CASE
Competencies for a sustainable socio-economic development

MANUAL
CASE SUSTAINABILITY COMPETENCIES TOOL

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1. What is the Sustainability Competencies Tool about?

The aim of the CASE Competencies Tool is to make the development of competencies for sustainable development visible and comprehensible. It focuses not so much on a quantitative assessment but more on qualitative reflection and dialogue processes, which can be initiated by various forms of self- and external evaluation. Primarily, the tool is meant to be used by students in the context of sustainability-oriented courses at tertiary level but it can also be transferred to processes implemented by sustainability-oriented companies and non-profit organizations (e.g. workshops, employee trainings or meetings) in a modified form. The manual shall provide guidance and insights to all users, in particular teachers/course facilitators, how to apply the tool effectively in their work.

The following manual is a supplement to the online tool. The first part explores the tool's background and objectives but also addresses possible fields of application. The second part gives a definition of the term "competencies for sustainable development" and explains the proposed competence-framework. Finally, the tool's structure and assessment process are explained.

1.1 Background and objectives

The Competencies Tool was developed as part of the Erasmus + project CASE in a collaborative process, where the CASE project partners, students and external partners were involved[1].

Competencies for a sustainable socio-economic development have been the central theme of the project CASE. A comprehensive literature review on competencies for sustainable development and sustainability-driven entrepreneurship presented the theoretical basis for the CASE project. The framework for sustainability competencies as defined by Arnim Wiek (Wiek et al 2012 and 2014) and coupled by Lans (2016) insights played a central role and serve as a frame for the tool. The CASE needs analysis provided the empirical basis, where competencies for sustainability-driven entrepreneurship were analyzed in the context of 73 interviews with sustainability-oriented companies and university partners (Bernhardt et al., 2015).

Depending on the application, the tool has the following benefits:

For students

- Students learn what competencies for a sustainable development mean, what their specific characteristics in relation to other key competencies are and how they are interrelated.
- Students learn to understand competencies as a bundle of attitudes, values, skills and concrete experiences.
- Students are motivated to reflect upon their own competencies and to figure out capabilities and barriers to development.
- Applying the tool in university courses, it supports learning processes through interlinking contents of the course and development of own competencies.
- Applying the tool in peer settings, it promotes the ability to provide and receive qualified feedback and to reflect in dialogue processes.

[1] 10 European universities and business partners), from diverse disciplinary backgrounds across different sectors and private as well as public organizations

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For teachers and external coaches

- Through a structured process, the tool supports teachers and external coaches in coaching students.
- In the context of course evaluation, the tool supports the assessment of learning objectives and competence development.
- The tool can also be supportive for quality assurance in curriculum development processes.

1.2 Learning approaches and learning process

The Competencies Tool supports a holistic learning process based on different learning approaches and methods. The most relevant are explained briefly below, further details can be read in CASE Report of WP3/4 (Biberhofer and Bockwoldt 2016).

Competence development

The tool is based on an understanding of competencies, which includes knowledge, skills and attitudes. Following Rieckmann (2012, p. 129) competencies are individual dispositions of self-organization, which include cognitive, affective, willful, and motivational elements. Competencies are not determined a priori but have a process-oriented character. Accordingly, they are a bundle of latent potentials which are activated in the concrete application situation. To what extent the level of existing and still developing competencies is perceived, is decisively related to the ability of reflection.

Reflection

Even if there are few clearly defined concepts, reflection is seen as a basic principle for the development of competencies (Reinmann 2005, p. 7) and is the basis for self-determination in the learning process, as found in Klafki (1986) and Häcker (2006a). The learning cycle of David A. Kolb is certainly one of the most influential (but also controversial, cf. Greenaway 2008) teaching / learning models. Kolb assumes that learning is based on experience. "Learning is a continuous process grounded in experience" (Kolb 1984, p. 27). At the center of his explanations are four phases: Following a concrete experience (1), these experiences are described, communicated and reflected, before (2) the findings are abstracted from them and are thus generalized in a phase of theory formation. The derivations from this (3) are tested in practical implementations, by transferring again into concrete action and thus (4) into a phase of practical experience (Kolb, 1975).

Since self-reflection reveals only a part of one's own competence profile, the complementary perceptions of others are decisive. It can be conducted either as peer reflection amongst a group of students or as external reflection by teachers or cooperation partners.

Coaching and Mentoring

Coaching and mentoring play a central role in supporting learning processes and aim to initiate and accompany concrete action- and development opportunities grounded on the perceived competence profile. In this context coaching and mentoring are understood in a broader sense, going beyond the traditional understanding of a linear relationship between coach and client.

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The two approaches "can be understood through the notion of becoming, through and in relation to others" (Rigg & O'Dwyer, 2012, p. 319). Coaching is based in the constructivist, systemic assumption that learners should construct their knowledge in accordance to their existing frames of reference.

Mentoring is based in social learning theory and serves two functions in the learning process: As role models mentors support the identity work of the learners developing an entrepreneurial identity and they are a source of social capital (Rigg & O'Dwyer, 2012). Whereas coaching has the idea, that the coached person is a competent individual who is in power of all resources needed to fulfill his/her tasks, the mentoring approach assumes that individuals learn best from other persons who are already one step further concerning their knowledge and development2. Therefore, a coach on the one hand should ask the "right" questions in order to help the coached person explore his/her resources, goals and motivations or structure his/her thinking process or activities. A mentor, on the other hand, can help with concrete advice, challenge assumptions or tell and show how he/she is solving similar problems.

1.3 Application

The usage of the tool is flexible and allows several forms of application. For each course, it should be decided how to use the tool, considering the objectives, time resources, participants' background and, if applicable, composition of groups.

Self- and external reflection

The key for individual learning processes is the ability to reflect upon own competencies, capabilities and boundaries of competence development. The tool supports the process of self-reflection but external evaluation as well, which is conducted by teachers or in the case of cooperation projects by external partners. The comparison of self- and external perception and perceived differences can initiate fruitful further learning processes. It is crucial that comparisons are embedded in a comprehensive feedback and dialogue process.

Status- and development-oriented assessment

The tool can either be used only once in a course, e.g. at the final stage, or e.g. at the beginning and at the end of the course. When only used once at the end the tool can help to become aware of the connections between contents of the course and own competencies; when used twice, the focus can be put on the development and learning progress, strengthening continuous reflection and exchange about personal sustainability competencies.

Individual or group-oriented evaluation

In the first place, the tool is aimed to support the perception of individual competencies. However, the tool is also suitable for evaluation of group competencies in the context of courses focusing on group- and teamwork.

[2] This idea goes back to Vygotsky's concept of the "zone of proximal development" (see in Rigg & O'Dwyer, 2012, p. 324).

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2. What are competencies for sustainable development?

The tool is based on an understanding of competencies, which includes knowledge, skills and attitudes. Following Rieckmann (2012, p. 129) competencies can be characterized as individual dispositions of self-organization, which include cognitive, affective, willful, and motivational elements. Competencies are not determined a priori but have a process-oriented character. Accordingly, they are a bundle of latent capabilities which are activated in the concrete situation of application. To what extent the level of existing and still developing competencies is perceived, is decisively related to the ability of reflection.

Wiek et al (2011) define competencies for sustainable development as essential for sustainability. Until now they have not been the focus of traditional education and therefore require special attention. Competencies for sustainable development are integrated into a context characterized by high complexity, insecurity, high speed of social change, individualization, diversity and uniformity. Therefore, it is crucial that sustainability competencies are considered as skills that enable people to successfully solve problems regarding real sustainability-problems, challenges and possibilities (Wiek et al., 2011). Below, five types of competencies, usually associated to the group of sustainability competencies, are specified further.

2.1 Systemic Competence

In an increasingly complex environment a different kind of thinking than the conventional linear one is required. Systemic competence is the ability to understand complex systems and to deal with complexity at the same time. That includes the ability to think beyond the boundaries of disciplines and to link different domains (society, environment and economy), as well as different levels (local, regional, global). It requires the ability to analyze structures within systems and subsystems, but also the ability to identify key actors and relationships between them.

2.2 Anticipatory Competence

Anticipatory competence is the ability to think in long-term time horizons and thus to anticipate possible future developments. It requires intergenerational thinking and therefore involving and considering different generations in the present and in the future. It includes foresight and the ability to cope with uncertainty and risks. The ability to design sustainable scenarios is just as much a part of it as the targeted development of capabilities and opportunities.

2.3 Normative Competence

Values and mindsets are motors of behavior. Normative competence is the ability to reflect, to name own values and to understand and accept the values of others at the same time. It means to have a concept of basic values of sustainability, such as responsibility, respect, tolerance and ethics, and to center own behavior around this axis. Normative competence includes the ability to identify and address value-conflicts and dilemmas that arise in achieving sometimes conflicting sustainability goals. It requires an attitude of inner independence and the freedom to hold against the mainstream.

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2.4 Strategic Competence

Strategic competence means the ability to design and shape change processes towards sustainability. It is connected to a sense for reality and practical understanding to bring ideas and concepts “down to earth". Management skills, such as the ability to structure processes, organize resources, and deploy them in the right way at the right time, as well as leadership skills, are an essential part of this competence. It becomes evident when problems and challenges in implementing strategies arise. For this, creativity, innovative power and "out of the box" thinking are needed, to be able to strike fundamentally new paths. In addition, it is essential to know how to control effectiveness and efficiency of solutions to repeat success and to reduce the repetition of failure.

2.5 Interpersonal Competence

As complex systems require a different kind of communication, interpersonal competencies should be re-defined in the context of sustainability. The prerequisite is an attitude based on diversity, transcultural and pluralistic thinking. The ability to develop interconnections between different stakeholders and to overcome "language barriers" is key. That calls for translation competence, hence, the ability to find a consensus for common terms and to develop a common language. Interpersonal competence further contains the ability to build, shape and maintain (multi-stakeholder) networks in the long term. At the same time, it includes the ability to cooperate successfully in heterogeneous teams. That means to know the success factors and barriers of teamwork and to apply this knowledge in real-world contexts. Ultimately, communicative skills are of utmost importance, like dialogue- and conflict skills, but also presentation-, moderation- and rhetorical skills.

3. How to use the tool?

The central aim of the tool is to initiate a reflection and dialogue process on sustainability competencies. The tool should help to sharpen one's own perception, to identify potentials, possibilities of development, as well as barriers. In the context of academic courses / teaching courses, the goal is therefore not an exact depiction of competencies but to foster sensitization and awareness of competencies. The structure of the assessment consists of the following elements.

FIELD OF COMPETENCE													
	IMPORTANCE				KNOWLEDGE				APPLICATION				QUALITATIVE INTERPRETATION
	0	1	2	3	0	1	2	3	0	1	2	3	
Sub competence 1													
Sub competence 2													
Sub competence 3													
Sub competence 4													
Sub competence 5													

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3.1 Fields of competencies and sub-competencies

Step 1: Get familiar with the meaning of competencies for sustainable development

The five fields of sustainability competencies, described under section 2.6.3, serve as a guiding frame. Each competence-field is explained through five sub-competencies, which reveal some of the most obvious meanings of the competence-field but do not claim completeness. Students should reflect upon each sub-competence and figure out, what it means for them and in the context of the course.

Online tool: For each sub-competence, impulse questions are available which help to reflect upon the own competence development.

3.2 Components of competencies and evaluation

Step 2: Evaluate competencies in a holistic way

In accordance with the definition of competence mentioned in section 2.6.3 and for a better differentiation of understanding, the tool proposes three components of competencies: importance, knowledge and application. Students should evaluate each component on a scale from 0-3, bearing in mind that the self-assessment reflects their individual perception. The assessment process can be guided through questions like:

- Importance: How important is the sub-competence from my perspective? Is it in line with my prioritized values?
- Knowledge: How do I assess my understanding and knowledge in the indicated field?
- Application: Do I apply the knowledge in practice? Which practical experiences have I gained?

The following table illustrates how the ranking 0-3 could be interpreted.

	Importance	Knowledge	Application
0	The competence is not regarded as important.	Understanding and knowledge are completely lacking.	Experience in practical implementation is completely lacking.
1	The competence is regarded as moderately important.	Understanding and knowledge are classified as weak.	Little experience in practical implementation.
2	The competence is regarded as important.	Understanding and knowledge are classified as good.	Sufficient experience in practical implementation.
3	The competence is regarded as very important.	Understanding and knowledge are classified as very good.	Great/Considerable experience in practical implementation.

For each competence-field practical examples are available in the guide, which provide experiences from courses, setting competencies for sustainable development into practice.

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3.3 Qualitative analysis and interpretation

Step 3: Interpret the numeric values and start a dialogue about competencies

As a result of step 2, a numeric value is shown for each sub-competence and for the competence field in total, allowing for several conclusions to be drawn. It is crucial that in step 3, students give a qualitative interpretation/justification of the results and deduce options for their own development path. The quantitative results can also be verified in dialogues with peers or teachers and thus deepen the reflection-process.

Deviations within the three components of competencies are of particular interest. For instance, if *importance* is high-rated, *knowledge* and practical application however low-rated, it could indicate a certain need, either for further personal development or for development of the curriculum.

3.4 Comparison

Step 4: Compare and reconcile self- and external perception

Depending on the course objectives and the relevance of reflection- and feedback processes, the results of the self-assessment can be compared with different values:

- Maximum: Every sub-competence has a maximum to reach, which means the advanced user-status.
- Results of previous assessments: the comparison with earlier assessments (for example, at the beginning of a course) gives an impact on reflection of competence development.
- Results of external evaluations: the comparison with the result of peer or teacher assessments supports the verification of the self-perception.

If comparative values are used, it is of importance to ensure that they are well embedded in a constructive dialogue and feedback setting.

3.5 Competence profile

Step 5: Making competencies visible

The values generated out of the assessment are graphically displayed in a bar chart, which provides a quick overview of strengths, weaknesses and development potentials. If comparison values are used, they are displayed in a corresponding bar chart.

Online tool: The three components of competencies are indicated through three different colors, as the graphic below shows.

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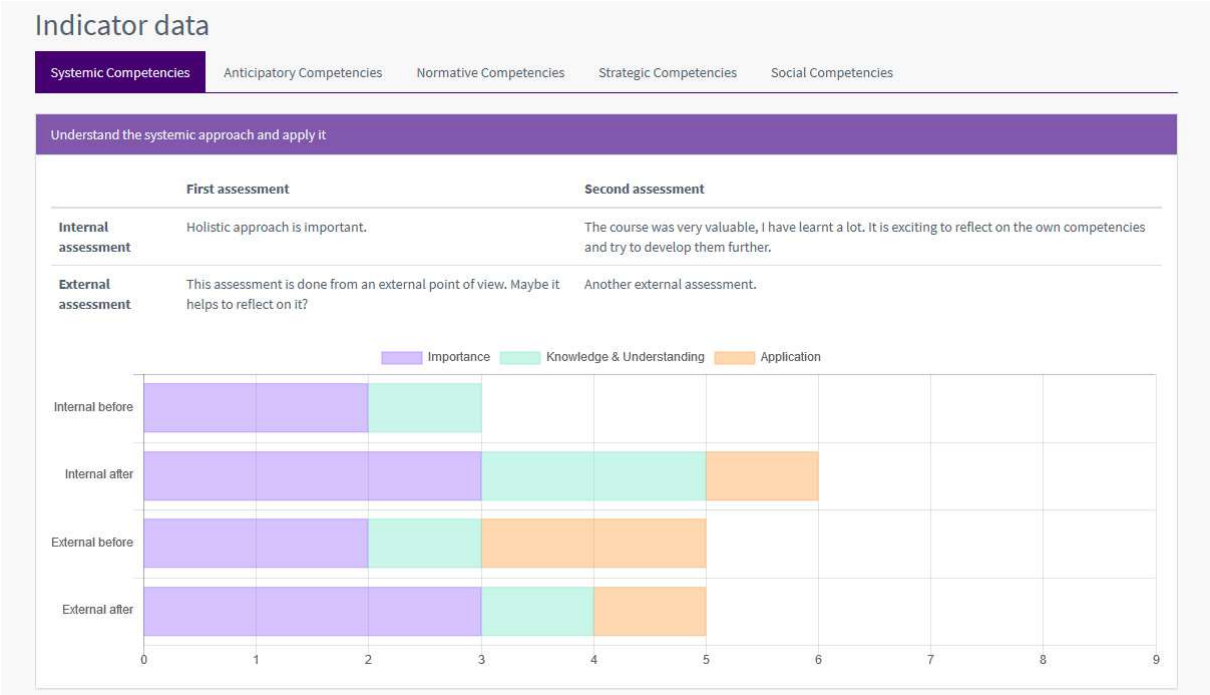

Figure: Visualization of the sub-competence in a bar chart

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