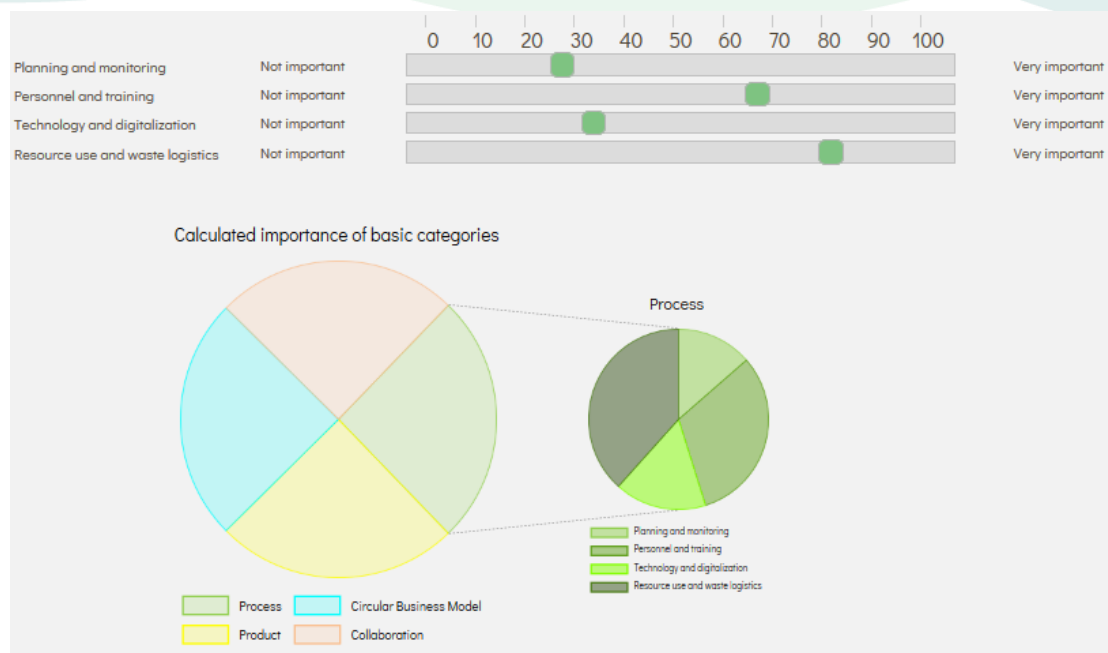
## **4. Data to be filled in and methods for compilation**

In order to keep a comfortable level of user friendliness, the user is asked to make its input three times, only (further explained in chapters 4.1., 4.2., and 4.3.). Process of feeding the tool with data shouldn't exceed 20 minutes in total. An unorthodox approach of the Diagnosis Tool is represented by the fact that the user himself/herself is prioritizing internal and external opportunities, so that the whole evaluation is then adapted to specific aspects of his/her business model. Process of prioritization is done in subchapters 4.1. and 4.2. Self-evaluation process is trust based, in other words, there is no way how to find out whether user feeds the tool with data reflecting situation in company. On the other hand, honest numbers will assure good results – revealing well-performing areas and also real room for improvement.

### **4.1. Prioritization tab**

There is a prioritization tab designed for every set of internal and external opportunities (Processes, Products, Circular Business Model, and Collaboration Models); each type of opportunities is further decomposed into four aspects. *For example Process opportunities are decomposed into aspects like Planning and monitoring, Personnel and training, Technology and digitalization, and Resource use and waste logistics.*

User is invited to express, which partial topic is more or less important for his business concept (by simply moving the tab left-right). The prioritization mechanism is depicted in the Figure 4-1-1. User is offered a sensitivity scale 0–100 to express the difference in importance.



**Figure 4-1-1 Prioritization mechanism**

The prioritization mechanism creates weights that are being assigned to statements in multiple choice part. *For example, calculated weight for Planning and monitoring is assigned to the statement "The company sets waste management and/or circularity-related targets, and regularly monitors, analyses and evaluates them."* The legend (assigning aspects to questions) is available in the Colour match display part.

## 4.2. Multiple choice (qualitative) statements

In this part of the self-evaluation, user fills-in multiple choice questionnaire (8 for each type of opportunities) according to the following scale:

- ▶ Not relevant – The issue is irrelevant for the company (cannot be implemented due to nature of its specialization and/or products).
- ▶ Absence – Given aspect is not addressed by the company, or is implemented at a low level (only few occasional activities taken).
- ▶ Preparation – Given aspect is somehow implemented by the company, however is not addressed regularly and in a systematic way (i.e. activities are carried out but rather at ad-hoc basis).

- ▶ Integration – Given aspect is integrated into regular company activities and is addressed in a systematic way (e.g. regular monitoring and evaluation is in place, written procedures exist, etc.).

Relevant calibration table (Figure 4-2-1).

Level of implementation	Points	Importance	Description
Not relevant	0	N.a.	The issue is irrelevant for the company (cannot be implemented due to nature of its specialization and/or products).
Absence	1	Low	Given aspect is not addressed by the company, or is implemented at a low level (only few occasional activities taken).
Preparation	2	Medium	Given aspect is somehow implemented by the company, however is not addressed regularly and in a systematic way. (I.e. activities are carried out but rather at ad-hoc basis.)
Integration	3	High	Given aspect is integrated into regular company activities and is addressed in a systematic way. (E.g. regular monitoring and evaluation is in place, written procedures exist, etc.)

Figure 4-2-1 Calibration table

In order to select from multiple choice options, user has to understand what individual options do mean. The Figure 4-2-1 depicts levels of implementation from 0 to 3. Not relevant means that particular statement is targeting aspect which is not relevant for the user's business concept. On the other hand, value 3 (Integration) means that statement is targeting an aspect which is very advanced in the value chain of business activities. *For example, user selects Integration option in case their level of employee training aimed at waste minimization awareness represents a cutting edge in their field of expertise/region/area.*

An example of filled-in multiple choice questionnaire is available in the Figure 4-2-2.

**Process - Questions:**

The company has a dedicated person (waste manager) responsible for waste management practices including waste prevention and minimisation and circularity aspects.

The company sets waste management and/or circularity-related targets, and regularly monitors, analyses and evaluates them.

The company has technological planning and maintenance programmes to reduce the mass of waste and minimise defects and losses.

Figure 4-2-2 Multiple choice questionnaire



The questionnaire depicted in the Figure 4-2-2 represents and is referred as a qualitative part of the evaluation; user is stating the level of advancement of his/her organization has reached in areas targeted by the questions posed. *In an example given by the Figure 4-2-2, the company does not have a dedicated person (waste manager) responsible for waste management practices, though his/her involvement would be beneficial. On the other hand, the company does not set waste management and/or circularity-related targets because this activity would be irrelevant.*

### 4.3. Fill-in (quantitative) questions

Fill-in questions represent a quantitative part of the evaluation. This set of questions needs to be answered for every internal and external opportunity part (Processes, Products, Circular Business Model, Collaboration Models – 4 questions in each part).

User is asked to fill-in number without any additional comment or sign (e.g. %). User is asked to state number which represents reality the most. Fill-in questions will not influence all key performance indicators (KPIs) but only those comparing the overall company performance with industrial benchmark. An example of fill-in questions is provided in the Figure 4-3-1.

What is fraction (in %) of material cost on your total cost?	70
What is mass fraction (in %) of use of alternative (renewable, secondary) input materials?	10
What is mass fraction (in %) of your total outflow of materials is recirculated? (i.e. used as by products, reused, recycled, composted, or materially recovered)	10
Number of employees (in %) trained annually in waste minimisation, waste separation and circularity aspects.	10

Figure 4-3-1 Fill-in questions

## 5. Key Performance Indicators and benchmarking (choice of quantitative and qualitative indices)

The Diagnosis Tool does not want to disappoint those who do not reach fantastic overall results in comparison to the best industrial benchmarks. We again want to respect individual pace of doing business and circumstances, the company is exposed to, frequently posing objective barriers disabling to reach excellent results. We, therefore, created two categories of KPIs. First category is represented by KPIs evaluating potential and good logic how the

business concept is structured. The second category is made up of KPIs showing the overall performance.

## 5.1. KPIs – potential of business concept

KPIs evaluating business concept potential are as follows (KPIs are placed into results displaying graphical tabs of the Diagnosis Tool):

- ▶ **Qualitative score** – refers to the value assigned to every question based on user's answers in qualitative part. The sum of those values represent another KPI – Potential of basic categories (expressed either as absolute value or in %).
- ▶ **Weight of qualitative statement** – represents the weight that user has assigned to selected aspects. (For further details, please, consult chapter 4.1. Prioritization tab.)
- ▶ **Calculated importance of basic categories** (external/internal opportunities – Processes, Products, Circular Business Model, Collaboration Models) – indicator is a summary of weights (expressed as % or score), which the system has assigned to every question based on user's preferences expressed in prioritization tab (chapter 4.1.). It is a less complex indicator than potential of basic categories because it doesn't include answers to qualitative questions.
- ▶ **Potential of basic categories** (external/internal opportunities – Processes, Products, Circular Business Model, Collaboration Models) – the indicator is a summary of scores of questions asked in four opportunity areas. Indicator (absolute value or in %) shows overall potential of opportunity area to contribute to good results in zero waste and circular economy. In other words, the indicator shows how the business concept is designed and what is the expected potential of specific aspects of a business concept to contribute to good results in zero waste and circular economy.

## 5.2. KPIs – overall performance

The overall performance of a company/business concept is depicted holistically, together with the breakdown into Processes, Products, Circular Business Model, and Collaboration Models performance areas. Diagnosis tool uses radar chart type for the display of the overall performance.

- ▶ **Overall results** – the indicator offers the final score (compiling together qualitative part and quantitative part results) of assessed company/business concept. This score is being benchmarked with the "ideal example" – an industrial example to be followed. In the later stage of the tool existence (when the representative sample of users will be reached), the benchmark value might be represented by the company which has reached the best results.

## 6. Interpretation of results

There are two basic formats of results interpretation – "Colour match" and charts. Both formats represent two "stories".

### 6.1. Colour match

Not only feeding the tool with input data should be time-efficient (less than 5 minutes per section), we also want a user to easily understand his/her position thanks to Colour match mode of display. User tests his/her business concept, whether it is structured in a logical way. *For example, if the Planning and monitoring has a significant importance/weight for his/her business concept, then, logically, questions referring to the planning and monitoring areas should be answered with the highest level of advancement – "Integration" or "Preparation" at least.* The Diagnosis Tool tests the composition of user's business concept and transfers results into a colour match. The analysis of qualitative part offers following results:

- ▶ **Analysis of qualitative part** – shows potential deficiencies (not important parts of the business concept are well-developed whilst important parts being underdeveloped) when colours do not match (red colour). On the other hand, when colours match (green vs. green), the concept is structured in a logical way. Examples are given in the Figure 6-1-1.

1,51	12,72%	1,01	11,51%
2,26	12,72%	1,01	11,51%
0,14	2,41%	0,69	11,78%
0,29	2,41%	1,04	11,78%
0,05	0,80%	0,11	1,87%
0,00	0,80%	0,16	8,97%
0,05	0,94%	0,26	8,97%
0,05	0,94%	0,53	1,87%

**Figure 6-1-1 Colour match story example: Perfect match vs. room for improvement**

It is important to note that perfect colour match is reachable also with low qualitative score (low performance) and low importance – but they must match. In other words, unimportant qualitative aspect is not delivering high performance results (score), which is logical. What is not desired is red result. That means an irrationally structured business concept and relevant corrections should be applied (unimportant area should not have high performance). Colour coding gradually evolve from red to green according your result.

## 6.2. Charts

There are several charts displaying KPIs:

- ▶ **Calculated importance of basic categories** [pie chart] – weights of individual aspects (e.g. internal collaboration, management practices) as assigned by the user ordered per basic opportunity area.
- ▶ **Potential of basic categories** [pie chart] – there is a general pie chart displaying overall performance of Circular business model, Collaboration models, Processes and Products opportunity areas. Potential of basic categories represent a strengthened or weakened importance of basic categories (1st dimension) – based at answers to qualitative questions (2nd dimension).
- ▶ **Overall results & comparison with others** [radar chart] – This chart shows the final overall performance (using scoring mechanism/metrics developed for this purpose) calculated from all quantitative and qualitative data. An offered breakdown is showing individual

contribution of every quantitative question that is being offered (using radar charts).

Importance and potential charts are available in the Figure 6-2-1.

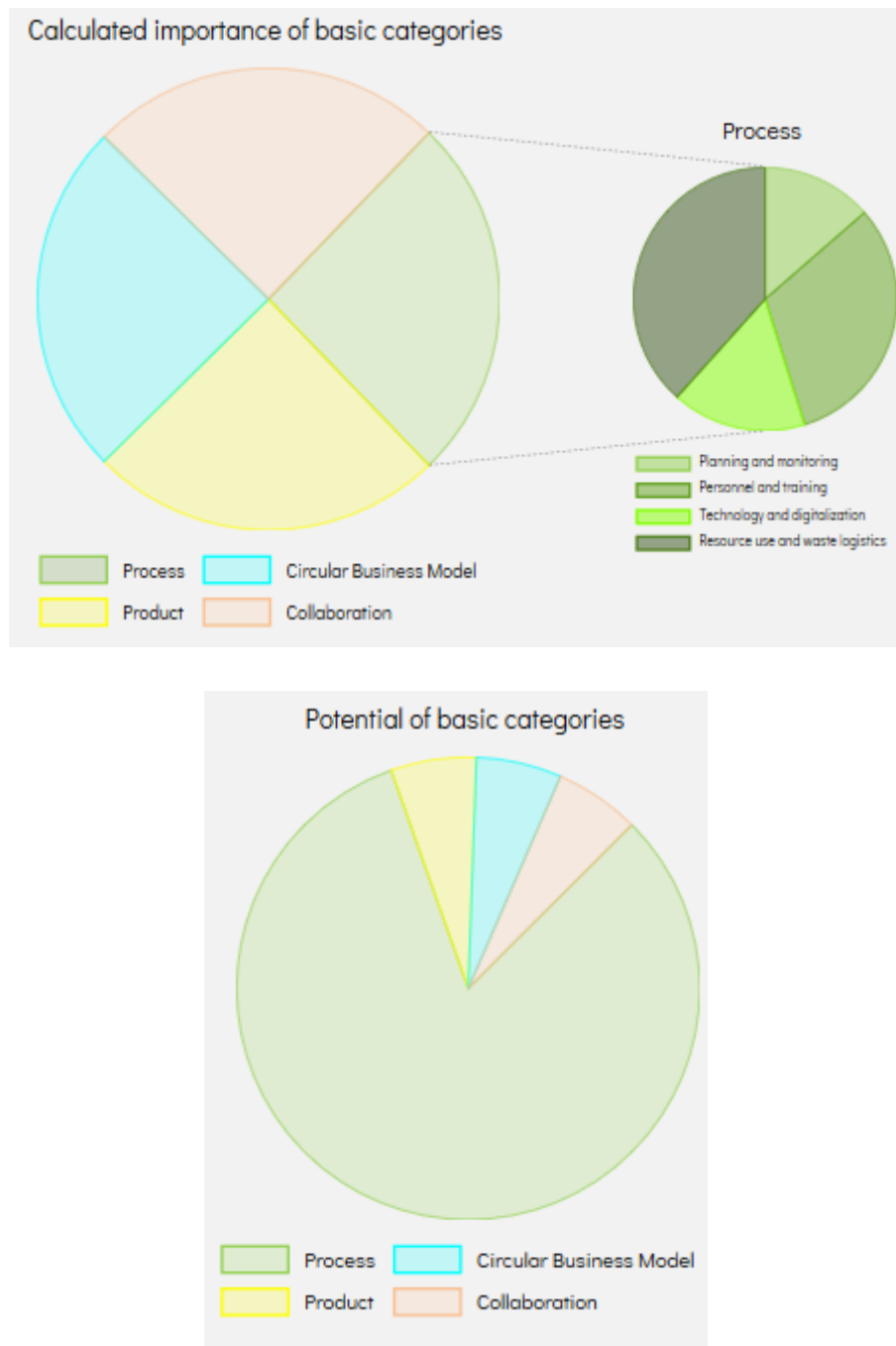


Figure 6-2-1 Importance and potential charts

## 7. How to use the online tool

Performance of a company and its comparison towards benchmarks is expressed through radar charts.

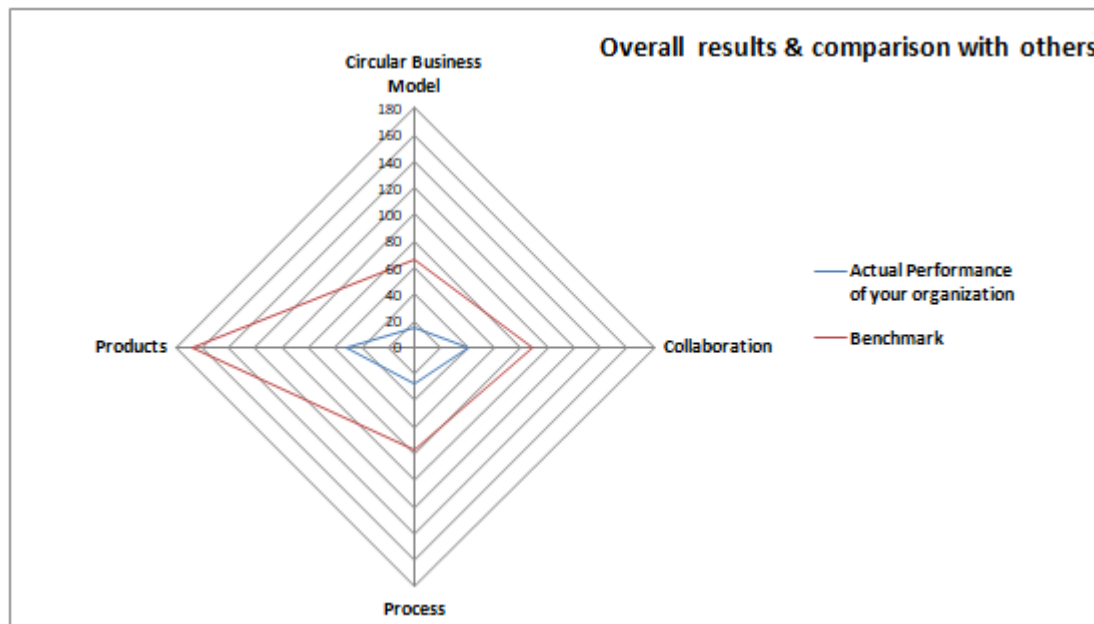


Figure 7-1 Overall results depiction

There is an overall radar chart (see the Figure 7-1) and four radar charts available for every aspect, showing contribution of every quantitative question to the overall performance. However, benchmark against the best values is not the primary message that the tool wants to communicate to users.

The main ambition of the EduZWaCE tool is to inform the user →

***Whether his/her business concept is structured in a logical way (colour match section).***

***Which aspect/area is underdeveloped and should be performing better.***

***Which aspect/area is overdeveloped and company does not need to develop it further at this moment.***

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The zero waste and circular economy field is still under the development. We, therefore, do not create a tool exclusively aimed at the best industrial results, because today it is rather unknown what shall be the best possible reachable performance in this field. Considering this fact, we are rather presenting the tool aimed at path towards the success than being aimed at success itself.

The user is asked to frankly answer all questions to his/her best knowledge. Only then, we are able to encourage or correct him/her on a way towards zero waste and circular economy.



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