SDGs-LABS.EU

WP 1 REPORT

COMMON KNOWLEDGE BASE AND NEEDS ANALYSIS

With the support of the Erasmus+ Programme of the European Union

SDGs Labs
Making the SDGs our business

CONSORTIUM

terra institute

ORIGINAL WIESENHOF

CEIFA coop

ISEKI Food Association

WU WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

Verbund Transformationsforschung agrar Niedersachsen

utad UNIVERSIDADE DE TRÁS-OS-MONTES E ALTO DOURO

Universität Vechta
University of Vechta

RCE Vienna
Regional Centre of Expertise on Education for Sustainable Development

REGIA-DOURO PARK
SCIENCE AND TECHNOLOGY PARK
PARQUE DE CIÊNCIA E TECNOLOGIA

SDGs Labs
Making the SDGs our business

COMMON KNOWLEDGE BASE AND NEEDS ANALYSIS

PUBLISHED 31.12.2019

Main Author
Johanna Bernhardt

Further Contributors
Tanya Deporta, Marco Rieckmann, Larissa Jäger, Lukas Scherak, Katarzyna Gruszka, Line Lindner, Susana Isabel Campos, Carla Amaral, Rita Saldhena, Suhita Osório Peters
together with the whole SDGs Labs consortium

With the support of the Erasmus+ Programme of the European Union

SDGs Labs
Making the SDGs our business

CONTENTS

1. INTRODUCTION 8
1.1. The project SDGs Labs – Making the SDGs our business 8
1.2. Context of WP1 within the project SDGs Labs 8
1.3. Objectives of the common knowledge base and the needs analysis 9
1.4. Structure of the report 9

2. RESEARCH DESIGN & RESEARCH PROCESS 12
2.1. Desktop Research 12
2.2. Empirical Research 13

3. THEORETICAL BACKGROUND 18
3.1. Sustainability challenges in the agribusiness and food production sector 18
3.2. Sustainable Development Goals and business 20
3.3. Sustainability-driven innovations 22
3.4. Competencies for a sustainable business 24

4. REGIONAL CONTEXTS 28
4.1. Regional profiles 28
4.2. Partners of the expert interviews 32
4.3. Participants of the focus groups 35

5. SUSTAINABILITY CHALLENGES IN AGRIBUSINESS AND FOOD PRODUCTION 38
5.1. Awareness of Sustainability Issues 39
5.2. Ecological dimension 40
5.3. Economic dimension 43
5.4. Social dimension 47
5.5. Policy-structural dimension 48

5.6. Conclusion and outlook 50

6. ATTITUDES TOWARDS THE SDGs 52
6.1. Experience with the SDGs 52
6.2. Attitudes towards the SDGs 53
6.3. Opportunities of the SDGs 54
6.4. Boundaries of the SDGs 56
6.5. Conclusion and outlook 59

7. SUSTAINABILITY-DRIVEN INNOVATION 60
7.1. Definition of innovation 60
7.2. Innovation potentials the SDGs 61
7.3. Drivers and pre-conditions for innovation 65
7.4. Conclusion and outlook 66

8. NEEDS FOR SDGs-RELATED COMPETENCIES 68
8.1. SDGs-related competencies 68
8.2. Needs and expectations towards the project SDGs Labs 69
8.3. Cooperation with Higher Education Institutes 73
8.4. Support on a policy and structural level 73
8.5. Conclusion and outlook 75

9. SUMMARY AND OUTLINE 76
9.1. Sustainability challenges in the agribusiness and food production sector 76
9.2. Opportunities and boundaries of the SDGs 80
9.3. Innovation potentials of the SDGs 81
9.4. Needs and expectations towards the project SDGs Labs 82

10. LITERATURE 84
10.1. Theoretical background 84
10.2. Research design 85

APPENDICES
A) Practical guide for the expert interviews
B) Guiding questions for the expert interviews
C) Analysis frame for the expert interviews
D) Practical guide for the focus groups
E) Guiding questions for the focus groups
F) Analysis frame for the focus groups

SDGs Labs
Making the SDGs our business

ABSTRACT

The European agribusiness and food production sector is facing multidimensional sustainability challenges, among them are not only a growing scarcity of resources such as water, land, soil and the loss of biodiversity, but also a lack of work force and economic pressure due to the concentration of global markets. In order to meet these challenges in a globally coordinated manner, the world community agreed in 2015 on the framework of the 17 SDGs and the 169 targets. The agribusiness and food production sector is related to all 17 SDGs, as Rockström & Sukhdev show in their famous wedding cake graphic (Rockström & Sukhdev, 2016).

The following report presents the main findings of the expert interviews and the focus groups which were conducted with enterprises and business associations of the agribusiness and food production sector in the context of the project SDGs Labs. These findings play a vital role for developing the following parts of the project, in particular the SDGs Labs and the SDGs Academies, which aim at meeting the needs of practitioners in implementing the SDGs in business.

The interviews reflect a high awareness of the sustainability challenges which are perceived in the three dimensions of sustainable development, the ecological, the economic and the social, complemented by a fourth, the political-structural dimension.

Regarding the SDGs it turned out that they are better known amongst the interview partners and focus group participants as expected. Most of them find opportunities for business in the SDGs. They regard them as a source of inspiration for rethinking the own business, for changing perspectives and for treating sustainability issues in a more integrated way. Boundaries and limits are seen as well, in particular in translating them to business and breaking them down to an applicable practical level.

Interview partners and focus group participants see high innovation potentials in the SDGs and give examples for different types of innovation. Innovation potentials are seen in products, in processes, in technological and digital developments, in organisation and structure, as well as in marketing and in social innovation. Even though these innovations tackle sustainable development, they are often not directly linked to the SDGs.

The interviews as well as the focus groups revealed a clear need for support in better understanding and operationalizing the SDGs in business. There is a need for awareness building measures, for trainings and seminars to better understand each single SDG, and to receive an integrated view of the SDGs as a total. Concerning the pedagogics, it seems crucial to touch people in their emotions, thus, to work with playful, interactive methods.

A further need concerns exchange, cooperation and networks, where various types and settings of exchange are proposed – from small scaled focus groups with enterprises working in a similar business field over working groups on the SDGs in a certain geographical area over trans-regional

exchange with enterprises from other countries to large scaled multi-stakeholder networks.

Furthermore, good practices are highly appreciated as useful inspiration how to translate the SDGs into concrete business cases. Finally, interview partners and focus groups participants stress the importance of pilots, whereby the understanding of pilots is different. Some refer to the pilot cases in the meaning of the innovation labs, others understand pilots in the sense of developing and testing tools and methods to apply the SDGs.

SDGs Labs
Making the SDGs our business

1. INTRODUCTION

1.1. THE PROJECT SDGS LABS – MAKING THE SDGS OUR BUSINESS

The project "SDGs Labs – Making the SDGs our business" is an Erasmus+ Knowledge Alliance linking eight partners from universities and business:

- Vienna University for Economics and Business (project coordinator), Austria
- University of Vechta, Germany
- Universidade de Trás-o-Montes e Alto Douro, Portugal
- Terra Institute, Italy
- ISEKI-Food Association, Austria
- Wiesenhof, Germany
- CEIFAcoop, Portugal
- Regia-Douro Park, Portugal

The project aims to build a culture of collaboration and knowledge exchange between business and higher education institutes with the goal of incorporating the Sustainable Development Goals (SDGs) in a holistic manner into modern business practices of the agribusiness and food production sector. The European agribusiness and food production sector itself is facing an uncertain future and multidimensional challenges, among them are not only a growing scarcity of elementary resources such as water, land, soil and the loss of biodiversity, but also new pressures due to population growth resulting in intensified food demand as well as the manifold and complex consequences of climate change.

At the same time, the agribusiness and food production sector is predicted to deliver more than a quarter of the 169 targets associated with the SDGs.

(a) Resulting from this, SDGs Labs aims at: translating the abstract SDGs into practical business solutions for actors all along the supply chain in the agribusiness and food production sector including HEIs, start-ups and established companies.
(b) building on existing experience and gathered expertise throughout the project flow to develop innovative means and methods dedicated to co-learning environments for future collaborations
(c) establishing a curriculum for a SDGs Start-Up Academy programme operating in various European countries fostering SDGs practice in business performance and future cross-border cooperation in the agribusiness and food production sector
(d) setting up a SDGs Business Pioneers Facilitation Workshop for existing companies aiming at incorporating the SDGs holistically into their business practice

1.2. CONTEXT OF WP1 WITHIN THE PROJECT SDGS LABS

The common knowledge base and needs analysis is the starting work package of the project SDGs Labs. It has a central relevance to the whole pro-

ject. Firstly, because it covers the starting phase where terms and theoretical conceptions are clarified, and the application is set in action. Secondly, because the analysis provides basic information and data for the following work packages.

The work package contributes to the overall purpose of the project by:

- addressing the need for steep innovation of the European agribusiness and food production sector in light of the SDGs;
- enhancing knowledge exchange among the different stakeholders involved or linked to the agribusiness and food production sector;
- creating new methods and collaborative learning and teaching environments;

fostering the implementation of the SDGs and SDGs-related innovations in HEIs, start-up incubators and companies linked to the agribusiness and food production sector.

1.3. OBJECTIVES OF THE COMMON KNOWLEDGE BASE AND THE NEEDS ANALYSIS

WP1 aims at generating a common understanding of the challenges and needs of the agribusiness and food production sector and the project specific objectives and concepts to address these challenges. The work package is divided into two parts:

Common Knowledge Base

Grounded on a first literature review and analysis of good practices, the common knowledge base serves as a reference frame for all following work packages. It covers the following issues:

- Sustainability challenges: understanding the main sustainability challenges of the agribusiness and food production sector;
- Value chains: finding a working definition for value chains and key stakeholders in the agribusiness and food production sector;
- SDGs: understanding each of the 17 SDGs, the interdependencies among the single SDGs and opportunities to translate them into business innovations;
- Innovations: understanding the concept and characteristics of sustainability-oriented innovation.

Needs Analysis

The needs analysis is conducted with enterprises and related associations working in the agribusiness and food production sector and aims at answering the following questions:

- What are the main sustainability challenges for the agribusiness and food production sector from an entrepreneurial perspective, both at the global and regional level?
- What is the understanding of the SDGs and how to deal with their complexity?
- Which challenges, opportunities and innovation potentials are perceived in integrating the SDGs in the daily business?
- Which knowledge/skills/competencies are necessary for implementing the SDGs and how could they be developed through trainings or other forms of entrepreneurial education?

1.4. STRUCTURE OF THE REPORT

This report aims at showing the results and outcomes of work package 1 – Common Knowledge Base and Needs Analysis - of the project SDGs Labs.

The first part gives an overview of how the knowledge base and the needs analysis are embedded in the project structure and objectives of SDGs Labs. The second part outlines the research design, including the desktop research and the methodolo-

gy of the empirical research. The third part is concentrated on the theoretical background and key concepts used in the project.

Chapter four contains profiles of the five European regions where the project is embedded, and summarized profiles of the expert interview partners and the focus groups participants. Chapter five to eight reflect on the main results of the expert interviews and the focus groups concentrating on four thematic complexes:

1. Sustainability challenges in the agribusiness and food production sector
2. Understanding the SDGs and attitudes towards them
3. Innovation potential of the SDGs in the agribusiness and food production sector
4. Needs for implementation of the SDGs into business.

These four chapters follow the same structure: They start with the main findings of the expert interviews and focus groups and conclude with an integrative summary of the most relevant results.

Chapter nine concludes with an overall summary of the main thematic complexes and gives an outline of further usage of the results in the project. Chapter ten provides a list of references. The Annex contains the practical guides, guiding questions and analysis frames for the expert interviews and focus groups.

SDGs Labs
Making the SDGs our business

2. RESEARCH DESIGN & RESEARCH PROCESS

To address the objectives of the project a research design was developed consisting of a desktop and an empirical research part. In the following chapter, the main steps of the research process are described.

Desktop research:	Literature review Regional profiles Good practice analysis
Empirical research:	Stakeholder analysis Sampling Expert interviews Focus groups Analysis of expert interviews and focus groups

2.1. DESKTOP RESEARCH

2.1.1. LITERATURE REVIEW

The literature review aimed at refining concepts, terms and definitions used in the project and contributing to the common knowledge base. It was not the purpose to create an exhaustive literature review but to get an overview of the state of the art of the scientific discourse about the concepts our project is grounded upon.

As key issues for the literature review, we identified the following topics:

(a) Sustainability challenges of the agribusiness and food production sector
(b) Approaches of implementing the SDGs into business
(c) Concepts of sustainability-driven innovation
(d) Competencies for a sustainable business

All partners were invited to contribute to that part of the research, the main responsibility however lay with the university partners of the project.

WP 1 was a starting point, but in fact the research on the literature is an ongoing process, as the study field of SDGs is quite young and scientific papers are regularly produced. The most important findings are summarized in chapter 3 of this report.

2.1.2. REGIONAL PROFILES

The region wherein a company or association is located provides an important frame of ecological, economic, socio-cultural, legal and political pre-conditions. Consequently, the idea of this part of the research was to better understand the regional context wherein the expert interviews, the focus groups and the following SDGs Labs and SDGs Academies are embedded.

We chose the following descriptive criteria for the regional profiles:

(a) General characteristics of the region: natural conditions, size, population
(b) Economic situation with a focus on the agribusiness and food production sector
(c) Main sustainability challenges in the region

As the term “region” is fuzzy, we agreed on an open meaning and focussed on the five territories where the project partners are located:

- Vienna region, Austria
- South Tyrol, Italy
- Portugal North, Portugal
- Portugal Centre and West, Portugal
- Oldenburger Münsterland, Germany

The partners of each of the regions were responsible for creating a regional profile. They are presented in chapter 4 of the report.

2.1.3. GOOD PRACTICE ANALYSIS

The idea of the good practice analysis was to better understand the agribusiness and food production sector in practice and to learn more about its structure, its intersectoral and global interdependencies. Furthermore, it was aimed at building access to interesting enterprises of the agribusiness and food production sector in the region.

The analysis focussed on the following questions:

(a) Which sustainability challenges does the enterprise face in practice?
(b) Which solutions does the enterprise find in practice to address these challenges?
(c) How does the enterprise integrate the SDGs in practice?

Again, all partners of the project were to continuously search for good practice examples, but the business partners were in charge of this part of the research.

As most of the good practices are located in the project regions and were selected as later interview partners, the analysis was an important prework for the interviews. For reasons of anonymity the profiles of the good practices are not presented in this report.

2.2. EMPIRICAL RESEARCH

The aim of the empirical research is two-folded: Firstly, we want to learn from practitioners about the main issue "how to make the SDGs their business". In detail:

- Which sustainability challenges do practitioners and stakeholders in the agribusiness and food production sector face in their daily work?
- How do they see potentials, opportunities and boundaries of the SDGs in business?
- Which supporting actions (e.g. workshops, training) and learning processes / settings do they regard as helpful for better integrating the SDGs in business?
- What expectations and wishes do they have for cooperation with higher education institutions?

Secondly, the empirical research meets the practical needs of the project:

- Setting up a SDGs network in each of our project regions and getting to know key players of the sector who could act as multipliers and drivers.
- Fostering a participatory approach which involves the target groups from the very beginning.
- Designing tailored measures for a defined target group and involving the future participants of SDGs Labs and SDGs Academies in this early stage of the project.

To meet these objectives, we agreed on a qualitative approach of social science research that collects, works with and interprets non-numerical data.

As outlined in the following chart, the empirical research was conducted in the five project regions containing alternating regional and trans-regional steps.

Figure 1: Process of empirical research

2.2.1. STAKEHOLDER ANALYSIS

A stakeholder is defined as an individual or group or organisation of individuals who have vested interests in the process or in the results of a project.

A stakeholder analysis is a systematic way to identify and analyse stakeholders by their power and interest. High power, high interest stakeholders are key players. Based on a defined problem, a stakeholder analysis looks for opportunities for action and limits of stakeholders. Stakeholder analyses are used in different contexts. We use one of the possible applications.

The first step in building any stakeholder map is to develop a categorised list of members of the stakeholder community. Once the list is reasonably complete it is possible to assign priorities along pre-defined criteria and to translate the highest priority stakeholders into a table or a picture (Babou, 2008). According to Eden and Ackermann the potential list of stakeholders often exceeds both the time available for analysis and the capability of the mapping tool to sensibly display the results.

The challenge is to focus on the "right" stakeholders who are currently important and to use the tool to visualise this critical sub-set of the total community (Eden & Ackermann, 2013).

Application in the project

The stakeholder analysis can provide valuable information on different stages of the project and for different purposes. The stakeholder analysis was not a must, but we recommended to start with it and extend and update it in line with the progressing project. It met the following needs:

(a) Supporting the sampling for the expert interviews
(b) Supporting the extended sampling for the focus groups
(c) Feeding the development of the regional stakeholder networks
(d) Identifying future participants for the labs implemented in the project

The criteria for identifying appropriate stakeholders were based on the sampling criteria for expert interviews and focus groups.

2.2.2. SAMPLING

As qualitative research does not focus on statistical representativeness, the aim of the sampling is to find a heterogenous and, within the relevant criteria maximally contrasted, group of people to cover the whole spectrum of the topic. The principle of variance maximizing should be applied (Patton, 2002).

Two approaches are distinguished in qualitative research: (a) deductive sampling, which is grounded on appropriate knowledge about persons who could provide relevant information to

the research question and (b) inductive sampling, where the sample is not fixed but developed step-by-step through the outcomes of each interview (Reinders, 2005).

Following the concept of theoretical saturation (Glaser & Strauss, 1967), it is not the aim to maximize the sample size because at a certain point additional interviews do not lead to additional information. "An appropriate sample size for a qualitative study is one that adequately answers the research question" (Marshall, 1996).

Application in the project

We followed a deductive sampling strategy. That seemed appropriate for reaching the practical targets within the timeframe and with the challenge of considering the outcomes of five different regions. Thus, a clear and precise definition and justification of the sampling criteria was crucial. We selected the following criteria:

(a) Companies and business-oriented associations from all five project regions
(b) Representatives of all stages of the value chain of the agribusiness and food production sector
(c) Enterprises and associations which are sustainability oriented or have experience with sustainability and/or implementing the SDGs.

These criteria guarantee a high level of variance but ensure a certain level of comparability as well, necessary for the later analysis and the development of further measures in the project.

Regarding the sample size, we recommended at least five interviews per region which seemed appropriate to investigate different stages of the value chain and to get insights in the sub sectors of the regional agribusiness and food production sector.

The sampling for both expert interviews and focus groups is presented in chapter 4 of the report.

2.2.3. EXPERT INTERVIEWS

"Expert" is a blurred term always associated with a certain knowledge. An expert describes the specific role of an interview partner as the source of specific knowledge about the research object and expert interviews are a method to reveal this knowledge (Gläser & Laudel, 2010).

Kruse distinguishes three forms of expert interviews: (a) the explorative interview which gathers facts to develop new research subjects, (b) the systemising interview which gathers expert knowledge as well to structure fields of action, (c) the theory generating interview which focuses on subjective interpretations of the interviewees (Kruse, 2008).

Expert interviews are conducted as guided interviews, where the guiding questions are used flexibly and should contain the topics but not the research questions (Meuser & Nagel, 2009).

Application in the project

In our project, the expert interviews had both, systemising and explorative character. We worked with semi-structured interviews with questions guided towards four thematic issues:

(a) Sustainability challenges of the agribusiness and food production sector
(b) Attitudes towards the SDGs
(c) Ideas for SDGs-driven innovations in business
(d) Needs for supportive measures and learning settings to better implement the SDGs
(e) in business and expectations for cooperation with higher education institutions.

2.2.4. FOCUS GROUPS

A focus group is a guided form of group discussion that collects qualitative data from the focused conversation of a "homogeneous" group. At the same time, however, a certain variation among the participants is necessary to enable conflicting opinions (Krueger & Casey, 2009).

Working with focus groups is particularly useful in the early stages of development of studies and projects when ideas are developed, concepts created and requirements of the project are to be requested (Holleis, 2008).

It is a moderated discussion of several participants usually based on a guide. The group interactions and group dynamics can lead to in-depth information being generated when group members hear replies from others and respond to them (Drescher, 2003). As the method is based on the principles of communication, openness, trust and reflexivity, the size of the group should not be too large: five to eight participants are recommended.

Application in the project

The focus groups were conducted after the expert interviews and built upon the first outcomes of the transregional interview analysis. Framed as stakeholder workshops, they aimed at validating and enriching the insights and perspectives gained from the expert interviews - and enlarging the regional point of view with the perspectives of the other regions. The following participants were invited:

(a) Interview partners from the expert interviews
(b) Additional key players from the sector: enterprises, education and science, politics, NGOs

2.2.5. QUALITATIVE DATA ANALYSIS

Qualitative data analysis aims at describing and understanding a phenomenon. Several methods of qualitative content analysis exist in parallel, focussing either more on deductive or more on inductive development of categories.

Amongst others, the Thematic Qualitative Text Analysis following Kuckartz seems appropriate for analysing data gathered by expert interviews and focus groups. This approach aims at identifying and conceptualizing selected content-related aspects in the data and describing the material along defined categories.

Following Kuckartz, different combinations of a mixed deductive-inductive approach are possible: Often the main categories are theory-led (deductive) while the sub-categories are developed (inductively) out of the data material. However, it is also conceivable that certain subcategories may already be available, based on previous knowledge, prior to reviewing the material.

These should enter the category system in the sense of explicitly making assumptions by the researchers. It is also conceivable to supplement main categories inductively if it becomes evident that there are aspects of the topic that the re-

searchers did not consider in advance when reviewing the material (Kuckartz, 2016).

Application in the project

For the analysis of the expert interviews and the focus groups, we followed an integrated approach that included deductive and inductive categories:

(a) Pre-definition of deductive categories derived from the main items of the guiding questions and the theoretical background.
(b) Inductive definition of sub-categories derived from the data of the interviews and focus groups.

The analysis was conducted at two levels:

(a) Regional pre-analysis: In every region a pre-analysis was conducted according to a defined analysis frame.
(b) Transregional analysis: The results of the regional pre-analyses were analysed and summarized according to a refined analysis frame.

For the analysis process, all project partners used MAXQDA.

SDGs Labs
Making the SDGs our business

3. THEORETICAL BACKGROUND

3.1. SUSTAINABILITY CHALLENGES IN THE AGRIBUSINESS AND FOOD PRODUCTION SECTOR

Challenges in the agricultural and food production sector are manifold and vary widely across different regions, products, production systems as well as stages of the value chain. Sustainability challenges encompass ecological, social as well as economic aspects[1].

The example of climate change illustrates this well, "[a]griculture both contributes to climate change and is affected by climate change" (European Environment Agency, 2015; also, Böll Foundation et al., 2019: 62). Likewise, other sustainability challenges of the agribusiness and food production sector can be both challenges to which the sector contributes as well as challenges that the sector faces. This can be as a reaction to environmental and resource problems, social aspects, due to changed expectations towards agriculture and increased criticism by society (e.g. Thünen Institute, 2019; Christoph-Schulz et al., 2018; Tamásy 2014) and the food sector[2].

Moreover, changed environmental conditions such as scarce resources or climatic changes that demand adaptation are also considered sustainability challenges (Böll Foundation et al., 2019.).

The importance of agriculture for the state of the environment is underlined in the Global Environmental Outlook carried out for UN Environment. It highlights the impact of agriculture on freshwater, related problems of water scarcity, and the loss of wetlands[3] (cp. UN Environment, 2019: 16). Agriculture is competing with cities and industry for the usage of freshwater (cp. ibid.: 12), as it uses globally 70 percent of freshwater withdrawals (up to 90 percent in poorer countries).

Another important problem is the loss of biodiversity. Agricultural development, and its techniques, as well as the decreasing number and declining condition of wetlands resulting from the development are named (besides urbanization, infrastructure development and overexploitation of water resources) as one of the causes of biodiversity loss. Moreover, agriculture contributes to air pollution, and the UN Environment report calls agriculture "a leading source of soil degradation and greenhouse gas emissions" (ibid: 16.).

Such ecological developments take place against the prognosis of continued global population growth resulting in an increased need for food, already today 800 million people are undernourished (FAO, 2017: 5). The eradication of hunger is an SDG and it is given high importance (McNeil, 2019: 17) as it is closely linked with social problems such as poverty and access to educa-

1 They can also be phrased as "environmental impacts", health impacts" and "socio-economic impacts" (cp. IPES Food, 2019: 4-5).

2 Trust in food manufacturers is at only 38% of EU citizens for information about food risks, and only 35% of EU citizens trust supermarkets according to IPES Food (2019: 4).

3 40 % of the wetlands were lost worldwide due to the agriculture since 1970 (cp. UN Environment, 2019: 12).

tion and economic development in poorer countries (FAO, 2017: 5, 6).

The need for addressing these complex global problems is therefore urgent. According to the GEO 6 report "transformative change […] is necessary" (UN Environment, 2019: 18), fundamental change in the use of natural resources is needed, "clean-up and efficiency improvements will not be sufficient" (for reaching the SDGs and other international agreements on environmental protection). The report points out that "under a business-as-usual scenario" efficiency is likely to increase, but the authors warn that this is conflicting with other environmental resources that need increased attention. "However, such improvements will be inadequate to reduce the pressure on already-stressed environmental systems "(ibid: 19). This calls for further reaching changes that need to be undertaken (globally).

A common feature for all states and regions in the European Union is the enormous change of production structures throughout the agricultural value chain. "From 2003 to 2013, more than 1 in 4 farms disappeared from the European landscape" (IPES Food, 2019: 5). As the Common Agricultural Policy (CAP) is the biggest budget of the EU, this sector is shaped to a high extent by its policies. Simultaneously, agricultural goods, fertilizers, feed, as well as food products have experienced a strong integration into the world market over the last decades (ibid.).

Hence, farmers are no longer limited in their impact to and causes from regional activities, but they are part of world market effects too. One feature of this is the volatility of prices of agricultural goods on the market (Böll Foundation et al., 2019: 35). The sector saw a "rapid consolidation and power imbalances" in agricultural suppliers, in retailers, (IPES Food, 2019: 5) but as well in the ownership of agricultural land (Böll Foundation et al., 2019: 28-29). This concentration results also in "poor working conditions and livelihood pressures" among farmers as well as other parts of the value chain (IPES Food, 2019: 5).

There are many calls for changes in agriculture. However, very different approaches for changes and solutions are discussed (McNeil, 2019; Bené et al., 2018). McNeil analyses the UN process of how SDG indicators are developed and operationalized in the example of the target 2.4.1 for 'sustainable agriculture', where very different, and contradictory, understandings of the term are presented. Moreover, if no compromises are found this might risk the effectiveness of the SDGs process, the authors warn.

Bené et al. (2019) apply a similar discourse analytical perspective on reports and institutions to distinguish narratives in the discussion and research on 'sustainable' (and 'healthy') food systems. They demonstrate that while all papers came to an understanding that "our food system is failing us" (ibid: 118), the analysed actors had very different understandings about the "nature of crisis and the failure "(ibid). This can help to understand the very different calls for "the kind of research and priorities needed to 'fix' the problem" (ibid: 116), as well as set different priorities for action (ibid: 118).

It is also remarkable that the concepts for agriculture have seen a shift over the last decades. From the late 1960s/ 1970s onwards a "productionist approach" (McNeil, 2019: 17[4]) was followed by the FAO "where the issue of hunger was framed as a quantitative problem, and the emphasis of governments was on boosting agricultural productivity" (ibid.). Similar ideas could be found as well in the Common Agricultural Policy of the European Union, in the farm subsidies of the US and in the Green Revolution in Asia (cp. Ibid.).

Yet, recently, the concept has seen lots of criticism, also at high level political forums (cp. ibid.: 17, 18). Also, the FAO admits today that the increase in productivity in agriculture during the last decades and the "Green Revolution of the mid-to-

4 As McNeil points out this was also shift of focus in comparison to the Millennium Development Goals (MDGs).

late 20th century" (FAO, 2017: 14) "has come at a considerable cost to the environment "(ibid.).

This was associated with "high-input, resource-intensive farming" (ibid). Now the organisation calls for "a greener revolution" or "second green revolution in which agriculture continues to provide abundant and healthy food while at the same time promoting the conservation and use of ecosystem services and biodiversity" (ibid.).

Likewise, the FAO's "Common Vision for Food and Agriculture" names both efficiency and the conservation and protection of natural ecosystems as the first of its key principles (ibid.: 15). This reflects a search for new ways to reconcile two seemingly contradictory approaches (as described in McNeil, 2019) and illustrates the dynamic that has come to this sector recently.

3.2. SUSTAINABLE DEVELOPMENT GOALS AND BUSINESS

In order to meet the challenges of sustainable development in a globally coordinated manner, the world community adopted the transformation of our world in 2015: the "Agenda 2030 for Sustainable Development" (UN, 2015). It encompasses economic, ecological and social aspects. The 17 Sustainable Development Goals (SDGs) and their 169 sub-goals are addressed to all governments worldwide, but also business, civil society and academia. The fact that the goals – unlike the Millennium Development Goals (MDGs) – apply to all countries is an important step towards the realization that the countries of the Global South and North must each develop, but differently, in order to make sustainability possible.

Because of their comprehensive nature, the implementation of SDGs requires far-reaching changes in all sectors of the economy. The agribusiness and food production sector are linked to a particularly large number of sustainability goals (FAO, 2017a, 2017b). Goal 1 - ending poverty - can only be achieved if incomes in rural areas increase. This is where most of the poor still live, even though for the first time in history more people live in cities than in rural areas. Goal 2 calls for the promotion of sustainable agriculture to end hunger. The sub-goals establish a direct link to poverty reduction: productivity and income of small producers, especially women and other disadvantaged groups, are to be doubled. There are also major synergies here with gender equality (Goal 5), as most small farmers worldwide are women (ibid.). Goal 6 deals with the subject of water (FAO, 2017b, 2019): Water use should become more efficient in all sectors - including agriculture - and the number of people suffering from water shortages should be greatly reduced. Water quality is to be improved by preventing pollution and the introduction of hazardous chemicals and substances. Goal 12 (ibid.) aims at creating sustainable consumption and production patterns.

The planet's natural resources should not be overused and less polluted, such as chemicals in the air, water and soil. It also addresses the problem that one third of all food does not reach the plates (the end consumer): By 2030, the global per capita waste of food in retail and households should be halved and food losses along the production and supply chain, including post-harvest losses, reduced. Goal 15 (FAO, 2017b; UN, 2019) is particularly closely linked to agriculture, because it is about preserving the foundations of our nutrition. The loss of fertile soil and biological diversity is to be halted. Land ecosystems are to be protected, restored and their sustainable use promoted. The aim is also to combat desertification, restore damaged areas and soils and strive for a world in which natural habitats and endangered species are protected.

Coining the slogan "How food connects all the SDGs" Rockström and Sukhdev presented a graphic in 2016 that illustrates the interconnectedness of all SDGs to the topic of healthy and sustainable food (Rockström & Sukhdev, 2016; on the need to connect the SDGs cp. as well Stafford-Smith et al., 2017). Rockström et al. (2009) underline that

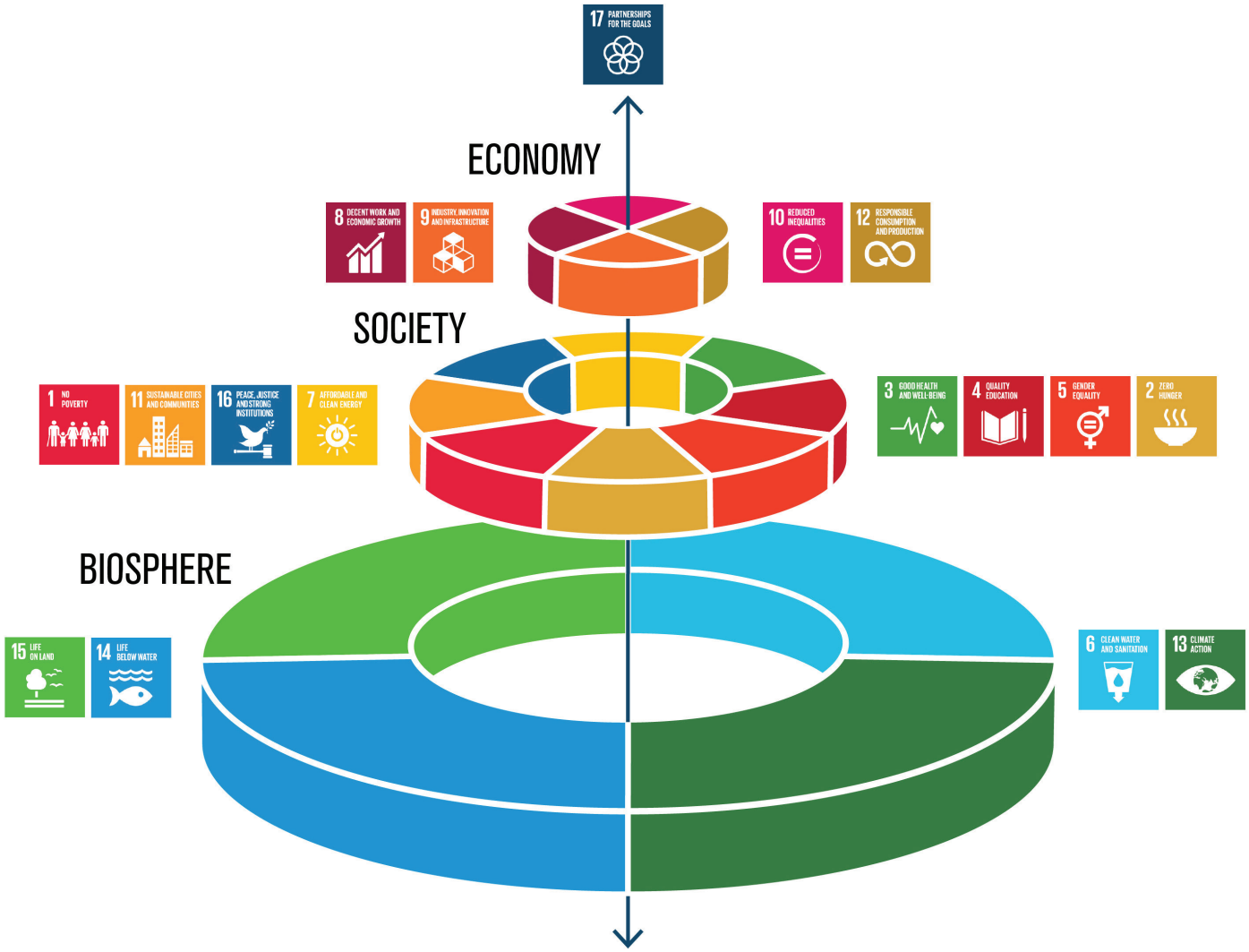

Figure 2: Azote Images for Stockholm Resilience Centre 2016

all economic and social activities need to "occur within the safe operating space of a stable and resilient planet" (Rockström & Sukhdev, 2016). The biosphere is placed in the graphic as a base and its good condition is a requirement for all other societal and economic activities (SDGs 6, 13, 14, 15) (cp. ibid). SDGs primarily linked to the social dimension of sustainability are placed on the next level, including good health, quality education etc. They are an additional requirement for the economic dimension placed at the top of this "weeding cake" graph (ibid.) to function. Accordingly, food (and agriculture) are linked (directly or indirectly) to all of the SDGs. This underlines the importance of the food production sector (and agriculture) in reaching the SDGs (cp. as well FAO, 2018). Rockström emphasises the need to not look at the SDGs separately but to consider the linkages (cp. Rockström & Sukhdev, 2016).

Weigelt et al. (2015) add to this perspective the relevance of land and soil governance for reaching the SDGs.[5] Following their analysis, "[s]oils and their governance are immediately relevant for at least nine of the proposed SDGs" (ibid.: 58): Goals 1, 2, 5, 7, 12, 13 (as part of provisioning services), goals 6 and 14 (as part of regulating services) and (apart from ecosystem services offered to mankind) goal 15 (biodiversity loss and

5 Remark: The paper was written at a time before the SDGs were yet officially declared by the UN, but still in the agreement process.

land degradation). They conclude, "[t]his overview emphasises that soils and their sustainable use are pivotal to successfully implementing the new global sustainable Development Agenda" (ibid.).

Companies in the agribusiness and food production sector also bear responsibility for sustainable development in general. The OECD Guidelines for Multinational Enterprises also apply to them. The OECD-FAO Guidelines for Responsible Agricultural Supply Chains (OECD/FAO, 2016) provide guidance for the implementation of this task. The social dimension of sustainability includes respect for human rights. Since 2011, the OECD Guidelines (ibid.) have included a new chapter on this subject. The human rights guidelines listed therein are in line with the Guiding Principles for Business and Human Rights (UN, 2011) adopted by the United Nations in the same year. Many companies follow sustainable business practices as part of their corporate social responsibility (CSR).

In agriculture (FAO, 2017a, 2017b), this means that all processing steps – from field to the plate at local, regional and international levels - must be checked for their sustainability (FAO, 2019).

In concrete terms, sustainable agriculture means economic activity in harmony with people and the environment that conserves resources and protects the climate. Sustainable agriculture is the living diversity of seeds, wildlife and farms, with which people can feed themselves safely and healthily today and tomorrow.

An overview of the SDGs and sub-goals relevant to the agribusiness and food production sector shows that an agricultural model (Thomsen, 2016) is needed that focuses on sustainability, global justice and access to sustainable food systems for all people. This can only be achieved through a reorientation of European policy (ibid.). Reforms are needed in areas such as agricultural, trade and development policy. In particular, the trend towards agribusiness at the expense of farming and the environment must be stopped and reversed. The examples of milk and meat production illustrate the consequences of a policy led by industrialisation and intensification for farmers in the EU as well as in developing countries.

Current studies unfortunately indicate a different picture concerning the engagement of companies with the SDGs (PWC, 2015; WBSCD, 2018). 71% of businesses say they are already planning how they will engage with the SDGs but only 13% of businesses have identified the tools they need to assess their impact against the SDGs. Only 41% of the businesses, surveyed, say that „they will embed SDGs into strategy and the way they do business, within five years "(PWC, 2015: 1). Of the 250 companies taking part in the World Business Council for Sustainable Development (WBCSD) survey, only 41% (WBCSD, 2018: 6) have integrated SDGs into their strategic thinking. There are six key findings that have come out of this survey:

1. "Business is engaged and sees the SDGs as a strategic opportunity, however integration challenges remain
2. Engagement and ownership are not yet part of the core business
3. SDG 13, 12 and 8 are the most common priority goals
4. Lack of understanding of the business case is the biggest barrier to internal engagement on the SDGs
5. Clarity on policy is needed to help companies commit
6. Further integrating the SDGs into corporate strategy is a key ambition moving forward" (WBCSD, 2018: 2)

3.3. SUSTAINABILITY-DRIVEN INNOVATIONS

Nowadays innovation is a central factor in economic growth and productivity. The ability to innovate is a strategic tool for companies wishing to maintain their competitive position in the global market (Olsen et al., 2012). This is especially true in the agribusiness and food production sector, which is the largest EU manufacturing sector and one of the main drivers of the EU economy,

contributing to both economic production and employment (Food Drink Europe, 2019). However, the agribusiness and food production sector has traditionally been viewed as a low-tech sector, with low innovation rates relative to other sectors (Materia et al., 2014).

Innovation has become one of the driving forces of business and the entire economy (Fiore et al., 2017). We face major global challenges, caused by the growing demand for food, associated with world population growth. That calls for innovation in the agri-food business to ensure food security and to increase sustainability of the environment. (Soldano, 2019).

Companies see innovation as the key to survival because long-term success requires customers to be satisfied with the innovations provided by the company's products and services (Cuc & Tripa, 2007). Innovation is a complex phenomenon involving the production, diffusion and translation of knowledge into new products or services, or the development of new production or processing techniques (Bigliardi, 2013).

Decades ago, the Theory of Economic Development defined innovation as a new combination of factors of production of new products and services, introducing new processes of production, marketing and new business organizations (Schumpeter, 1934). Recently, authors characterize innovation according to four typologies i) product innovation, (ii) process innovation, (iii) organizational innovation and (iv) market innovation (Soltani & Hosseini, 2012; OECD, 2015).

Product innovation is introducing new or substantially improved goods or services. Process innovation occurs when production or delivery methods are improved, market innovation is the adoption of significant changes in product or packaging design, product promotion or pricing, and organizational innovation refers to the creation or change of business practices, workplace design or external relations (Soltani et al., 2012).

Innovation in enterprises of the agribusiness and food production sector is generally seen as balancing technology with market demand and is often implemented as incremental rather than radical innovation (Bigliardi, 2013). A particular issue is the case of social innovation that plays an important role in the transition to sustainable agriculture (Soldano, 2019)

In addition to the four innovation typologies, in the agricultural sector it is also necessary to consider innovations such as animal feed types, new feeding systems, new packaging types, new preservation types, new additives, new flavours, new products as well as new types of logistics.

It is evident that an SME's success depends on the capability to integrate their activities in a network. In this way they interact with external firms and other actors and maintain their enterprises more competitively (Avermaete et al., 2003).

The agribusiness and food production sector is complex, and it is not always easy to categorize innovations, especially in the food industry.

Thus, it must be kept in mind that when defining innovations in different agri-food domains, different dimensions must be addressed (Colurcio et al., 2012, Materia et al., 2014). Nowadays, organizations need to build a culture more aware of the environmental and social impacts of business activities. For instance, it is a challenge to adopt new business models and new technologies (Geradts & Bocken, 2019).

Innovation carries risks that may arise at the environmental, economic and social levels. Usually, environmental hazards are associated with nanotechnologies and biotechnologies such as new forms of non-degradable materials, loss of biodiversity, ecosystem disturbances, soil depletion, soil fertility, damage to soil structure, biomass reduction and microbial diversity (EU, 2016). Social risks are associated with the loss of healthier traditional eating styles, inequality related to negative health impacts, gender inequality and unequal distribution by social classes of new technologies associated with the economy. The displacement of workers to the major technology hubs in large cities can have consequences on livelihoods and

contribute to depopulation and increasing poverty. Economic risks, from for example replacing traditional products with more innovative ones, can lead to market disruption (Jacobsen et al., 2013; Pandey, 2018).

In increasingly competitive markets the environmental, social and economic dimensions need to be considered through a commitment of local, regional and international entities so that emerging issues can be debated and addressed together (Sodano, 2019).

3.4. COMPETENCIES FOR A SUSTAINABLE BUSINESS

The discourse on education for sustainable development (ESD) (Rieckmann, 2012; Sterling, 2010; Sterling et al., 2017) asks how we can equip learners with the values, knowledge, skills, and motivation to help achieve economic, social and ecological well-being. Thus, ESD aims at facilitating the development of competencies needed for dealing with sustainable development (Barth et al. 2007; Rieckmann 2012; Wiek et al. 2011, 2016).

Following Rieckmann (2012), competencies do not only include cognitive aspects, but also affective, motivational and volitional elements. Wiek et al. (2016: 242) underline that "competencies … accommodate the topical knowledge required for successful problem solving in a particular context." Key competencies are defined as those with a special significance for the development of important social goals within a special framework, such as sustainability (Rieckmann, 2012). More than domain-specific competencies, such as mathematical competencies or geographical competencies, key competencies "require a high degree of individual reflexivity" (ibid.: 129).

In sustainability, Wiek et al. (2011: 204) define key competencies as "essential for sustainability that have not been the focus of traditional education and therefore require special attention." These are linked to a context characterised by complexity, uncertainty, rapid social change, individualisation, and diversity (Rieckmann, 2012).

Key competencies for sustainability must then be competencies which enable people to solve problems in a successful way "with respect to real-world sustainability problems, challenges, and opportunities" (Wiek et al., 2011: 204).

In the ESD discourse, there are a growing number of researchers who have been examining the many interconnecting aspects of ESD and associated competencies (e.g. de Haan, 2010; Glasser and Hirsh, 2016; Rieckmann, 2012; Wiek et al., 2011, 2016). Various key competencies essential to sustainable development have been outlined – they describe what individuals need to be able to do for transforming their own individual lifestyles to more sustainable ones and for contributing to societal transformation towards sustainability. For example, Wiek et al. (2011) distinguish five sustainability key competencies: systems thinking, anticipatory (or future) thinking, normative (or values) thinking, strategic (or action-oriented) thinking, and interpersonal (or collaboration) competencies. Afterwards, they add a sixth competency: integrated problem-solving, which is described as a "meta-competence of meaningfully using and integrating the five key competencies for solving sustainability problems and fostering sustainable development" (Wiek et al., 2016: 243).

Gestaltungskompetenz (shaping competence) (de Haan, 2010) considers key competencies for shaping or transforming the society towards sustainability, including competencies such as gathering knowledge in a spirit of openness to the world, thinking and acting in a forward-looking manner and dealing with incomplete and overly complex information. In a Delphi study with ESD experts from Chile, Ecuador, Germany, Mexico and the UK, Rieckmann (2012) identified the competencies for systemic thinking and handling of complexity, for anticipatory thinking and for critical thinking to

be the three most important key competencies for sustainable development.

In the international ESD discourse, there is some agreement that the following key competencies are most important for thinking and acting in favour of sustainable development (Rieckmann, 2018; UNESCO, 2017):

- Systems thinking competency: the abilities to recognise and understand relationships, to analyse complex systems, to think of how systems are embedded within different domains and different scales and to deal with uncertainty
- Anticipatory competency: the abilities to understand and evaluate multiple futures – possible, probable and desirable, to create own visions for the future, to apply the precautionary principle, to assess the consequences of actions and to deal with risks and changes
- Normative competency: the ability to understand and reflect on the norms and values that underlie one's actions and to negotiate sustainability values, principles, goals, and targets – in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions
- Strategic competency: the ability to collectively develop and implement innovative actions that further sustainability at the local level and further afield
- Collaboration competency: the ability to learn from others, to understand and respect the needs, perspectives and actions of others (empathy), to understand, relate to and be sensitive to others (empathic leadership), to deal with conflicts in a group and to facilitate collaborative and participatory problem solving
- Critical thinking competency: the ability to question norms, practices and opinions, to reflect on own one's values, perceptions and actions and to take a position in the sustainability discourse
- Self-awareness competency: the ability to reflect on one's own role in the local community and (global) society, to continually evaluate and further motivate one's actions and to deal with one's feelings and desires.
- Integrated problem-solving competency: the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options which promote sustainable development – integrating the before mentioned competencies.

Against this backdrop of sustainability competencies, various scholars have specified competencies for sustainable business. Hesselbarth and Schaltegger (2014) focus on contextualizing competencies for sustainable development in a work context, proposing five key competencies for change agents for sustainability: strategic competency, systems-thinking competency, anticipatory competency, normative competency, and interpersonal competency. Osagie et al. (2016) combine results from a systematic literature review with results from interviews with CSR managers to compile a set of eight CSR-related competencies: anticipating CSR challenges, understanding CSR-relevant systems and subsystems, understanding CSR-relevant standards, CSR management competencies, realizing CSR-supportive interpersonal processes, employing CSR-supportive personal characteristics and attitudes, personal value-driven competencies, and reflecting on personal CSR views and experiences. Wesselink et al. (2015) analyse individual competencies for managers engaged in corporate sustainable management practices and identify five competencies: systems thinking competency, embracing diversity and interdisciplinarity competency, interpersonal competency, action competency, and strategic management competency.

Lans et al. (2014) look for key competencies in sustainable entrepreneurship. Connecting entrepreneurial competencies with competencies for sustainable development through focus group discussions with university teachers, they identify the following sustainable entrepreneurship key com-

petencies (Lans et al., 2014: 43): systems thinking competency, embracing diversity and interdisciplinary competency, foresighted thinking competency, normative competency, action competency, interpersonal competency, strategic management competency, and entrepreneurial self-efficacy. After having tested Lans et al.'s competence framework for sustainable entrepreneurship in terms of construct validity (among 402 would-be entrepreneurs), Ploum et al. (2018) suggest the inclusion of six competencies: strategic management and action competency, embracing diversity and interdisciplinary competency, systems thinking competency, normative competency, foresighted thinking competency, and interpersonal competency.

Recently, Foucrier and Wiek (2019) have developed a "Process-Oriented Framework of Competencies for Sustainability Entrepreneurship". With this framework they describe sustainability entrepreneurship competencies and link them to the actual phases of entrepreneurship (discovery, planning, start-up, build-out, consolidation).

While competencies describe the capacity or disposition of acting, they do not necessarily imply that an individual will act in a certain way in a specific situation. Hence, to transform capacities into real sustainable actions, individuals need corresponding values and motivational drivers.

Furthermore, sustainability performance is related to an individual's environment, understood as opportunities to perform which are beyond the individual's control. In this perspective, opportunities are environmental and contextual mechanisms which enable action. In other words, they are conditions which provide the necessary support and avenues for sustainability-driven action. Accordingly, sustainability performance depends on the interplay of knowledge and skills, values and motivational drivers, and opportunities (Biberhofer et al., 2019).

SDGs Labs
Making the SDGs our business

4. REGIONAL CONTEXTS

Sustainable socio-economic development is embedded in a regional context. As such, the findings of the expert interviews and the focus groups must be seen against the background of regional frames and conditions. The five regions where the project partners of SDGs Labs are located reflect Europe`s diversity. The following profiles of the regions Vienna, South Tyrol, Oldenburger Münsterland, Portugal North and Portugal Centre-West aim to give insights in the regional structures.

Following a systemic approach, each region is defined by relationships among appropriate subjects in a certain geographical frame. In the case of our project, the interviewed partners from enterprises and universities are important representatives of the regional realities. As such, an analysis of the sample of interview partners and of focus group participants completes this chapter.

4.1. REGIONAL PROFILES

4.1.1. VIENNA REGION

Characteristics of the region

Vienna is the capital of Austria, one of its nine states and the cultural, economic, and political centre of the country. The city today covers an area of 41.487 hectares in the north-eastern part of Austria, on an extension of the Alps called the Vienna basin (Vienna City Administration 2014b). Besides the city, the Vienna region (as defined in our project) also includes the states of Lower Austria and Burgenland. According to a registry data analysis conducted by the City of Vienna Statistics Department (MA 23), Vienna has a total population of over 1.87 million.

Economy with a focus on the agribusiness and food production sector

Vienna is characterized by a strong economy that draws its strengths from high productivity and a highly qualified work force in combination with low wage costs per unit of output (European Commission, 2015). Vienna is a service-driven region, which can be easily explained by its role in administration, research and science and an orientation towards knowledge-intensive business services.

Only 0.1% of employees in the region work for the agricultural sector. Still more than 6.000 ha (16% of the total size) are used for agricultural purposes, and 40% of Austrian greenhouse areas are in Vienna. The leading agricultural areas include horticulture which accounts for approximately 50% of the agricultural and food sector. Horticulture includes greenhouses and the growing of open land vegetables, like cucumbers, tomatoes, salad, peppers, radish, cauliflower and chives, as well as flower production. The second strongest branch in the sector is viticulture which accounts for approximately 30% of the agribusiness and food production sector. More than 710 ha of vineyards are cultivated in Vienna, 80 % white wine and 20 % red wine. Arable farming is the third strongest branch in this sector producing mainly winter soft wheat for bakery production and rye.

Sustainability challenges

Vienna`s main sustainability challenges for the agribusiness and food production sector are characterized by the already rising temperatures predicted to intensify in Austria in the coming decades. These are resulting in ever-more intense floods, heat waves, hailstorms and droughts. Such extreme weather events hit the main activities in the agribusiness and food production sector the most: horticulture, viticulture and arable farming. Related to global warming the possible shortages of water resources pose a danger for the agribusiness and food production sector.

Labour shortages during harvest and limited amount of land available for cultivation are other serious challenges to sustainability.

4.1.2. SOUTH TYROL

Characteristics of the region

South Tyrol is one of the two autonomous provinces that make up the autonomous region of Trentino-Alto Adige/Südtirol in Italy. The province has an area of 7,400 square-kilometres (2,857 sq mi) and a total population of 527,750 inhabitants (31.12.2017). Its capital is the City of Bolzano. Most of the population speaks German, with around a quarter speaking Italian and a small minority speaking Ladin as their first language. The majority of the population is concentrated in and around the two largest cities (Bolzano and Merano).

Economy with a focus on the agribusiness and food production sector

The economy of South Tyrol is characterized by a variety of sectors from agriculture to industry to services, especially tourism. The development in the economic sectors in South Tyrol bears comparison to international trends: the number of persons employed in agriculture has dropped while the number of persons working in the services sector has increased.

Nevertheless, agriculture in South Tyrol enjoys a higher status compared with the European average. 6,1 % of the labour force works in agriculture. The mainly small-sized and family-owned farms confer a great stability to South Tyrol's agriculture. It is characteristic for the region that the labour force is organised in +100 different cooperatives because of very small-structured farms. The most important branch in the agribusiness sector is fruit growing, mainly apples. South Tyrol is the largest unified apple growing area in Europe with about 18,400 hectares. Dairy farming is the second strongest branch in the agribusiness and food production sector with yogurt the best-selling product in this sector. Somewhat less widespread, but still central for South Tyrol, is viticulture. In South Tyrol, white wine accounts for 60% and red wine for 40%. Processing & refining companies work primarily in fruit processing, meat, the beverage industry and flour production.

Sustainability challenges

The main sustainability challenges for the agribusiness and food production sector include already rising temperatures. Even though warmer temperatures make it possible to develop new growing areas, the challenge of extreme weather events such as droughts and floods is much more significant.

Furthermore, warmer weather brings challenges for the main activities in the agricultural sector: the rise of plant and forest pests in fruit growing, dairy farming and viticulture.

Because of large monocultures, the loss of biodiversity and soil fertility is a danger too. That leads to an ever-growing use of pesticides and fertilizers which burden the environment.

As the number of persons employed in agriculture has dropped, finding workers is a challenge for the producers. In return it is a challenge for the seasonal workers to get fair working conditions.

4.1.3. OLDENBURGER MÜNSTERLAND

Characteristics of the region

The Oldenburger Münsterland is centrally located in North-western Germany in the Metropolitan Region Bremen/Oldenburg and consists of the two districts Vechta and Cloppenburg. Vechta and Cloppenburg are the two biggest and most important cities, too. It is a rural area with a low population density (~ 150persons/km2). 70% of the area is used by agriculture.

Economy with a focus on the agribusiness and food production sector

Since 1994, in Oldenburger Münsterland the gross national product has grown by 62%, and the industrial turnover has increased by 48% since 1997 to 6.5 billion Euros and export sales by 137% (cp. AEF OM, 2019). Decisive for this type of economic development was and still is "the innovative and efficient agriculture and meat processing industry" (ibid.) in this region. The main lines of industry are food and luxury foodstuffs with a share of 49% of the industrial turnover, followed by plastic processing with a share of 14%. Further key industries are mechanical engineering and plant manufacturing in the sector of agriculture and construction.

In the last 20 years, intensive livestock farming has increased by 62%. During the last decade, livestock breeds increased as follows: Turkeys: 3,07 mio (2007) to 3,09 mio (2018), Pigs: 2,03 mio (2007) to 3,46 mio (2018), Chicken: 12,5 mio (2007) to 21,22 mio (2018) (Districts Vechta and Cloppenburg, 2019). The service sector increased by 63%. In addition to those processing companies, regional fruit and vegetable production with an acreage of about 4.500 hectares is an important economic factor. These main lines of industry offer "complete solutions" from one region for the world market.

Sustainability challenges

Such intensive agriculture is not without environmental protection issues. The main challenges from a sustainability perspective are related to environment and health. Water and soil quality is diminished due to (too) high nutrient loads (N, P, nitrate), resulting from a surplus of nutrients/ manure in comparison to land size. As a consequence, manure is also exported (at high rates compared to other regions). Furthermore, there are increased levels of antibiotically active substances in groundwater.

With regard to economic and socio-cultural aspects the decreasing number of agricultural holdings accompanied by the increasing size of those remaining (in terms of numbers of animals, value of production as well as size per holding) is the most evident change in the sector since the 1960s.

Also, the age-structure of farm holders has changed, and the number of young farmers has decreased. Companies in the sector are facing a shortage of qualified employees while young farmers are missing attractive conditions.

4.1.4. PORTUGAL NORTH

Characteristics of the region

Portugal North includes the regions of Douro and Alto Tâmega. With about 3.6 million inhabitants, the Northern Region concentrates almost 35% of the resident population in Portugal. Furthermore, it assures close to 39% of national exports and represents about 29% of GDP of the national economy. The two regions, Douro and Alto Tâmega, cover an area of 7,104 km².

Economy with a focus on the agribusiness and food production sector

The agribusiness and food production sector is one of the strategic lines for boosting the regional economy of this low-density territory. With a growing concern about raw material quality and product differentiation, farms and enterprises are supporting this development. The varied agricul-

tural and horticultural production, such as apples, grapes, cherries, potatoes, chestnuts, almonds and olives are the most important products of the agribusiness and food production sector. Wine and cultivation of vineyards is the second strongest branch in the agribusiness and food production sector of the region. The different wines have a national and international brand and prominent image and both their supply and production are important sources of labour and income. In livestock production, goat and bovine cattle stand out as the third strongest branch in this sector.

One of the differentiating factors of these municipalities are the endogenous products of recognized quality, many guaranteed with the Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) label.

Sustainability challenges

The main sustainability challenge for Portugal North are rising temperatures resulting in climate volatility and climate change including water scarcity. The resource-conserving management of water sources is therefore a major challenge for this region.

Regarding economic and socio-cultural aspects, the decreasing population is a major change in the sector since 2001, which is still lasting. Furthermore, the region is facing low levels of education and qualification.

Finally, the territorial resources, assets and skills are not sufficiently valued.

4.1.5. PORTUGAL CENTRE - WEST

Characteristics of the region

The West Region of Portugal incorporates the northern part of the District of Lisbon and the southern part of the District of Leiria. It has an area of 2486 km² and a population of 362,523 inhabitants. The West Region benefits from a relatively central position in mainland Portugal, in the corridor between the metropoles of Lisbon and Porto, bringing better demographic and economic behaviour than the national context.

Alentejo is the largest Portuguese region with a territorial area equivalent to about 31,500 km² corresponding approximately to one third of the country's territory. Alentejo borders the regions of Centro, Algarve and the Spanish regions of Extremadura and Andalusia. The region is home to approximately 0.8m inhabitants and has the lowest population density among the Portuguese regions. Over the last decade, the region has undergone an average negative population growth rate, which is largely due to rural exodus.

Economy with a focus on the agribusiness and food production sector

In Portugal Centre, horticulture is the most important branch in the agribusiness and food production sector. Its most important products are pears, apples, wine, and liquor, of which some are endogenous products such as the apples of Alcobaça and the liquor Ginjinha.

In the region of Alentejo, the agribusiness and food production sector is one of the main traditional industries. The most important products are cork, wine, olive oil and dairy products which are also important for the local economy.

Sustainability challenges

From the point of view of the workforce, Portugal West is still characterized by insufficiently qualified people. 40% of the resident population has an education equivalent to the 1st cycle. Labour forces have a low average education and as a consequence the region is lacking qualified technical staff.

The Alentejo region seems to be undergoing a process of rapid agricultural intensification despite its dry Mediterranean climate and a tradition of extensive, multi-functional agricultural systems. Although two modes of production continue to coexist in the region, the transition from the long-lived model of extensive agricultural production toward a predominantly intensive mode of ag-

riculture has been extremely fast – and it will be a big challenge to handle this.

4.2. PARTNERS OF THE EXPERT INTERVIEWS

In all five regions, interviews were conducted with regional enterprises and associations of the agribusiness and food production sector. 26 interviews were conducted in total; five in the Vienna region, six in South Tyrol, seven in Portugal North, three in Portugal Centre-West and five in Oldenburger Münsterland.

In selecting the interview partners, we aimed to cover a wide range of entrepreneurial realities and different stages of the value chain in order to provide an empirical basis for the later conception of the SDGs Labs, which should also address entrepreneurs in associations from various backgrounds and give access to different professional contexts and working environments. Thus, the sample represents different types and sizes of organisations, different stages in the value chain and different levels of implementing sustainability.

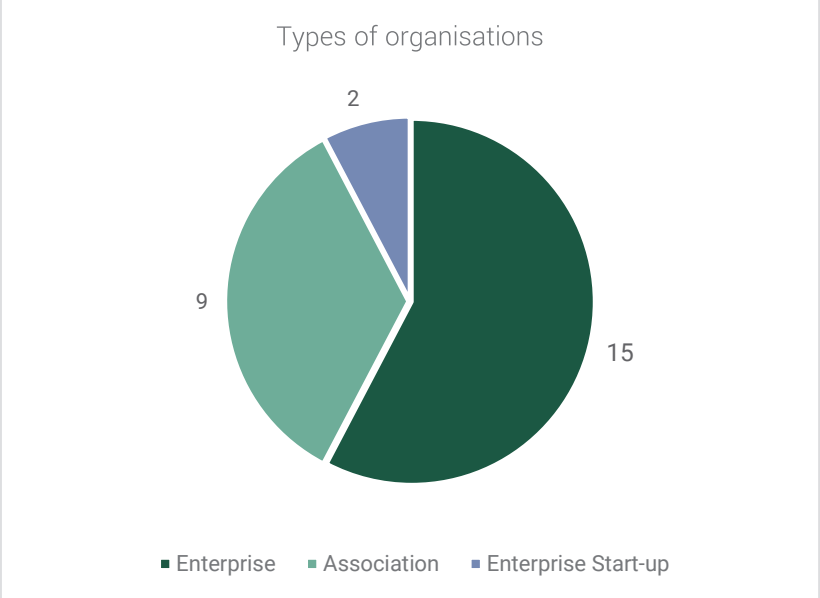

Figure 3: Types of organisations involved in the expert interviews

4.2.1. TYPES AND SIZES OF ORGANISATIONS

As the graphic (Figure 3) shows, two thirds of the interview partners were representatives from enterprises and one third were from business-related associations and cooperatives. Within the group of enterprises, we distinguished a third group, start-ups.

Besides enterprises, we decided to involve associations and cooperatives as well because this type of organisation is typical for the agricultural sector. They hold an even more important position in South Tyrol and Portugal as the farming sector is mainly small-scale in these regions. Bundled in cooperatives, these small enterprises gain power and become a common voice to push their interests.

The classification was chosen because these groups have different approaches to encounter sustainability challenges and different needs. Cooperatives see the challenges from a superior level and search for solutions fit for as many members as possible. Their main task is to offer services for daily business issues but also to raise awareness of new developments and to give support in transformation processes. Enterprises face the challenges very directly in their daily business and have to answer immediately. Their needs may be more practically oriented. Start-ups face the challenges very directly as well, but they are often more flexible to turn challenges into innovations.

The classification of enterprises is grounded on the Reference of the European Commission (2005), which proposes four size-classes following employee numbers. As the graphic shows, we had a quite normal distribution:

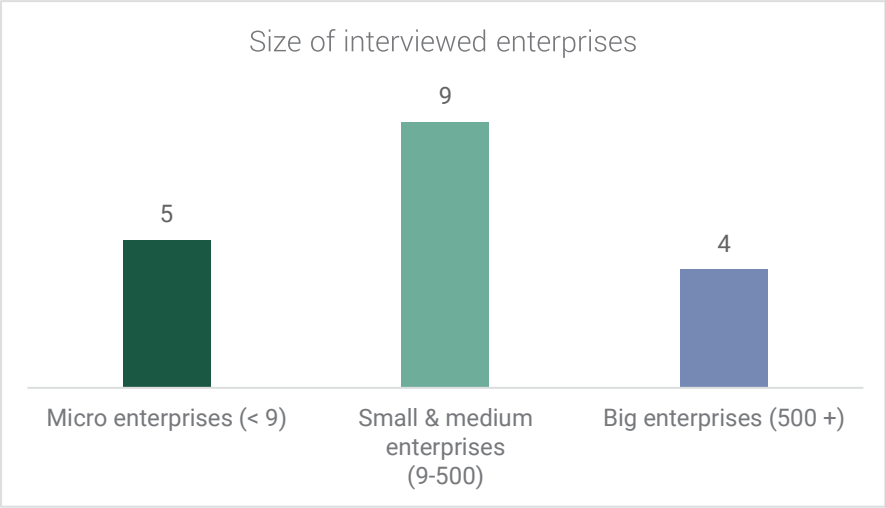

Figure 4: Size of enterprises involved in the expert interviews

- 28 % micro enterprises with 2 to 7 employees
- 47 % small and medium enterprises with 12 to 200 employees
- 25 % large enterprises with 1,300 to 47,000 employees

The first group consists of micro enterprises or small farms. In this group we identified some interesting "fast innovators" who are more flexible to react quickly to socio-economic dynamics. They often act in niches initiating and fostering sustainability-driven innovations far away from the economic mainstream. As such, they can give important impulses for larger transitions, but sometimes they do not have the power to progress an initiated change.

In the second group, small and medium-sized companies, we also identified high awareness and potential for sustainability-driven innovations. Some have established themselves as regional pioneers of organic production over the years and today serve as good practice examples for others. Many of them are well embedded in the region and orient their entrepreneurial decisions towards a high level of responsibility for people and the environment, but sometimes they are underestimated in terms of transition power.

The third group are large companies where we observed a tendency to slower processes of integrating sustainability in their strategy. They start with single product lines, for instance organic products, and assess the reaction of the market before progressing to another segment. Undoubtedly, they have much more resources for research or marketing and therefore they are able to create a high impact.

For classification of the associations we also used the Reference of the European Commission (2005), which classifies along numbers of members. The graphic (Figure 5) shows the following distribution:

- 45 % small associations with 7 to 200 members
- 55 % large associations with 650 to 13,000 members

In the first group, we found excellent examples of applying sustainability in practice, in its ecological and social meaning. They may serve as a

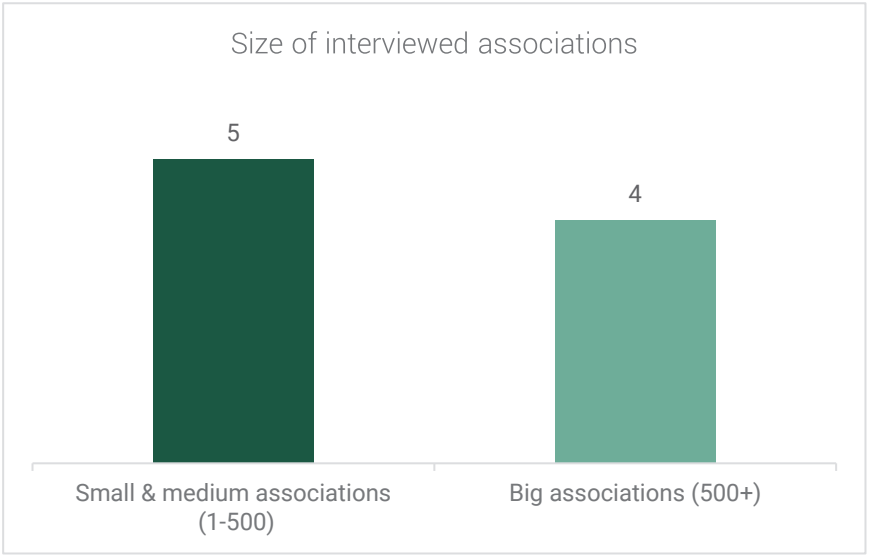

Figure 5: Size of associations involved in the expert interviews

role model for a new type of agriculture and food production.

Larger associations and cooperatives in turn have the power to reach a great number of members and thus can do a lot on awareness building towards sustainability issues.

4.2.2. VALUE CHAINS

One of the aims of our sampling strategy was to cover the different stages of the value chain.

According to Porter's Value Chain approach the idea is to focus on systems and activities that means how you process inputs into outputs and offer to consumers. Using this viewpoint Porter described the chain of activities that are common to all business (Porter, 1989).

In a slight modification of Porter, we used the following stages:

- Agriculture: arable farming, horticulture and animal husbandry
- Production: production and processing of food
- Distribution: supply and distribution of food
- Retail: virtual marketplaces, food stores, gastronomy
- Related services: consulting, marketing.

As the graphic shows, all stages of the value chain are covered through the selection of our interview partners. Most of the selected organisations are active in more than one stage. Every region managed to involve several stages of the value chain. The approaches of the regions were necessarily different because of different agricultural focal points (see regional profiles).

Vienna concentrated on one clear value chain, vegetables, and tried to close the circle: horticulture - processing of vegetables – distribution – retail and marketing – reuse of food.

South Tyrol addressed the three main branches apples, wine and milk at different stages: apple growing, viticulture and alpine farming at stages of growing - food processing – distribution - retail and gastronomy, consulting and marketing.

Portugal North put a focus on olives and wine where enterprises and cooperatives often cover the complete value chain: viticulture, olive growing – processing - distribution – marketing.

Portugal Centre-West emphasized one cooperative specialist on meat, vegetables and olives which covered all stages, and cattle husbandry on the Azores.

Oldenburger Münsterland focussed on large-scale farm structures which integrate nearly all stages of the value chain in one company: animal husbandry – processing food – packaging – distribution – marketing.

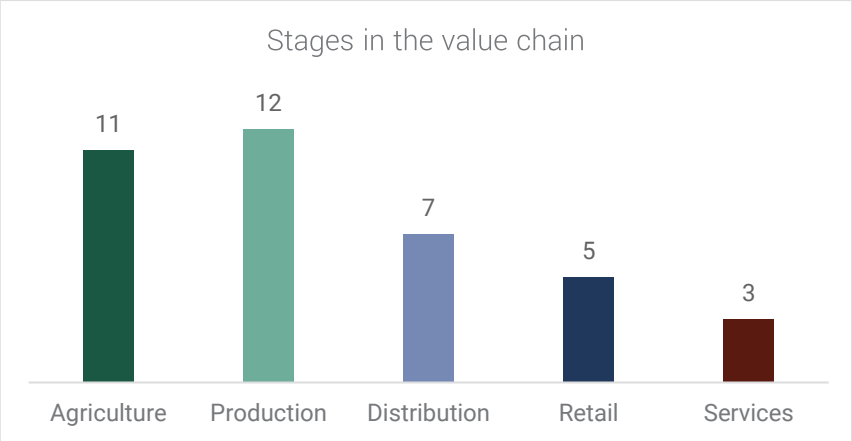

Figure 6: Interview partners active in different stages of the value chain

4.2.3. SUSTAINABILITY INDICATORS

One of our selection criteria was the orientation of enterprises or associations towards sustainability, bearing in mind that it is difficult to define common indicators which are valid for different branches in different countries.

Ten interview partners state that they produce organic or have at least one organic product line in their assortment, but the term "organic" is grounded on different labels and certificates. Others define their sustainability orientation through "environmentally-friendly production".

Seven interview partners prepare Sustainability Reports which is com-

pulsory for companies with more than 500 employees. Three of them do it voluntarily.

Four interviewees have a separate Sustainability Department which is again linked to the size of the enterprise.

4.3. PARTICIPANTS OF THE FOCUS GROUPS

Focus groups were conducted in all five regions, in total with 30 participants. Each focus group was attended by five to seven participants all related to the agribusiness and food production sector.

The focus groups aimed at deepening and focussing the findings of the expert interviews and to give the initial impulse for a regional network around the project SDGs Labs. Beside the interview partners, participants from additional enterprises and cooperatives, from politics, universities and NGOs were invited.

The distribution between interview partners and new participants was as shown in Table 1.

Region	Interview partners	New participants
Vienna Region	0	6
South Tyrol	2	4
Portugal North	2	5
Portugal Centre-West	0	5
Oldenburger Münsterland	3	3

Table 1: Distribution between interview partners and new participants

4.3.1. TYPES OF ORGANISATIONS

As the graphic (Figure 7) shows, nearly half of participants were from enterprises, seven from associations and cooperatives, four from NGOs and networks related to consumers, three from universities and two from local or regional politics. Through the integration of consumer organisations, representatives from politics and universities, the loop is closed.

At the same time the floor is open for a multi stakeholder dialogue where sustainability issues are discussed from different angles. That shows the relevance of addressed issues, like the SDGs, in a wider society and makes the outcomes more robust.

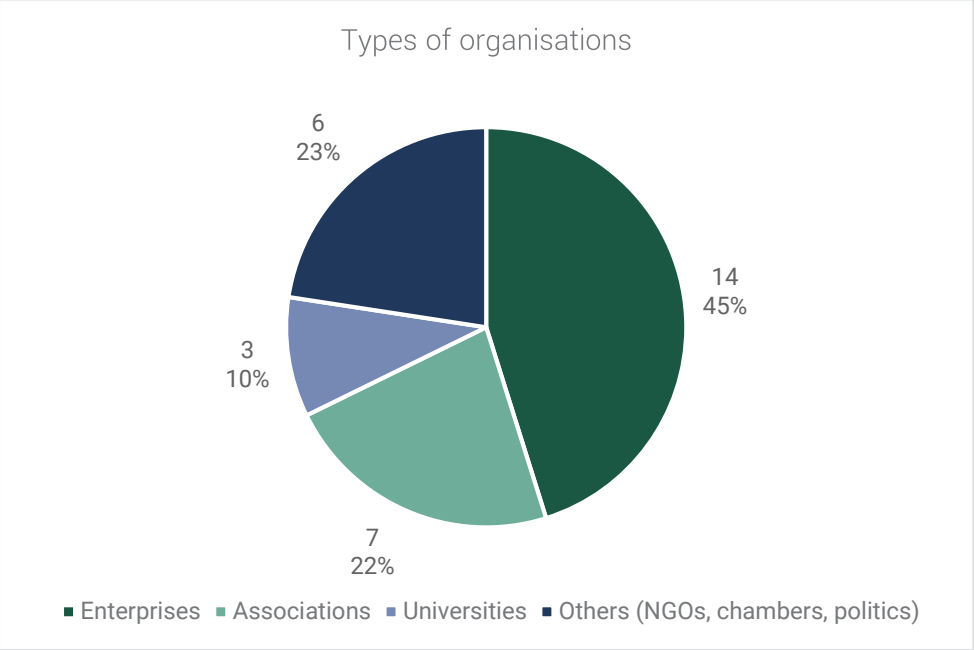

Figure 7: Types of organisations involved in the focus groups

4.3.2. VALUE CHAINS

In the focus groups, all stages of the value chain were covered, extended by one additional stage – research – represented by universities and research institutions.

In most focus groups all stages were covered; in Vienna the production partner was missing, while in South Tyrol and Portugal West the research partner was missing.

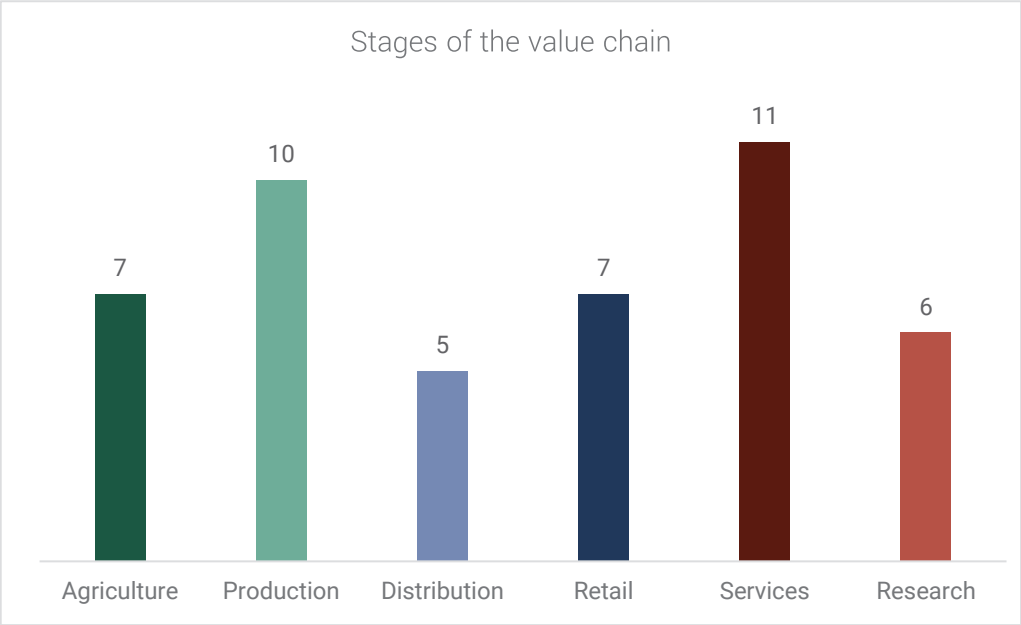

Figure 8: Focus group participants active in different stages of the value chain

SDGs Labs
Making the SDGs our business

5. SUSTAINABILITY CHALLENGES IN AGRIBUSINESS AND FOOD PRODUCTION

Challenges in the agribusiness and food production sector are manifold and vary widely across different regions, products, production systems as well as stages of the value chain. Sustainability challenges encompass ecological, social as well as economic aspects or, referring to the IPES Food report (2019), are about "environmental impacts, health impacts and socio-economic impacts".

This chapter presents the most important findings on sustainability challenges recognised by enterprises and business associations working in the agribusiness and food production sector. It aims to explore the concerns practitioners have and to take them as starting point for developing measures for a better integration of the SDGs into business.

The outcomes are based on the expert interviews conducted in five European regions, following the question: "What are the main sustainability challenges in the agribusiness and food production sector?" The outcomes are structured along five main topics and further sub-topics which were not pre-defined but induced from the interviews:

1. Awareness of sustainability issues
2. Sustainability challenges - ecological dimension
3. Sustainability challenges - economic dimension
4. Sustainability challenges - social dimension
5. Sustainability challenges - policy and structural dimension

The following graphic shows how the statements are allocated to the different dimensions of challenges in agribusiness and food production.

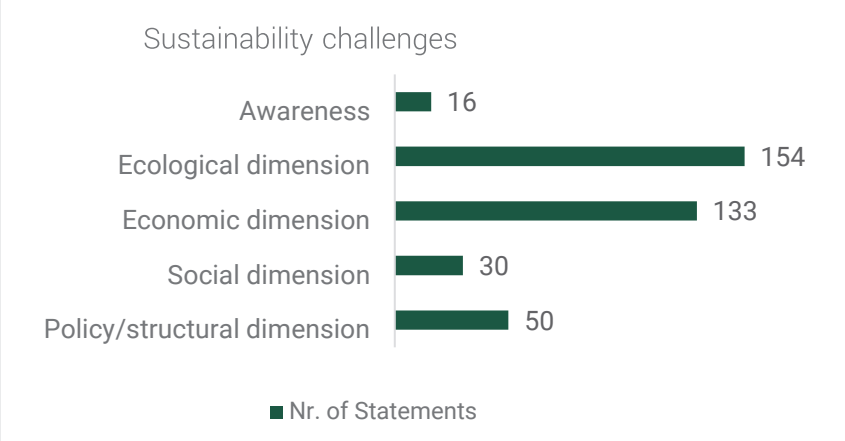

Figure 9: Sustainability challenges in agribusiness and food production

The analysis of each sub-topic starts with an introduction and brief estimation of the relevance through indicating the amount of statements and the number of interview partners who referred to a specific topic. Afterwards, the most relevant results are discussed, highlighting commonalties and differences between regions, as far as it gives an additional benefit to the research.

The chapter closes with a summary and outlook, how to use the results in the further work packages of the project SDGs Labs.

5.1. AWARENESS OF SUSTAINABILITY ISSUES

It is remarkable that nearly half of the interview partners from all regions regarded awareness as key for the debate on and practice of sustainability. Awareness is closely related to interview partners' consciousness of their immediate environment, their own and others' actions.

"I believe that there is a lot to be done in raising awareness and that does not only concern us as a company but also each individual himself" (IP 1, 2019). "Our sector is the one with the biggest impact on the environment and the resources on a global scale" (IP 2, 2019). "Benchmarking with other companies helps a lot to see what is possible to realize" (IP 3, 2019). "I will not make investment in water, rationalization, reuse and recycling of water and then forget to monitor the process and fail to realize" (IP 13, 2019).

Some pointed still to a lack of awareness and knowledge amongst producers and consumers about sustainability but recognize a growing sensitivity on sustainability issues particularly amongst the younger generation. "Right now, we are on a path of awareness among producers and consumers. Younger generations are more alert to this problem, but of course, barriers will always exist. The path is correct, but we will still need time" (IP 19, 2019).

Others saw a communication gap between agricultural practice and science, which slows down the process of awareness building. "There is a lack of communication between agricultural practice and science. Our problem is that from the scientific area in the past was hardly any practical support for our working field" (IP 22, 2019).

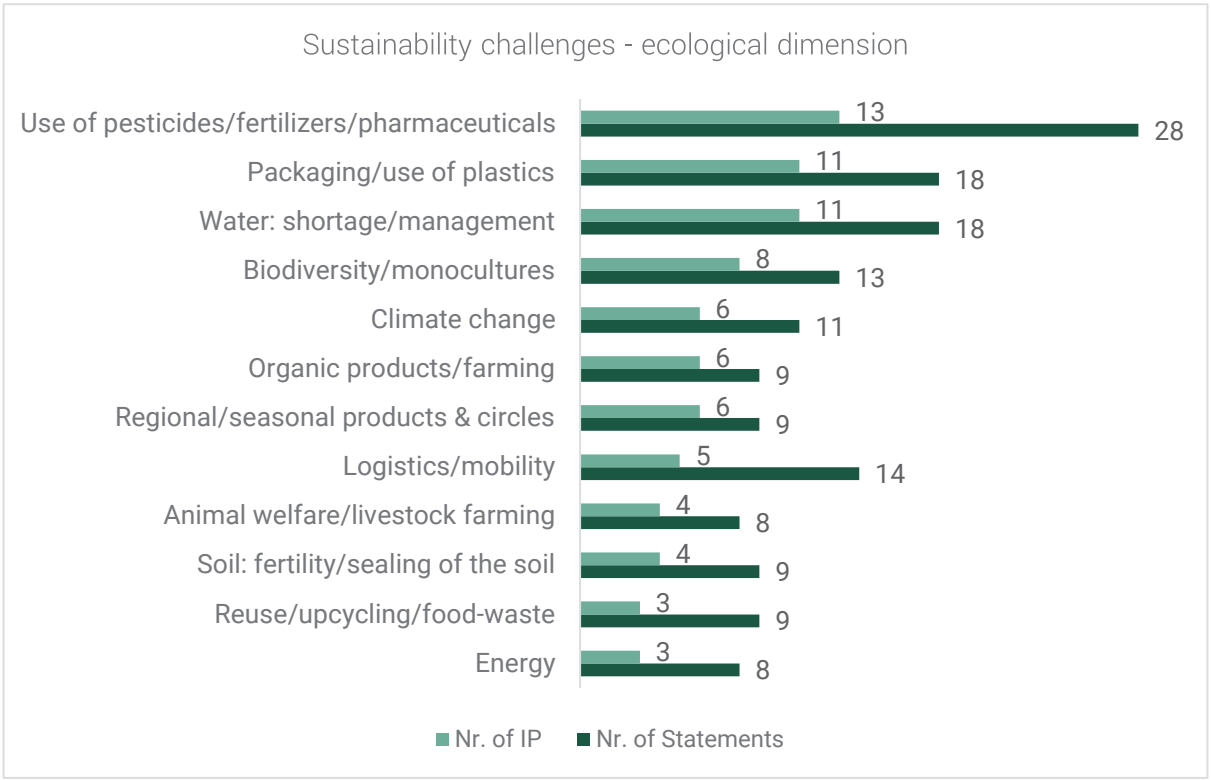

Figure 10: Sustainability challenges – ecological dimension

5.2. ECOLOGICAL DIMENSION

Raising the question on sustainability challenges most interview partners addressed ecological challenges first and quite detailed.

Taking the number of respondents as a basis, the three most concerning issues are:

- Use of pesticides, fertilizers and pharmaceuticals
- Packaging and the use of plastics
- Water scarcity and water management

5.2.1. USE OF PESTICIDES, FERTILIZERS AND PHARMACUETICALS

The use of pesticides, fertilizers and pharmaceuticals is the topic which seems to concern interview partners the most, as half of them mentioned it - from all regions and from all stages of the value chain.

Interview partners are highly aware of the consequences, pesticides have on the whole circle of an ecological system. “For us, but also for the whole region, pesticides are a big challenge. The topic goes from use of herbicides and insecticides to soil degradation to water management to… it is a circle” (IP 3, 2019). Therefore, they want to know more about the origin and the effects of pesticides. “We need knowledge in the sense, where do the substances come from - no matter in what form of agriculture - where do the operating materials derive from, how are they produced, under what social conditions are they produced and what effects does it have where they are used?” (IP1, 2019)

They also know quite well that at the moment only a strategy of reduction and not a complete exit is possible, as the global food system is grounded on mass concepts which do not work without chemicals. “We already reduce for a long time. We already have this notion even in the weeds, we have reduced a lot in the residues in the soil and we also use products to fight vine diseases already much softer, not so aggressive to protect from insects” (IP 17, 2019). Also, in animal husbandry reduction of pharmaceuticals is a topic. “Antibiotics reduction and saving medication in animal husbandry is a “hot spot topic”. The parental herds are vaccinated, this gives the maternal vaccination protection, passed over to the egg and to the chick. We therefore know that our chicks have a very high state of health” (IP 21, 2019).

5.2.2. PACKAGING AND USE OF PLASTICS

Packaging is another top issue which was addressed by nearly half of the interviewees from all regions.

There is a conflict between guaranteeing durability and reducing food waste on the one hand and reducing packaging on the other hand. “We need a packaging that guarantees a long durability. Everyday counts, because then I have less food waste. The consumer is educated like that, goods that are two days before “best-before-date”, he will not buy anymore, only at reduced price” (IP 22, 2019).

Another unsolved question is how to substitute plastics through environmentally friendly materials while keeping the good features of plastics. “Our war at this moment and our main Achilles heel is packaging in organic farming. We use many plastics, but we will try to reduce and convert to biodegradable packaging and cartons” (IP 20, 2019). “There is a system for reusable boxes. However, this is also a difficult subject, as they have to be cleaned with great effort. If a box hardly has a scratch, it has to be removed, because natural germs could colonize it” (IP1, 2019). “So, even if we manage to bring new packaging onto the market in completely recyclable packaging, it will only be effective if the entire waste management industry is oriented differently so that it can really be recycled” (IP 25, 2019).

5.2.3. WATER SCARCITY

Water is another emerging issue which was addressed by nearly half of the interview partners, particularly by those working in agriculture. They are worried about increasing water scarcity, the need to irrigate agricultural areas more and more and to manage a scarce resource well.

"Water is one of the most important resources, if not the most important, that we have in the world. And it's just that water is slowly becoming scarce here, too. Last year it showed us this extremely" (IP 1, 2019). "Now the big challenge we are facing right now is the water issue. For example, we have a vineyard irrigation system, which covers about 70/80 percent of the area. To manage it, is our big challenge" (IP 15, 2019). "We try our best to take advantage of the rainwater, but we have a problem here in our region because our plots are very scattered and when we want to make a water-reservoir we have to do it in the depressions, where we are taking the neighbour's ground" (IP 20, 2019).

But water is regarded as social topic as well, as the scarcity of this resource leads to the question of fair distribution and bears a source for conflicts on different levels. "Well, the challenges in the region are very diverse. This applies to the usage of groundwater and the soil, that relates to nutrients. Challenges concern the question of freshwater, drink water quality, the consumption of drinking water, and the usage of resources very generally" (IP 22, 2019). "And we already know today that not only agriculture will fight against fishing and electricity production, but there will also be fights within agriculture" (IP 1, 2019).

5.2.4. LOSS OF BIODIVERSITY AND INCREASE OF MONOCULTURES

Interview partners from all regions regarded the tendency to monocultures in agriculture and consequently the loss of biodiversity as big challenges, as the following statements indicate.

"Here, the greatest challenge is biodiversity, from which we are moving further and further away, but at the same time presenting ourselves better than we are" (IP 5, 2019). "But of course, all these mass concepts are now reducing costs in the short term, yes, but if you look exactly there in the long term, how will the soil be exploited, how will the groundwater be polluted, what will biodiversity look like there?" (IP 7, 2019). "I was just at a conference in Berlin of the Agricultural newspaper and 'die ZEIT'. There they also elaborated, that the topic of biodiversity is to be ranked even higher than the climate change. Whole systems are getting lost" (IP 22, 2019).

5.2.5. CLIMATE CHANGE

Challenges concerning climate change were addressed in different ways.

Some of the interview partners see the challenge in the fact that we are not affected directly and therefore underestimate the urgency. "It's once hot and once cold. The fact that the average temperature increases by 1 or 2 degrees over 20, 30 years, we will probably all not realize that. We can take that out of expert measurements and figures in the media, but we won't notice it" (IP 9, 2019).

Others, particularly farmers, experience climate change in their daily work. "We also have water as a challenge. Due to climate change, seasons have very changed. We have difficulties to know and to forecast" (IP 20, 2019). "And then of course climate change is a very important topic for us, because with fruit and vegetable cultivation comes an extreme amount of CO2, (for example) tomatoes in glasshouses are gassed with CO2 to grow faster" (IP 8, 2019).

5.2.6. SUSTAINABILITY OF ORGANIC FOOD AND ORGANIC FARMING

Organic farming was a topic in all regions, as well. The interview partners agreed on the relevance of fostering this type of agricultural practice but also pointed out critical issues.

First, they raised the question, if organic can be regarded as sustainable anymore when considering the whole supply chain, also long transportation routes. "Define sustainable. Is it an organic product if it comes from Africa or Egypt or from New Zealand - is it sustainable or not?" (IP 11, 2019). They also pointed up difficulties if organic farmland borders conventional due to the risk of contamination through pesticides or genetically engineered seeds. "That means that being in integrated protection respects the region a lot. But when we do viticulture in integrated protection we are to compromise with all other winegrowers" (IP 17, 2019). Finally, they also question, if organic farming is able to feed the world population, as organic farming needs different conditions, sometimes also more resources like farmland. "There are also people who say that organic farming cannot feed the world. So, of course, the issue of true costs feeds into this as well" (IP 25, 2019).

5.2.7. GROWING DEMAND FOR REGIONAL AND SEASONAL PRODUCTS

The topic of regional food was mentioned by interview partners from Austria and South Tyrol where regional food is often used as synonym for sustainable food. In German, the word "Regionalität" is often associated with locally produced food which is characterised by shorter supply chains. Due to the geographic conditions of Austria and South Tyrol, with large mountain areas and the natural occurrence of short distances within food supply chains, this topic was found to be prevalent in these regions.

The most concerning question was how to meet an ever-growing demand for regional products in a system where consumers are used to have everything, anywhere, anytime. "For example, the regional circles, the big word regionality, where no one knows, is the radius 5 km or 500 km? Imagine the ideal case: within a small radius. From the point of view of the company, certain products are not available in the quantity they are expected - keyword meat" (IP 4, 2019). "At the moment we are rather in another dilemma, that we actually have too little of everything we have to distribute. Of course, this is more and more difficult, because our customers do their planning and advertising on a long-term basis and if they have tomatoes in their flyers and we can't deliver them, then that's not good either" (IP 11, 2019).

A conflict occurs upon the question, if regional is the best solution in relation to artificial growing conditions in greenhouses. "Well, the most efficient is, of course, year-round production in heated greenhouses, where you have the best and the highest yields. That's a lot more and will probably be 2/3 of our turnover and quantity. And then there is the less intensive seasonal production" (IP 9, 2019).

5.2.8. LOGISTICS AND MOBILITY

Logistics and mobility were mostly addressed by the interview partners from South Tyrol, as the region is highly burdened by intensive traffic and the people are quite sensitive to that topic.

"We have many small producers who generate top products, but often lack structure and logistics." (IP 4, 2019) "The real problem is that the real costs are not charged. If the flight had a real price, nobody would fly except the one who has to" (IP 6, 2019).

5.2.9. ANIMAL WELFARE AND LIFESTOCK FARMING

The topic of animal welfare was raised by interview partners from the region Oldenburger Münsterland only, because animal husbandry, mostly

in mass production, is one of the biggest economic sectors in that region. They addressed some interesting conflicts between animal welfare, legal restrictions and economic needs.

"A competing goal is animal welfare. We have definitely conflicting goals there. If I can give an example, 'private farm'. There it is simply the case that we have a slower growing breed, that lives one third longer, but therefore it also needs, of course, more feed" (IP 21, 2019).

5.2.10. DISAPPEARENCE AND DEGRADATION OF SOIL

As regards the resource soil, two main challenges are perceived – the disappearance and the de-gradation of soil through monocultures and one-sided fertilisation.

"For certain areas, I am sure it won't look good in the future, if the soil is totally ruined. There are enough studies, especially in America, how much sand and soil disappear every year" (IP 6, 2019).

"Of course, all these mass concepts are now reducing costs in the short term. But if you look exactly there in the long term, how will the soil be exploited, how will the groundwater be polluted, what will biodiversity look like there?" (IP 7, 2019)

"Challenges with nutrient surplus refer to soil as well as to groundwater" (IP 22, 2019).

5.2.11. RECYCLING AND FOOD WASTE

Food waste was perceived as a challenge and worth thinking about how to reduce it.

Interesting was an insight from meat production where both mass production and small-scale integrated farms head for the same goal but from different angles – to save food and avoid food waste by processing the whole animal. "But in the end, we are doing this already for years, and not everyone is aware of that. Poultry meat is also only so cheap, as all parts of the slaughtered body are processed further, nothing is left" (IP 21, 2019).

"We try to apply efficient management, save energy and water, try to make the most of everything and not waste it. Select the good raw material so that there are no by-products for example" (IP 18, 2019).

Some regarded food waste even as a systemic challenge. "The perishability and the short moderation play a role for us and it grows also the thought that the switching and the processing of surpluses is actually only a symptom fight and does not change the cause, however" (IP 8, 2019).

5.2.12. ENERGY

Saving energy and using renewable energies are challenging factors for our interview partners but not centre staged. The ever-growing mechanization and automatization in agriculture requires more and more energy and raises the question how to save energy or even to become energy autonomous.

"We cooperate with the largest importer of vegetables and fruit, who also operates the only geothermal greenhouse in Austria in Styria. This means that we are almost independent even in winter, and we significantly reduce imports from Italy or Spain with very low greenhouse gas emissions, which are caused by logistics and lighting, but not by heating. And that puts us well below the CO2 emissions from Spain and Co" (IP 11, 2019).

5.3. ECONOMIC DIMENSION

Besides the ecological challenges in agribusiness and food production, most interview partners perceive economic challenges as well.

Taking the number of respondents as a basis, the three most concerning issues are:

1. Financial issues and cost structures
2. Consumer and demand structures
3. Market structures

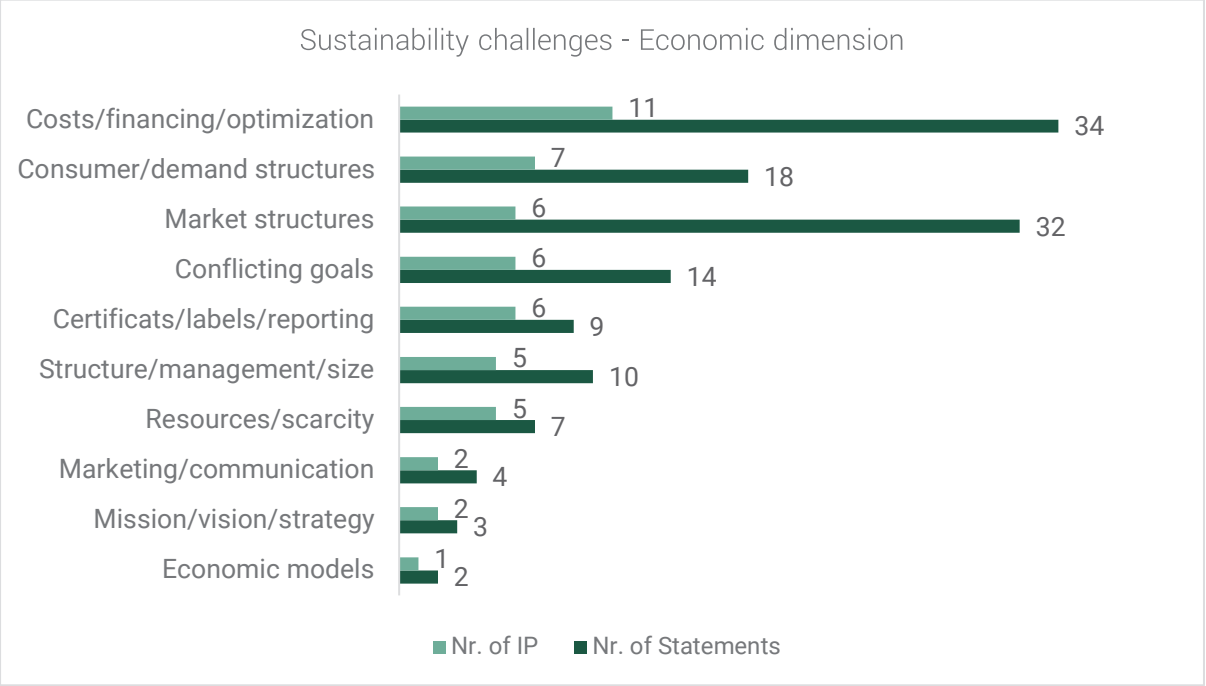

Figure 11: Sustainability challenges – economic dimension

5.3.1. COST- AND FINANCE STRUCTURES

The topic of cost- and finance structures is the most relevant economic challenge which was addressed by eleven interview partners from all regions.

They are worried about the development of costs in relation to prices and consequently the question if small businesses can survive. "Production costs are rising, but product prices are not rising in the same proportion as they should. And when they rise, the other side comes, the consumers, who say the product is far too expensive. Although you spend much less today than you did 20 years ago. As a result, the value of food is no longer known to many" (IP 6, 2019). "The question of mechanization, the question of labour is already a more specific financial thing" (IP 15, 2019)."Then there is the issue of earning an income that is either needed to live on the farm, to do it in parallel or to close it" (IP 6, 2019). "It is becoming very difficult in the case of small-structured agricultural enterprises that cannot afford, for example, foil tunnels, that cannot afford technical support, that cannot even afford irrigation - then more and more of them have to stop" (IP 8, 2019).

A big issue is how to communicate that sustainability pays off in the end. "It is sometimes a bit of a problem to convince, if you make such an innovation now, which goes ahead, which is of concern. To convince the management that at some point we will also have an economic benefit. Because at first, you only see the costs" (IP 5, 2019).

5.3.2. CONSUMER- AND DEMAND STRUCTURES

The second most addressed economic challenge were consumer- and demand structures.

Among others, the most striking was the picture of a new, paradox consumer. "A lot will change in the next few years, also online. What about the situation of consumers? How critical will they really become? The Friday for Future Generation for example, which is also exposed to criticism. First, they demonstrate and afterwards they all go to McDonalds. The paradox has become reality. We

are all allowed to deal with this form of consumer" (IP 5, 2019).

"For me it's extremely about scaling. We realize that about the amounts now, you also need the amounts of consumers, who need to buy your product, because if you do not have that, it does not come to optimizing" (IP 7, 2019).

"High standards are demanded by the retailing/ trading companies as well as customers, also higher than e.g. standards existing in other countries" (IP 25, 2019).

5.3.3. MARKET STRUCTURES

Market structures was one of the top issues with a great variety of responses.

The interviewees are worried about the tendency to market concentration, grounded on a philosophy of linear growth and competition. "I believe one of the big sustainability challenges is the question of growth in various areas. At the same time the question arises, what about the post-growth society? The challenge is to find inspiring best practice examples; there are only few of them" (IP 5, 2019). "What has been added in recent years is that the big players, Lidl and Hofer, who are the biggest professionals in communication, have entered the field. As a result, the consumer gets more and more confused" (IP 5, 2019). "If we could make the ego of individual companies go away… This competitive thinking, I believe, is a major obstacle to sustainability" (IP 7, 2019).

Consequently, international markets and trade flows become complex and call for transparency of value chains and comparability of standards in the agrobusiness and food production sector. "I like to produce according to good standards, I like to handle everything sensibly and legally, no question, but then to be lumped together and manage the same market (comparing different EU countries) is just difficult. It doesn't work. Because wages are also different. That alone makes a huge difference" (IP 9, 2019). "When you have goods and you realize the storage is full, we need to find ways to get rid of that now, we do not want food waste. And then you have a buyer in the Netherlands. One can never exclude at 100 percent that they will sell, for instance to Africa. And that is due to the worldwide trade, sometimes you cannot retrace it" (IP 21, 2019).

"For me the transparent supply chain is definitely a challenge. It doesn't matter whether it's in the conventional or organic sector, not just where the raw materials come from, but also where the animal feed comes from and which people are involved. So simply trace back to which farm, to which cooperative in which countries" (IP 25, 2019).

5.3.4. CONFLICTING GOALS

Many conflicting goals were mentioned during the interviews, which are about, how to keep the environment, the ecology and the economy in balance. "And we see, when we go into depth with the topics, that keeping the environment, ecology and economy in balance is not so easy. But there are ways and means" (IP 1, 2019).

The variety of tackled issues is quite impressive, from conflicts between wilderness and agriculture, to conflicts between reduction and gaining an appropriate income, to the challenges in packaging.

"For example, how do I manage to keep the alpine pastures still farmed? If the wolf tears animals and nobody gives animals on the mountain pasture anymore, then we have a problem with avalanches and so on. And that is a topic - the question, may the wolf be or may not be? How do we deal with wilderness?" (IP 6, 2019).

"Reduced animal population leads to less N and P emission but is contrasting to the company's goal of selling feed" (IP 22, 2019).

"For me the one feeds into the other [referring to supply chain, packaging and climate change as issues discussed before] even with sustainable packaging. Glass is actually good, but it has the worst CO2 footprint, so these things are extremely difficult to reconcile" (IP 25, 2019).

5.3.5. CERTIFICATIONS, LABELS AND REPORTING

Certificates and labels are regarded relevant for communicating sustainability outside.

"We communicate far too little with labels, some of which could only be picked up with the checklist. We are one of the regions with the lowest density of labels in the hotel sector." (IP 4, 2019) "Every year we are scrutinized by the official control entities for waste, also to verify the labelling. We as operator have to be certified very well, not in a stairwell" (IP 14, 2019).

A need for social certification was stated from one interviewee who works with goods from all over the world. "We also have some textiles and household goods. Here I see the problems in production more in the area of social certification" (IP 11, 2019).

5.3.6. STRUCTURE, MANAGEMENT AND SIZE

Most answers referred to the topic of size. Large companies are seen two-folded in the light of sustainability. On one hand, size is regarded as a risk because it tends to dominate everything. "Even all the big constructs are a challenge. In principle it is the property, the money, which belong to a few and the others are dependent. They dictate everything: the price, the land, the plantations... that is a very big risk for the future" (IP 6, 2019). "I would say that the most blatant is the EU's common agricultural policy.

How much influence it has in the areas because the EU subsidy system is actually rewarded on the basis of size. The more hectares you own, the more subsidies you get" (IP 7, 2019).

On the other hand, a certain size seems to be necessary to produce a remarkable impact. "When I look back to the last 10 years, I have to say that essential protagonists of a certain size (of 100 employees and more) have hardly been added. Yes, we are talking about a start-up here and a start-up there, but structures of a certain size have not been added" (IP 5, 2019).

5.3.7. SCARCITY OF RESOURCES

Another challenge, which becomes more and more obvious, is the scarcity of resources. Interview partners see this challenge not only for their own organisation, but also for other companies in the supply chain and on a global level, e.g. how to feed the world population.

"The scarcity of raw material is for me one of the most important factors. Therefore, I am always sensitive and try to maximize the value of the raw materials from our suppliers" (IP 13, 2019).

"I believe that climate protection is too abstract for many people. If you explain that it is more about resource preservation or such things, then it is much easier for agricultural enterprises to understand" (IP 8, 2019).

"The challenges are tremendous, because we have to produce more resources. I have the rational and non-rational feeling that we do not have resources for the world, for the number of people on the planet, we need more resources" (IP 26, 2019).

5.3.8. COMMUNICATION AND MARKETING

Two interview partners raised the question how to communicate sustainability outside.

"I think one of the big challenges in sustainability is how to communicate? It's not much different with organic. If organic is sexy, then it fits. If organic is communicated with a raised index finger, then everyone says, no. And then 3 organic scandals pop up and everyone says - I knew it before" (IP 5, 2019). "Certifications can be very helpful in the representation to outside, as we are in a competition, and sustainability is a competitive factor" (IP 21, 2019).

5.3.9. MISSION, VISION AND STRATEGY

Two interview partners identified challenges in anchoring sustainability in the mission and strategy of the enterprise.

One mentioned biodiversity as an example of topics which are not the core business of the company, and therefore difficult to grasp. "All teams are thinking about what is following, what projects will we do. One topic, that is not easy is biodiversity. Things like social standards or saving energy or saving resources, are relatively easy to get and also logically understandable. Biodiversity is always a bit difficult to understand when you are sitting in your office" (IP 23, 2019).

The other interview partner referred to different understandings and philosophies within an international holding. "This actually means that we are not only swimming along in the CSR report and strategy of our mother, but that we need our own thing. Not only because it is demanded from outside, but also out of conviction, because we are simply, as I said, always 100% organic" (IP 25, 2019).

"If you really want to bring the SDGs into the corporate strategy, then I think it's helpful to have a bit an idea of applicable targets. Or at least don't be afraid to sit down with the management and say 'That and that and that is important now. What are we doing there at the moment?" (IP 25, 2019).

5.4. SOCIAL DIMENSION

Social issues were addressed by the interview partners as well, but they seem not to have the same priority as the ecological and economic dimensions.

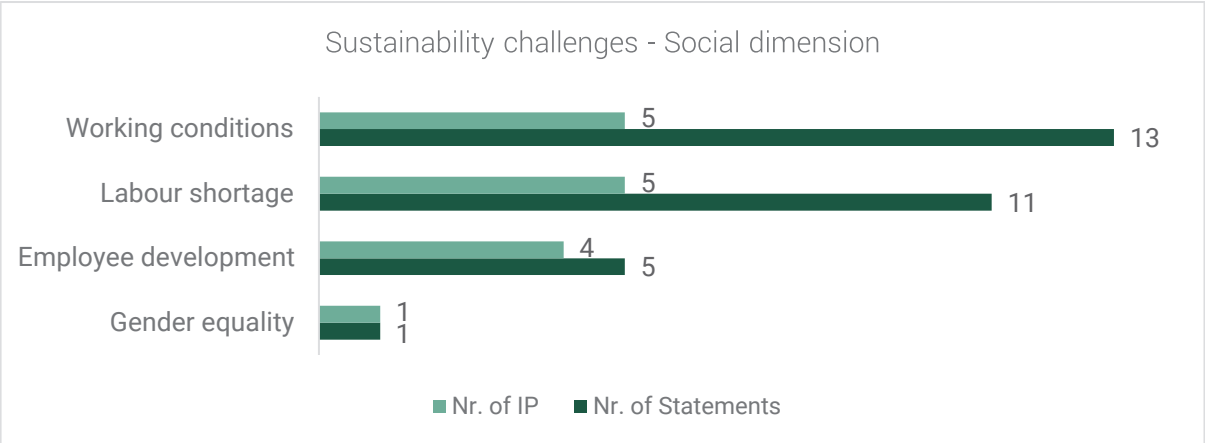

Figure 12: Sustainability challenges – social dimension

As the graphic shows, social challenges are correlated to employment issues.

1. Working conditions
2. Labour shortage
3. Employee development

5.4.1. WORKING CONDITIONS

Working conditions are a big issue, particularly concerning the workers in the field or in food production. Challenges are seen in respecting dignity of work, fair wages, accommodation and to cope with different social standards inside the EU and in third countries.

"Then of course something like fair wages is also a topic here. If you think about seasonal harvest workers and such people, equal rights are certainly also a topic. There are also some issues with finding agriculture and vegetable traders with whom you can work well" (IP 8, 2019). "Or take the topic, with which we also dealt, human dignity in work. The peak of it was 4 to 5 years ago, when the topic of accommodation in the slaughtering industry was massive here, and the exploitation

of labour has been discussed massively here. It is still today. We are for sure not at the end of the discussion. There is need for improvement (IP 22, 2019).

"The second issue, as I mentioned earlier, is social standards, especially in the southern producing countries. That is now a recurring theme in the media anyway. Production in Almería, where workers actually live in greenhouses. The vegetables are GAP-certified just as we are" (IP 9, 2019).

5.4.2. LABOUR SHORTAGE

Labour shortage is one of the most crucial challenge under the social perspective. It was mainly addressed by interviewees from the agricultural regions, who see the lack of manpower on different levels:

- Lack of employees in the fields or in food production
- Lack of young talents
- Lack of successors on farms

"For me the big problem we are experiencing right now is the lack of manpower. It is often not because the olive grove is not productive. For example, this year I have a partner with a significant production, but he couldn`t make anything out of it because he could not get enough manpower." (IP 14, 2019) "We want to include new techniques to make it easier, especially to fill the labour shortage in production, as there are no people available to work in the field" (IP 20, 2019).

"You need young talents. We have sectors, where we already now have a lack. And you need to try to fix the lack, as otherwise the existence of a company is endangered" (IP 21, 2019). "For the farms, the challenge is to find people who will continue to run the farm. This is a social issue. It's a big challenge, especially as long as the economy is as good as it is now, because everyone can find a job somewhere else without any problems" (IP 6, 2019).

5.4.3. EMPLOYEE DEVELOPMENT

It seems to be an issue, not only to find people, but to find qualified people. To address this challenge the interviewees bet on employee development, including technical skills as well as general education.

"In the matter of people our concern is quite big, mainly because we also want to train these people. We have now a project that we call the "Common Place" project. We spent 18 months creating a set of training for our employees, ranging from the technical area, but also, for example, teach them how to work with computers, explain the history of Portugal, even the people who work in the vineyard" (IP 15, 2019).

"And the target set is of course, that the clever brains, that we have here in the region, to keep them, or to get in new clever brains from outside into the region. To become attractive for professionals. The lack of qualified labour is a big topic" (IP 22, 2019).

5.5. POLICY-STRUCTURAL DIMENSION

Another type of challenges is perceived on a policy and structural level, which is, of course, interlinked with the challenges mentioned before.

Challenges are noticed in three fields:

- Regional and national policy and regulations
- EU policy and regulations
- Interest groups and public organisations

5.5.1. REGIONAL AND NATIONAL POLICY REGULATIONS

Most barriers for advancing sustainable development are seen in regional and national policies and regulations.

The interview partners, mostly from Portugal and Germany, pointed out conflicts between sustaina-

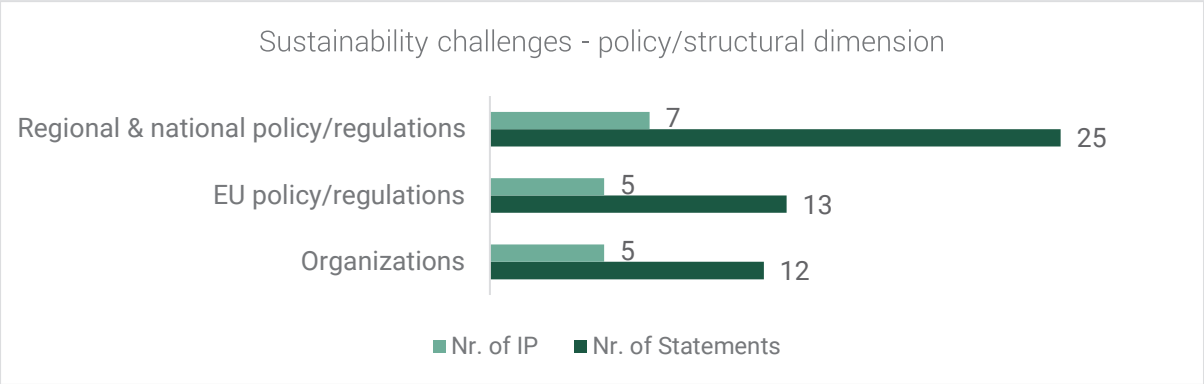

Figure 13: Sustainability challenges – policy and structural dimension

bility measures and regulations, or dependencies on subsidy policies for small farmers.

"One wants open stables, but then they are hardly accepted due to the BIMSch- (emission and air-protection) regulations. That is also the case for the 'private farm' stables, which you cannot construct everywhere, that is not compatible with the construction authorisation. These are target conflicts, of which we are aware, and which are our daily work" (IP 21, 2019). "But that is a topic in Germany, especially promoted by the Green party, the topic to regulate meat consumption by the state. I do not believe that that will happen. Simply because I do not believe that in Germany one wants to interfere so strongly in the personal decisions, but who knows (IP 22, 2019).

"There are many farmers who do not survive without subsidies. But the subsidy must serve as a lever for a new business, to provide some support, not as a way of life" (IP 19, 2019).

5.5.2. EU POLICY AND REGULATIONS

Following the opinion of the interviewees, EU policy has a huge influence on the progress of sustainable development in agriculture and food-production. EU policy influences the sector through legislation, directives, common programmes and subsidies.

"There are manifold relations to the European agricultural politics. It does indeed affect us directly. By directives, by ordinances, through the common agricultural politics, CAP, through the different programmes, that are connected to it, as those need to be implemented locally. We said that the decisive frameworks are set in Europe. And we need to look, that we can take influence on these" (IP 22, 2019). "There are many barriers, and many of them turn out to be political. At this time, the main pressure on organic farming came from consumers. From the government came no big support; the main things have been imposed by the European community" (IP 20, 2019).

"For me there is a very clear misalignment, especially in the EU policy programmes, which clearly tend towards mass and monoculture, because you can only make production so big, if you unify it, and not in the way Austria is actually structured" (IP 7, 2019). "At this time the producers receive some support from the European community due to the islands' insularity. There are also supports when there is drought. Many of the farmers depend on this support for their survival, but sometimes this subsidy falls short" (IP 19, 2019).

5.5.3. PUBLIC INSTITUTIONS AND ORGANISATIONS

A fifth of the interview partners feel little support from public institutions in advancing sustainable solutions. Some even have the experience of being hindered in their engagement.

"From public institutions we would need: implementation advice, help on how to check off the checkpoints, creating accesses. The commitment is extremely high on an individual level. But then

they can rarely do something concrete...so as far as content is concerned. Every time I ask, what can we do or is there a possibility here or there, they get lost" (IP 7, 2019).

"If we do a project, the governmental organisations just say that the project is not well, but they do not give solutions. We feel little support from the institutions, it is always penalizing, but there is little support" (IP 20, 2019).

"The lack of a suitable organisation to represent the interests of the agribusiness- and food production companies in the region was the reason for us to found a separate association" (IP 22, 2019).

5.6. CONCLUSION AND OUTLOOK

The findings from the expert interviews reflect the complexity of sustainability challenges, which the agribusiness and food sector is facing but to which the sector is contributing as well. At the same time, the interviews reflect a high degree of awareness amongst the interview partners - who work in the sector day by day, thus know it very well and know possible angles for transforming the sector. Awareness is a very important starting point for fostering the SDGs` implementation in this sector.

A second important finding is that the interview partners perceive challenges in the three dimensions of sustainable development, the ecological, the economic and the social, complemented by a fourth, the political-structural dimension.

According to Mulligan, sustainable development is about the so called "triple bottom line", which suggests the need to seek a balance between economic development, environmental protection and social well-being (Mulligan, 2015).

Regarding the ecological dimension, the interview partners see challenges related to products, to production and processes, but to changing environmental conditions, as well. The three most concerning issues are the growing dependency on use of pesticides, fertilizers and pharmaceuticals in agriculture, the unsolved question of packaging and the increasing water shortage and growing need for irrigation all over Europe. That is in line with the Global Environment Outlook, which points out that a fundament change in the use of natural resources is needed (UN Environment, 2019).

Regarding the economic dimension, the interview partners observe a growing imbalance between increasing costs for sustainability-oriented food production and achievable prices on the market. A development forced by changing global market structures, which tend to concentrate and become less and less transparent. This observation is underpinned by the European Union`s report, which states that the agricultural sector has undergone an enormous change of production structures throughout the value chains (IPES Food, 2019). Finally, a change of consumer behaviour is noted, with a tendency to higher consciousness for sustainable development but with a tendency to a "paradox behaviour" as well.

Social challenges are seen particularly in a lack of employees, which concerns workers in the fields or in food production as well as young talents or successors of farms. This precarious situation roots in poor working conditions and livelihood pressure among farmers and other players in the value chain, throughout the European Union (IPES Food, 2019).

Another outcome of the interviews is that sustainability challenges are not one-dimensional. They are related to each other and this interlinkage often causes dilemma and target conflicts like the following:

- Reduction of pesticides and fertilizers versus keeping monocultures fertile
- Reducing plastics in packaging versus long durability of food
- Natural conditions for organic farming versus the needs for feeding a growing world population
- Growing demand for organic and regional food versus a lack of availability
- Increasing need of food versus scarcity of land, water and other natural resources
- Affordable prices for healthy and sustainable food versus increasing costs of raw materials and necessary infrastructure
- High impact of organic lines from large scale enterprises versus destruction of small-scale suppliers
- Support of small-scale farms through subsidies versus dependency on subsidies

Most of these target conflicts are too complex to be solved in the short term but it is an important competency to identify them and to develop strategies to cope with them.

A fourth outcome is that the interview partners see the challenges on both, a microeconomic and a macroeconomic level. Of course, they define the challenges of their own business more precisely, but they also see the interdependencies on a European and global level. That is another important pre-condition for understanding the vision of the SDGs.

SDGs Labs
Making the SDGs our business

6. ATTITUDES TOWARDS THE SDGS

This chapter presents a general picture of practitioners' experiences with, attitudes towards, opportunities and barriers for implementing the SDGs. The outcomes are based on two different sources, on the expert interviews and the focus groups and they are structured into four parts:

1. Experience with the SDGs
2. Attitudes towards the SDGs
3. Opportunities of the SDGs
4. Challenges and barriers of the SDGs

Each part contains a detailed analysis of the outcomes of the expert interviews complemented by the most striking propositions of the focus groups.

The chapter closes with a conclusion and outlook on how to use the outcomes in the further project.

6.1. EXPERIENCE WITH THE SDGS

The following graphic (Figure 14) shows the knowledge level the partners of the expert interviews possess about the SDGs.

It is rather surprising that only three interviewees responded that they neither work with the SDGs nor know what they are about. This high degree of awareness can be explained through the careful selection of the interview partners and seems not to be representative for the sector.

Most of the interviewees indicated that they know the SDGs but have no experience in applying them in practice. The following statement expresses the opinion of this group very well. "We have in fact not yet worked so much with the SDGs. Well of course, one knows them, one knows they exist, and we also already figured out some correlations for the one or the other topic" (IP 21, 2019).

Seven from 26 interviewees already have experience in applying the SDGs. "We have created sustainability KPIs and now, with our own sustainability projects, we can assign the SDGs to them. We are already explicitly addressing SDGs targets and the KPIs are also based on the SDGs. That was not the original goal, but in the process, we were in fact focussing on relating it to the company when starting and developing them" (IP 25, 2019).

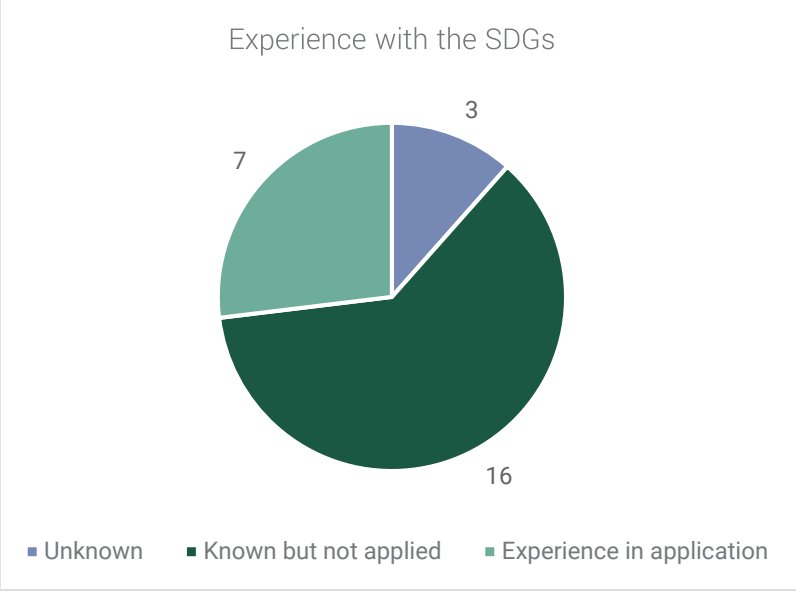

Figure 14: Experience of the interview partners with the SDGs

6.2. ATTITUDES TOWARDS THE SDGS

As the following graphic (Figure 15) shows, the majority of statements to the SDGs is positive.

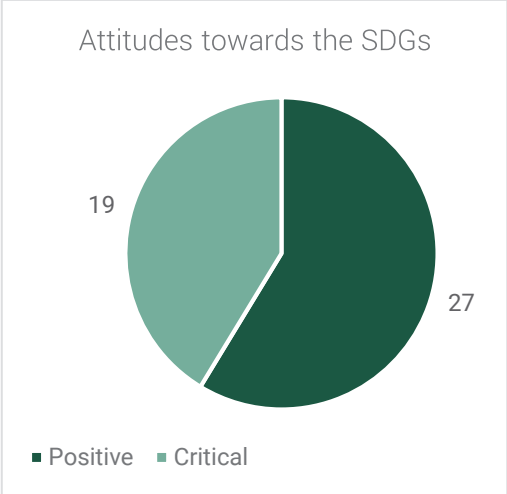

Figure 15: Positive and critical attitudes towards the SDGs

In the following table the most relevant attitudes are summarized.

ATTITUDES TOWARDS THE SDGs	
Positive	• Worldwide agreed and worldwide valid • All blocs are interwoven and relate to each other • Most goals affect everyone, no matter if it is a family or enterprise • Somehow everything includes everything • SDGs place great importance on social justice, that means the fight for equality and equal rights • Big framework where you can find yourself and talk to like-minded people • Guideline for entrepreneurs, businesses and the future of our lives • SDGs are drivers of innovation • Great success to lift the SDGs to a global scale • Generalized goals which all can share

ATTITUDES TOWARDS THE SDGs	
Critical	• Not many goals where we have an impact • Quite general, not obvious what is behind each goal • 99,9% of the people are not reached by these goals • Biggest and richest countries in the world have zero willingness to change • Some are more, some less plausible for the daily work • Companies are not permanently aware of all 17 goals • Difficult to communicate the SDGs to smaller businesses • Some targets don`t fit to the overarching goals

In the focus groups, the participants did not position themselves as clearly as in the expert interviews, but rather discussed different perspectives. In eight statements, the SDGs are seen quite positively, six statements include critical remarks, partly from the same participants.

In the following table the statements are added which were specific for the focus groups.

ATTITUDES TOWARDS THE SDGs	
Positive	• Exciting, how big and diverse the subject sustainability is • Responsibility to work for the SDGs because actions have influence on employees and their families, but also on value chain partners • High relevance, because sustainability also means survival of the enterprise • Important that large companies reach the goals because of their high impact • Education plays a central role - not formatting people but opening their minds
Critical	• SDGs are defined for a national level – therefore complicated to rethink for everyday life • Global, galactic goals – great difficulties to apply them into practice • Picking out single SDGs can lead to exactly the opposite • SDGs are designed for growth • Dealing with the limits of growth – topic for innovation

6.3. OPPORTUNITIES OF THE SDGS

Most interview partners and participants of the focus groups, even those who have a critical attitude, see opportunities in working with the SDGs for the agribusiness and food production sector.

They detected opportunities in five aspects, as the following graphics shows:

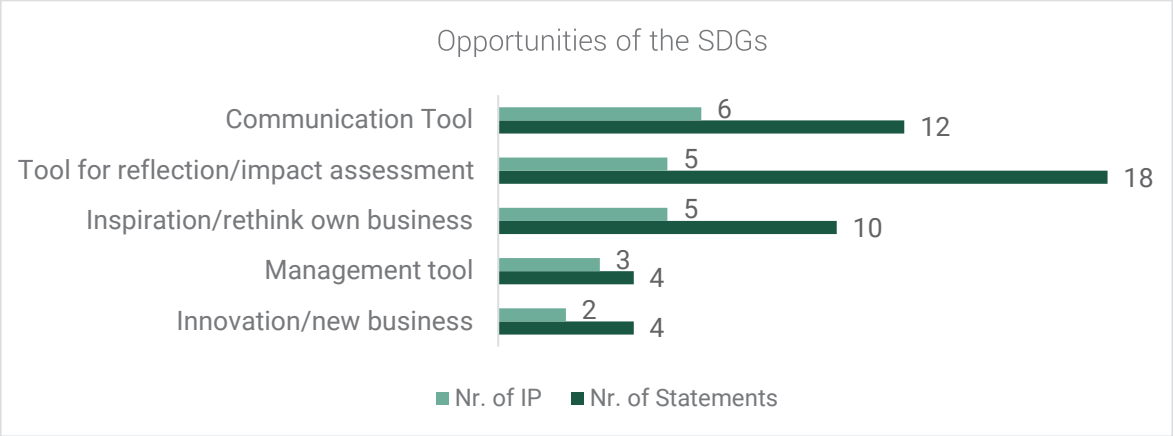

Figure 16: Opportunities of SDGs

6.3.1. COMMUNICATION TOOL

To use the SDGs for communication is not yet very common but it is regarded as one of the great possibilities of the SDGs.

"I just believe that the SDGs are a super communication possibility" (IP 7, 2019). "One good thing about SDGs that they as a company or agriculture in general can show the positive impacts they already have" (IP 23, 2019). "We use the SDGs in the sustainability report. There are also statements on the individual SDGs. But we communicate our own projects and our own issues, the SDGs and our contribution are not in the foreground" (IP 11, 2019).

6.3.2. TOOL FOR REFLECTION AND IMPACT ASSESSMENT

What interview partners appreciate about the SDGs is that they demand a different way of thinking. "What I like about the SDGs is the way of thinking. That each goal can be thought in different contexts. For example, poverty. I think there is poverty everywhere in the world, poverty cannot only be financial, it can also be nutritional or social" (IP 1, 2019). "That's what I find so exciting about the 17 goals, that they also inspire reflection. What does the goal actually mean for me as a person in my life situation? Many factors play a role here" (IP 1, 2019).

A quite progressive idea occured in several interviews - to use the SDGs as framework for an impact assessment or for sustainability reporting. "How sustainable we are, has always been what distinguishes us. And if we can say that because of these goals (...) we fulfil that and that and that, and so we are officially there somehow. But if there was the possibility to have an SDGs Impact Framework, it would also be a huge topic of credibility or trustworthiness for us" (IP 7, 2019).

"So, you somehow want to plan the future in the company, and one wants to go in this or in the other direction, and then maybe it helps to evaluate which project could be more important, if you just look at what the SDGs are asking for. In any case, that would be an interesting thing for the after next sustainability report, to make a concrete evaluation for the SDGs of where we are standing" (IP 25, 2019).

Another interesting topic came up in the focus group in South Tyrol, where participants discussed

whether the SDGs should be measurable or not. "The SDGs help us to measure what is good and what isn't and to try things out, to see which solutions are there. They can help finding solutions" (FP 5, 2019). "The idea of these goals was exactly this: no additional audit, no certification, but a pure "framework". Where everyone can orient him/herself: where can I contribute?" (FP 1, 2019).

6.3.3. INSPIRATION AND RETHINKING OF THE OWN BUSINESS

The SDGs are seen as a source of inspiration and as motivation to discover new perspectives through an integrated sight on the various dimensions of sustainability. "I think that they also bring a new perspective. Another perspective of course always brings the chance to improve yourself" (IP 21, 2019). "If you want to have a good goal, at first, you have to look in which direction you should go to become more sustainable. And for that it is quite helpful to take a look at the SDGs, and then develop your own KPIs in that direction, because they are not directly applicable things" (IP 25, 2019). "I actually think it's (i.e. the broad SDGs framework) nice, that's how diversity looks, that's how eco-social fair cooperation looks, these areas should actually be considered. For us it's a positive challenge that we actually want to do something in each of these areas because we are an eco-social company" (IP 8, 2019).

Not only for professional but also for individual development the SDGs can serve as a booster. "The big challenge is to set an example as an individual, as a father, as the person responsible for the company, and to start with myself. To say which goals appeal to me most and where can I do something within my radius of action that also gives me emotional meaning?" (IP 5, 2019).

Also, for the participants of the focus groups the SDGs are a source of inspiration which could be limited through a very strict definition of SDGs. "I also believe that precisely defined goals can be counterproductive. Because that basically tries to set a limit, from where I can say I am good and now I don't need to do anything anymore. But I should constantly confront myself with how I can improve, what I can still do" (FP 4, 2019).

Another idea evolved during the discussions in the focus groups of Oldenburger Münsterland and South Tyrol – the idea of cooperation instead of competition. "We have to go for a cooperation policy, not for policy but all for environmental cooperation" (FP 26, 2019). "It is education for cooperativism, it is a very important idea!" (FP 29, 2019). "The SDGs can be used as guidelines for companies, as an idea generator. They are globally valid and it's less about competition but more about learning from each other" (FP 1, 2019).

6.3.4. MANAGEMENT TOOL

To regard the SDGs as a management tool is quite an interesting perspective because that means to put sustainability at the core of a company`s strategy.

"The SDGs are a management tool for me. The SDGs are for corporate decision makers to know that those are the international goals we need to address, where we need to think about how to achieve them, and what projects we offer in the area" (IP 11, 2019). "Through the SDGs one can simply systematise it better, because they are, in fact, defined goals, and defined subjects and that helps systematising" (IP 21, 2019).

In the focus groups, an additional meaning of management is pointed out – the relevance of involving employees in the process of applying the SDGs. "It is important to make this connection, so that the process makes more sense to the people. The company alone can`t achieve anything on its own, if employees are not involved" (FP 11, 2019).

6.3.5. INNOVATION AND NEW BUSINESS MODELS

Following the attitudes of some interview partners, innovation is centre stage in the SDGs. "Innovation is included in every topic. If there is no innovation, then these goals cannot be achieved!" (IP 6, 2019)

"I think there will evolve a lot of business models. Especially if you go into the individual criteria and look at certain things, there's a lot going on. If someone in the ecological field is in the process of developing things further, that's very, very positive" (IP 5, 2019).

6.4. BOUNDARIES OF THE SDGS

Although several opportunities were pointed out, many limiting aspects and boundaries were mentioned in the interviews as well as in the focus groups. These criticisms are of particular interest and value for the project SDGs Labs, because they show where practitioners are hindered and also give inputs on how to address these boundaries in designing the following SDGs Labs and SDGs Academies.

They see boundaries in five aspects, as the following graphic shows.

6.4.1. PROBLEMS WITH THE APPLICATION OF THE SDGS

The biggest challenge is seen in applying the SDGs in practice. Half of the interview partners from all regions come up with this concern.

Some point out the target conflict between the need for abstraction on the one hand and applicability on the other hand. "I see weaknesses in the SDGs in the meta level. But on the other hand, this is again not a weakness, because the SDGs are deliberately formulated in such a way that they reach as many nations and states as possible and can be applied to as many areas as possible. It is logical that they cannot be broken down into a single project or into concrete measures" (IP 11, 2019).

Others recognise the target conflict and already come up with solutions. "If you come to a consumer with SDG 12, he won't be able to do anything with it, but if you come along with a closed loop economy, everyone will know what it means" (IP 11, 2019). "I think, other institutions have to start and somehow translate the SDGs into the corporate language and into the language of the ordinary citizen, because otherwise it is just such a colourful, abstract project. Even our management won't have ever looked at the 169 targets, I think. Therefore, a kind of translator would be required, who are in the department and say, 'Ok, that's important now and those are the ones we think are best for the company" (IP 25, 2019). "I think they

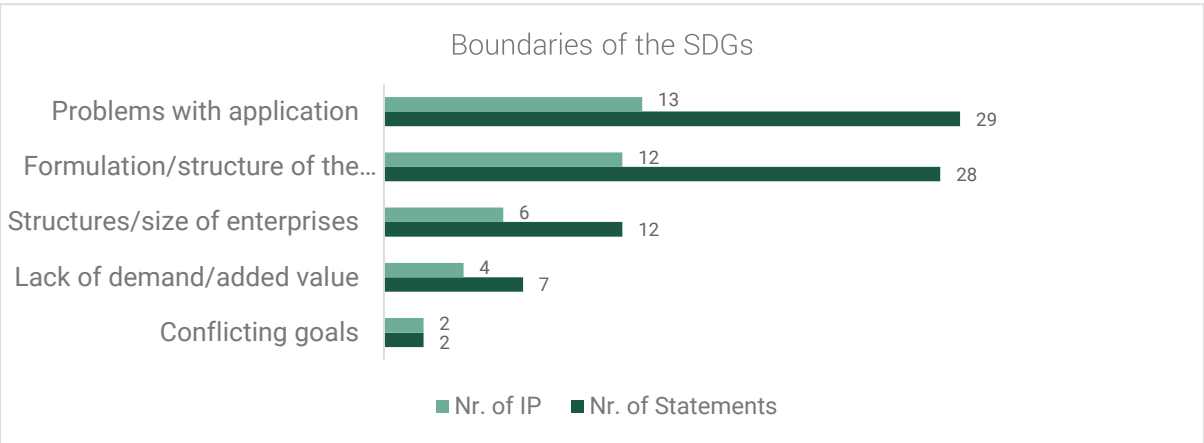

Figure 17: Boundaries of SDGs

work, but the question is, how to practice them. It is the biggest difficulty. But I think there are possibilities" (IP 14, 2019).

In the focus groups, the applicability to practice was discussed, as well as the topic of measuring and assessing the implementation of the SDGs. "I also think this SDG translation process has to work somehow in two directions. First of all, the big abstract and the concrete measures to calculate it. My impression is always that the companies often already have these concrete measures, they just don't break them up particularly high and link them back to the SDGs" (FP 25, 2019). "Especially with the measurable one, there we have different levels again, whether we measure global warming or the CO2 imprint of one kilo of grain or one kilo of poultry meat. I believe we must then also break down the measurability in order to translate things. I believe that if we have valid indicators that we can compare with one another, we can also discuss them and discuss how we can optimise, improve and change them" (FP 25, 2019).

6.4.2. FORMULATION AND STRUCTURE OF THE SDGS

Nearly half of the interview partners from all regions were critical about the formulation and structure of the goals. The criticisms should be taken seriously, yet the background of the speakers should be considered as well.

An interesting argument that could keep practitioners away from the SDGs, is the concern that they do not reach people. "The goals are super, but incredibly rational. They don't reach anybody, no politician and no human being. If people are not touched in their emotionality and do not recognize a clear sense in the activity, then they will never change their behaviour. With every habit you want to change, you will fail if you are not 100% convinced of the meaning" (IP 5, 2019).

Another interesting hint concerns the negative formulation of some goals. "For example, no poverty - I don't like the goal, it should be formulated positively. For example, creating income for everyone or something like that. That would be a positive goal, because then I don't think of poverty and the subconscious does not understand negative formulations. So, there are some goals that are formulated negative, like "no hunger", "no inequalities" (IP 6, 2019).

One argument, which seems to have a specific relevance, concerns the general formulation of the SDGs. "I have to say that I find it relatively difficult, as the topics are so high on a meta level. So, every single goal is in fact relevant, if I think of 'no poverty', 'no hunger'. But how do I break that down to my current challenges such as the topic of nutrients for example?" (IP 23, 2019).

The holistic approach is challenging as well as the connection to the single targets for those who already have experience with applying the SDGs. "The holistic concept is demanding in contrast to working with 'hotspot topics', but it is true that in theory every SDG could be relevant" (IP 21, 2019). "The links between targets and main goals are not always obvious; the formulation of the SDGs has not made clear which actor is responsible for what; there are different interpretations also among companies, whether to best address all SDGs or the best suiting ones" (IP 25, 2019).

In the focus groups, the formulation of the SDGs was discussed as well. A particular topic is the global dimension of the SDGs and the difficulty to break them down to the individual level. "But this also requires a more or less nationwide commitment that one commits oneself to it. So, I find the SDGs difficult as an individual, because for me this is really a very global issue. Where you have to acknowledge them globally and where you say globally, we are changing something" (FP 9, 2019).

Another topic was the demand for target group-oriented communication of the SDGs. It is important to reach people where they are and in language they understand. "It always depends on whom you want to address. When I think of farmers and producers in the countryside, I think that

most of them have already dealt with sustainability issues. Now that we are back to the SDGs, which is first of all an abbreviation of an English wording and is not easy to grasp. And then you have these 17 SDGs with topics like oceans and so on - so I don't know if it's necessary to talk to people in that way or if it's not better to talk to people in their language and about their topics. But then working out, how it contributes to these SDGs, so that you can say what you are doing on your farm and in your region, already contributes to a global development. So, you're a part, but it's a bigger whole" (FP 10, 2019).

6.4.3. STRUCTURE AND SIZE OF ENTERPRISES

Structure and size of the enterprises turned out to be a boundary in two different directions: on the one hand, small scale units, in particular in South Tyrol and Portugal, that do not have the capacity to work on the SDGs in a structured way, and on the other hand, the big structures, which are not flexible enough to adapt quickly.

"Due to the fact that the companies are so small-sized, the issue of sustainability is often played alongside. The issue often arises incidentally, but it is not clearly defined. They are far too little structured, except the experts, who have dedicated themselves to the topic. Here one would have to offer still more structure, support, provide requirement specifications, provide guidelines" (IP 4, 2019).

"Effective dissemination of the goals would be needed to make them known. But not all farmers have access to the internet. Farm associations would be a good engine for liaison with farmers" (IP 19, 2019). "In comparison to smaller companies, decisions in terms of innovations are not so fast, as we have more levels of hierarchy" (IP 23, 2019).

The discussion in the focus groups tackles the matter of size of enterprises, as well – small units, which have more difficulties to implement the SDGs and bigger units, which are confronted with higher expectations. "Well, I think that smaller companies in particular have more consulting needs, of course" (FP 21, 2019). "But also, large companies have difficulties. It is expected that such topics will be dealt with. That is simply expected. You probably also have the resources somewhere to get it done" (FP 20, 2019).

Very close to the topic of capacities, the question is raised again, if it isn`t more feasible to start with single SDGs, tailored to a company`s capacities and then step by step broaden the view. "Well, I think it's more motivating to start with some SDGs, where you can maybe make a difference. Even if it's perhaps in competition with some other. If it then somehow goes ahead. The perfectionism of wanting to achieve everything immediately and dealing with everyone is usually not possible, even in terms of capacity" (FP 24, 2019).

"Actually, every company would need its own translation of the SDGs and sub-goals and what does that mean for us? That's why sometimes exchange is good, but there are limits, in my opinion. Because in the end every single company has to see how the SDGs or which SDG it can fulfil" (FP 24, 2019).

6.4.4. LACK OF DEMAND AND ADDED VALUE

Close to the problems with application of the SDGs, a lack of demand and recognized added value is stated. As the concept of the SDGs is quite young, it is too early to judge whether they will prevail in the long run in the business context.

It is comprehensible that established companies have their doubts about the added value as they have their routines and need time for adapting or changing a system. "That means that there is a sorting, so we have the ZNU standard, where a systematisation is done, then another sorting according to GRI, and then we would have another clustering, a systematisation according to SDGs - difficult." (IP 21, 2019) "The CSR report of our

organisation needs to be pragmatic, especially as we have farmers as clients. The SDGs could be difficult to communicate." (IP 23, 2019)

"Well, the SDGs they're definitely better known now in our company. But for us to make any direct evaluations as to whether we're fulfilling the goals, that's actually almost impossible. But also checking, whether we meet a certain target, we don't have that yet." (IP 25, 2019)

6.5. CONCLUSION AND OUTLOOK

A first quite surprising finding is that the SDGs are better known amongst the interview partners and focus group participants than expected. Only three interview partners indicate that they do not know the SDGs; 16 or 62% state that they know the SDGs but do not have experience in applying them. That is in line with previous findings, where 71% of businesses have plans how to engage with the SDGs, but not yet applied (WBCSD, 2018). That is in fact an interesting starting point for the following parts of the project SDGs Labs.

A second finding refers to the variety of opportunities which enterprises see in the SDGs. They are regarded as a source of inspiration for rethinking the business and for changing the perspective. Interesting is the attitude that innovation is required by the SDGs, otherwise they could not be fulfilled. Some proposals also tackle very concrete applications, like the idea to develop a SDGs-based assessment tool, that helps to evaluate the impact of sustainability related activities of enterprises. This is an idea that could be interesting for the SDGs Academies.

A third conclusion is about boundaries and limits, where the challenge of translating the SDGs to business and breaking them down to an applicable practical level is in the foreground. In particular, small scale businesses feel overstrained by the complexity of the SDGs framework, which seems to have little relevance for their daily business. That is in line with the WBCSD report, where a lack of understanding of the business case is defined as the biggest barrier to engagement on the SDGs (WBCSD, 2018). For our project, the task will be to create a translation framework that helps to overcome these barriers by making the SDGs as concrete as possible.

Also, of great interest were the controversial discussions about how to approach the SDGs in daily business, either to work with single SDGs where one has experience or to pursue an integrated approach which puts the total of the 17 SDGs in the centre. Probably it is not an either/or, but a both/and. Rockström and Sukhdev also emphasise in their "wedding cake" model the need to not look at the SDGs separated but to consider the interlinkages (Rockström & Sukhdev, 2016). With SDG 17 at the top of the wedding cake, the picture gives an interesting hint, how to realize "the both/and" – through developing partnerships and alliances towards the SDGs, another mission of the project SDGs Labs.

SDGs Labs
Making the SDGs our business

7. SUSTAINABILITY-DRIVEN INNOVATION

With the aim of creating a more concrete picture of what innovation means for practitioners and to see possibilities for translating the SDGs into entrepreneurial innovations, this chapter presents ideas and examples of sustainability-driven innovations in the agribusiness and food production sector.

The outcomes are based on two different sources, on the expert interviews and the focus groups. They are structured into three parts, whereby the third only refers to the focus groups.

1. Definitions of innovation
2. Innovation potential
3. Drivers and pre-conditions for innovation

Each part contains a detailed analysis of the outcomes of the expert interviews, complemented by the most striking propositions of the focus groups.

The chapter closes with a conclusion and outlook on how to use the outcomes in the further project.

7.1. DEFINITION OF INNOVATION

In the expert interviews, 19 out of 26 interview partners found a definition of innovation for themselves and their business. Interesting is the fact that many understand innovation not only in product logic but in a more holistic way.

They define innovation from two different perspectives:

(a) Motivational perspective: What is the motivation or driver for innovation?

(b) Outcome perspective: What does the innovation look like?

UNDERSTANDING AND DEFINITIONS OF INNOVATION	
Motivation	• The innovation driver is the "Zeitgeist" • Innovation comes from pain and the desire to do something • It is to see current and future problems and to find solutions • It is a matter of assessing the needs of the sector • It is to listen to the inputs of the environment around us • It is to do something different than usual • Innovation is positively changing a situation • Without innovation a company is not able to survive • Innovation is the responsibility to contribute to sustainability relevant topics • Innovation happens, when there is an urgent need
Outcomes	• Innovation is a question of definition: technical, digital innovation, … • Inventing a new product or changing a process • Break down existing processes or find other levels of the value chain • Come up with creative and advanced ideas, products, which reach the end consumer • To innovate is to produce better and more easily • It is not only about creating new, but creating new methodologies and new ideas • It is about arranging techniques to minimize resources • It is a new combination of a set of factors that allows for discovery and evolving into more interesting areas

Table 4: Understanding and definitions of innovation

7.2. INNOVATION POTENTIALS THE SDGS

All interview partners and also many participants of the focus groups contributed with examples from practice or with concrete ideas of how the SDGs, or more generally, sustainability thinking in business can inspire innovation.

Following Soltani, who proposes four types of innovation in accordance with business functions, we found a similar structure for the answers, adding the aspects of technological/digital innovation and of social innovation.

The following graphic shows in which kind the interview partners see the innovation potential of the SDGs.

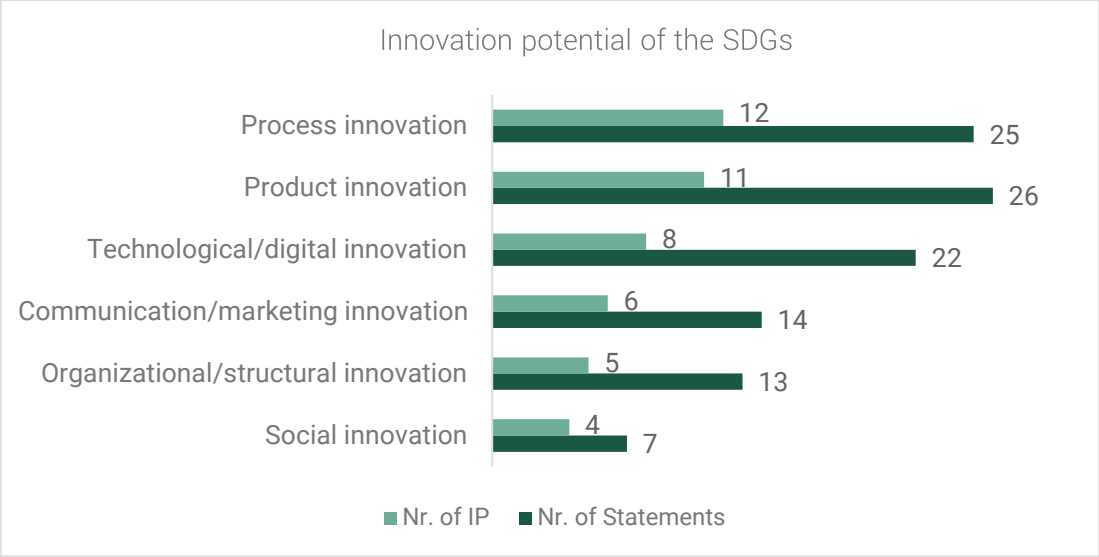

Figure 18: Innovation potentials of the SDGs

7.2.1. INNOVATION IN PRODUCTS

11 out of 26 interview partners see high innovation potentials in products and services. The approaches to generating sustainable innovations, however, are different.

Interview partners from South Tyrol and Portugal see opportunities in "re-inventing" old traditional sorts of vegetables which are very well adapted to regional conditions. "Above all, those who create innovative and great offers with regional products certainly have a good potential. In other words, those who take the regional, the old creatively into a new era" (IP 4, 2019). "Yes, the old types of vegetables are becoming more and more popular at farmers' markets or for the hotel business, who like these extravagant things very much" (IP 6, 2019). "Instead of importing we started to produce some vegetables that we didn't recently produce here. We are talking about chard, celery, we needed to go a lot behind to start producing these crops" (IP 20, 2019).

The Portuguese think of different uses of olives and by-products. "Let's now move on with the new olive oil soap and olive-based candle design. A chemical engineer who has some experience in this field, will bring us new experience and hopefully a good area to develop our activities" (IP 12, 2019). "In East Germany they use olive pomace for soil fertilization. We here haven't got it yet. The issue of leaf too, we try to excite olive leaf for feed of small ruminants and cattle" (IP 14, 2019).

Others regard the trend to meat-like products as interesting. "One innovation, for example, is the entire vegetarian diet trend and the development of foods that meet the taste and zeitgeist but are not based on animal products. For example, Austria now has meat-like products based on mush-

rooms" (IP 11, 2019). "That can be products from alternative proteins" (IP 21, 2019).

7.2.2. INNOVATION IN PROCESSES

In the expert interviews nearly half of the interview partners regarded process innovation as a big opportunity for sustainable development and gave ideas and examples of different types of processes.

"Or Microgreenhouses or simply Aquaponics. That's an innovation for me, because the combination and circulation of nutrients and water didn't used to be like that" (IP 11, 2019).

For some, process innovation means to handle all kinds of resources – water as well as animal bodies – carefully. "Not the grapes, but all the equipment, the deposits, the floor, etc. we wash in one operation. This water is treated for later use" (IP 17, 2019). "For example: every part of the slaughtered poultry is processed further, even farina of haemoglobin is produced, the liver is processed in the pet food industry, bones can be processed and go into pet food industry or become fertilizers, feathers become fertilizers, and proteins in water can be filtered and serve as feed for shrimp breeders" (IP 21, 2019).

Process innovation also means to rethink well-known concepts differently, e.g. include environmental aspects into considerations about optimization. "In Scandinavia that is already today the case, that environmental aspects are automatically part of the optimization. So, for example, how much CO2 does one feeding ratio emit? That means that one would not only optimise with regard to the fat production and muscle development, but they consider also the topic of the carbon footprint" (IP 23, 2019).

For some, transport and logistics are important topics where they also see a huge potential for innovation. "We had a change of paradigm in logistics. In the old days, olive oil was produced in March; the olives were full of white picks, full of fungi and had other defects. Today, we penalize partners, don't even let them unload, if the olives come in a sack. They have to come loose in the box of the van, so that the olives do not get into an oxidation process and do not change. Another concern is related to the risk of cross-contamination by use of mineral oils and gasoline. We have to be careful, when it comes to discharge the olives but also in the harvesting process" (IP 14, 2019). "What we are also interested in are actually innovations in the field of transport. It would be fantastic if a lot could be done in the next few years, so that one would simply have better opportunities to choose transport service providers that are more sustainable" (IP 25, 2019).

In the focus groups an additional aspect of process innovation was brought in, namely the aspect of co-working either in the classical form of co-operatives or in new types of partnerships. "Yes, there is innovation potential, for example in being associated. Each producer delivers the grapes and makes the wine in the same place, so we can optimize the processes. Even waste, we can manage easier together, also pesticides, vineyard applications, purchasing etc. We try to organize and collect everything in the same place and make all processes more centralized" (FP 18, 2019). "You have just mentioned the Solawi, which is certainly not for the mass market, but I think it is a very interesting concept that brings agriculture together with consumers. Perhaps we can think again about such stories. Because you said earlier that politics and business must work together. We are back on the subject of partnerships, the system is complex, and we have to pull the lever somewhere" (FP 25, 2019).

7.2.3. TECHNOLOGICAL AND DIGITAL INNOVATION

Automatization and digitalization have long reached the farming and food sector. The examples mentioned in the interviews give clear evidence of that and they also confirm the high ex-

pectations in technology as a problem solver for various sustainability issues.

Technology levels are different: from mechanical tools in small scale farms to all types of robots in industrial production, the use of technology makes processes more efficient, saves manpower and allows a more precise use of resources. "At the mechanization level, we were the first company in the region with the first grape harvester. We have a lot of things that are banal today, but we were the pioneers in vinicultural techniques" (IP 15, 2019). "For example, harvesting robots: It is a monitoring robot that drives around the greenhouse all night and looks at how to use crop protection in a sensible way. That is, of course, a saving in manpower and helps to react earlier and more precisely with beneficial organisms" (FP 7, 2019). "For example, packaging robots that automatically pack cardboard boxes full, so that no one needs to move the heavy boxes, and that also leads to efficiencies. Clean room technology in the sausage production - the long durability you can only reach with clean room technology. Or high-pressure installation so that no air and no germs from outside can come in" (IP 21, 2019).

Digitalisation plays an ever-increasing role in innovation – from steering single production processes to managing a complete farm through smart farming. "We now have our own software solution, which is made for the single farmer as a user. It gives full transparency on the agricultural holding with regard to nutrients and their spread on the field.

Also, one can follow data for slaughtering, as well as at which points manure was spread and how much need for nutrients there is in the soil. Also seed or fertilizers can be noted down there in a merchandise information system, and it is also available as an app" (IP 23, 2019).

7.2.4. INNOVATION IN ORGANISATION AND STRUCTURE

Some of the interview partners see the need for organisational innovation that has to accompany every technical innovation. They link it mostly with HR topics like training or adapting working conditions.

"In the last 15 years, we have been focusing heavily to innovate in this specific area. And the proof of that is that we had a total vineyard area of about 50 hectares and now we have 100. We still have the same number of human resources" (IP 15, 2019). "For example, the fact that truck driver trainings are provided by the companies themselves due to a lack of trained labour" (IP 21, 2019). "A lot has happened in the area of personnel management and work design, which is an important point of innovation, especially in times of a shortage of skilled workers. Everything has become more flexible, working from home, the hierarchies have become much flatter. Even in a part-time position you can also actively participate" (IP 25, 2019).

Also, in the focus groups, HR issues were discussed focussing primarily on traineeships and recruitment. "Next year we have practically no graduation class and we are booming here. So, the point here is to find trainees in the first place, and even skilled workers in certain areas are difficult" (FP 20, 2019). "It's called HR, but I have to say, that also depends on the leader, who thinks relatively sustainably. He has made a lot of changes there and always attaches great importance to sounding out how people tick during the recruitment interviews. In the past it was all about the job. Now, sustainability has already found its way much more into the selection process" (FP 24, 2019).

7.2.5. INNOVATION IN COMMUNICATION AND MARKETING

For some interview partners the SDGs are also relevant for innovation in communication and marketing.

They gave examples for successful communication strategies: to tell the stories behind, face to face contact or to integrate the SDGs into the KPIs. "That is the task of marketing, to communicate well and to tell the stories behind, the special features of a region. This is also one of our tasks to point out that the companies should communicate what they are already doing well" (IP 4, 2019). "We always bet a lot on the most direct advertising in the sense of school visits, going to colloquia, proving, going to fairs, direct contact with people, has always been that issue. We had a time, when we were visited from 3.000 to 4.000 kids per year. This is already 20 years ago, but many of them are now our consumers, at this moment they are bringing their children" (IP 20, 2019). "For us the SDGs now have been fed into the KPIs and due to that, they are now a topic" (IP 25, 2019).

But the SDGs could also help to communicate a criticized product like meat. "They need concepts to market their meat, that is very clear. Meat is not as sexy anymore, as it used to be. I believe that in Germany we will stay meat eaters. But the meat consumption is getting in fact more conscious. That will definitely result in a reduction" (IP 23, 2019).

In the focus groups, particularly in the German one, communication and marketing were discussed in a quite controversial manner. One of the crucial points is the discrepancy between emotional pictures and hard facts about reality. "And then we have a farmer with a chicken in his arms. But we show very factual videos. And the joke is, the discrepancy. We want the greatest possible transparency and therefore we invite you to visit us, but the response to visits is almost zero" (FP 20, 2019).

They also addressed the challenge to show the contribution of modern agriculture to sustainability and to change the pictures we have from sustainable agriculture. "With these figures, we are trying, day after day, to make it clear that modern agriculture makes an excellent and urgently needed contribution to world food. That only modern agriculture can do that, and this can be underpinned by a CO2 footprint or other concrete figures, in order to make it clear how effectively the product is produced in a resource-conserving way, not now in a way that increases intensity, but in a way that conserves resources" (FP22, 2019). "We often project with our idea of sustainable development, because we actually project a picture of agriculture, but also of production, consumption, as if surrounded by nature, which no longer exists" (IP 23, 2019).

Finally, they asked whether a changed advertising strategy is enough. "But it's easy to believe that a changed advertising strategy can now create a sense of well-being in society and even achieve approval, I don't think that's the case, the times are over. We must act and show through concrete action that we are on the way" (FP 20, 2019). "What I meant was not advertising, but marketing in the sense of presenting the corporate culture and the production culture. And it can't be that a company that is convinced that it is doing a good thing, that this company doesn`t dare to go in front of the camera as a company" (FP 21, 2019).

7.2.6. SOCIAL INNOVATION

Aspects of social innovation were raised in particular by interview partners from South Tyrol. Interesting global issues were tackled: alternatives to the capitalist economy model, education as innovation driver or new pension systems for women.

"I think the big question is also, will new models assert themselves disruptively against today's

classical capitalist model?" (IP 5, 2019). "And in this respect, I think there is mega potential for innovation in education" (IP 5, 2019). "Even education - it changes fundamentally every decade. If I compare the learning methods I had with today's methods, then there are worlds in between" (IP 6, 2019).

"Also, in the so-called gender equality is a must for innovation. That at some point it will be normal for both partners to work and have children. But this requires innovative models, e.g. for pension protection" (IP 6, 2019).

Social innovation is also addressed on a company level. "We work together with many social organisations and of course turn this into stories (i.e. use that for marketing). If we really sell something for the Wiener Tafel now or develop products that are cheaper and can be bought by socially weaker classes. We work together with a company fighting food waste, we provide them with vegetables and say, we don't want to make a business out of them, but please write on it that these are our vegetables" (IP 10, 2019).

7.3. DRIVERS AND PRE-CONDITIONS FOR INNOVATION

The question on driving forces and pre-conditions for innovation was addressed explicitly only in the focus groups. The aim was to find good examples for a flourishing innovation culture on an enterprise level as well as on a regional level.

The outcomes are structured into three issues:

(a) Driving forces for sustainability innovations
(b) Pre-conditions in regions
(c) Pre-conditions in enterprises

7.3.1. DRIVING FORCES FOR INNOVATION

The participants of the focus groups noted positive and negative drivers for innovation towards sustainability: to solve problems, participation and teamwork, but also high pressure.

"But what I'm saying is that innovation can also arise from solving such problems. Simply enabling people to change their behaviour and that brings us back to the changed market structures" (FP 25, 2019). "By starting with it, we have a sustainability team in every production plant. Once a year the sustainability teams meet centrally to exchange their experiences" (FP 20, 2019). "But there is an extremely high pressure to innovate, because everyone knows, that sustainable packaging is an issue. And you don't want to be the last one" (FP 22, 2019).

"In Douro, the questions I asked here in the survey, Douro depends a lot on winemakers, not only for Douro wine but also for Porto wine, but also for tourism and we need people, who are working in these sectors. It was important that we try to think of the Douro as a place to live, then we have people to work in the vineyard and become a sustainable and developed place" (FP 18, 2019).

7.3.2. PRE-CONDITIONS FOR INNOVATION

For both, regions and enterprises were found relevant pre-conditions that foster the innovation climate, as the following table shows

PRE-CONDITIONS FOR INNOVATION	
in regions	• Increasing public participation, also on community level • Societal acceptance of innovation • Clear political targets and societal consensus about the targets • Innovation-friendly legal conditions • Public communication about development and achievements • SDGs are in the public discussion • Responsibility of each company to do more for the SDGs • Money to promote sustainability labels • Valid market- or scientific studies about consumer behaviour concerning sustainability-driven innovations • Good practices which serve as testimonials
in enterprises	• Companies have to set the tone to reach the SDGs • Companies have to expand their room for manoeuvre • Courage of companies to change the political framework • Big companies have influence on the whole value chain • Looking deeper than just at efficiency • Financial incentives to implement the SDGs • Skilled people: professional skills but sustainability orientation as well • Practice exchange and cooperation

Table 5: Pre-conditions for innovation

7.4. CONCLUSION AND OUTLOOK

Firstly, the interviews and focus groups revealed that actors of the agribusiness and food sector have a comprehensive understanding of innovation that goes far beyond simply product innovation. They see high innovation potential in the SDGs and give examples also for process innovation, for technological and digital innovation, for organisational and structural innovation, for marketing innovation and for social innovation. This variety is in line with Soltani and Hosseini, who propose to characterise innovation through four types (Soltani & Hosseini, 2012).

Amongst the great variety of examples for sustainability-driven product innovations, two opposite tendencies are most striking. On one side, there is a growing tendency to recover the roots and re-invent old, traditional, regional types of food. On the other side, there is a tendency to design completely new types of food, incorporating the latest scientific findings about healthy and sustainable ways of nutrition. Both tendencies are interesting for the project SDGs Labs.

A third finding refers to the growing relevance of mechanisation and digitalisation in the agricultural and food sector. Traditionally regarded as low-tech sector, it faces an enormous catch up, which manifests in the use of robots, artificial intelligence and smart monitoring tools in all stages of the value chain. A development that supports the efficient and conscious use of scarce resources and therefore has to be thoroughly considered in the project.

Finally, the need for social innovation was addressed. That goes ahead with Soldano, who points out the central role of social innovation in the transition to a sustainable agriculture (Soldano, 2019). The most urgent need is seen in improving working conditions to make the sector attractive for employees. Education and advanced trainings for professionals could play an essential role in transforming the sector towards a sustainable one.

SDGs Labs
Making the SDGs our business

8. NEEDS FOR SDGS-RELATED COMPETENCIES

This chapter reflects on the needs of practitioners to support a better integration of the SDGs in practice. It aims to make visible which competencies are necessary and the ways and methods to develop them. A specific focus is put on how the project SDGs Labs could support the implementation of the SDGs into practice.

The outcomes are based on two different sources, on the expert interviews and the focus groups. They are structured into four parts:

1. SDGs-relevant competencies
2. Needs and expectations towards the project SDGs Labs
3. Cooperation with Higher Education Institutes
4. Needs on a policy- and structural level

Each part contains a detailed analysis of the outcomes of the expert interviews, complemented by the most striking propositions of the focus groups.

The chapter closes with a conclusion and outlook, how to use the outcomes in the further project.

8.1. SDGS-RELATED COMPETENCIES

The outcomes of the interviews and the focus groups show that, beyond a grounded professional background in agriculture or food production, specific competencies are needed to contribute to the SDGs. The indicated competencies are close to those, Rieckmann identified as key competencies for sustainable development (Rieckmann, 2018).

SDGs – RELATED COMPETENCIES	
Systems-thinking Competencies	• Integrated view of the different dimensions of sustainability • Drawing a macro view on the single issues • Ability to do networked thinking, starting with the every-day issues • Have a good overview of the needs of the organisation • Holistic thinking • Ability to recognize connections
Anticipatory Competencies	• Ability to consider effects of certain products • Create a positive vision for the future • Awareness for time: in the short term – in the long term
Normative Competencies	• Being critical to detect weaknesses but solutions as well • Mindfulness: mindful treating of people, land, any resource
Personal Competencies	• Spiritual thinking • Inner work • Personal interest and motivation for the SDGs • Courage to change something
Strategic Competencies	• Ability to make the goals tangible • Openness to set new goals and to work for them • Creativity to solve problems

SDGs – RELATED COMPETENCIES	
Social/ Inter-personal Competencies	• Take in all employees in the process and treat them as protagonists • Ability to convince people • Ability to inspire and activate people • Translate the goals into a simple language • Communication skills: to reach many different stakeholders • Ability to exchange experience and different views • Join forces in cooperation across and vertically in the value chain • Reach different levels of policy and civil society organisation

Table 6: SDGs – related competencies

8.2. NEEDS AND EXPECTATIONS TOWARDS THE PROJECT SDGS LABS

To learn more about the concrete needs and expectations on the project SDGs Labs was a central object of the expert interviews and the focus groups, in order to get a practice-oriented basis for designing the following SDGs Labs and SDGs Academies.

All interview partners and participants of the focus groups contributed with their experience and with ideas for possible measures. Even though there might be differences in the regions regarding pre-conditions or feasibility of certain ideas, a distinction between regions does not make sense in this study as it is more about collecting ideas.

The needs can be structured along four categories, as the following graphic shows:

8.2.1. COOPERATION, NETWORKS AND EXCHANGE

Cooperation seems to be a success factor for giving the SDGs more relevance in business. Half of the interview partners from all regions confirmed that point and gave interesting examples of how this cooperation could look. The interesting thing about these examples is that they address cooperation at very different sizes, levels and actors – each fulfilling a specific purpose and need.

Cooperation thinking starts within the own organisation. "Communication helps, so, internal communication, which is super important anyway. Especially, when you're not a small company, where you can stand up in front of all employees" (IP 25, 2019).

Another type is cooperation among companies working in the same field. "It is much more exciting to have a very small focus group with 3-4 people with similar or the same SDGs, because at such network meetings simply such a broad spectrum is not possible, because everyone has more or less the same problems" (IP 8, 2019).

Also working groups were mentioned which should unite a whole village around the SDGs.

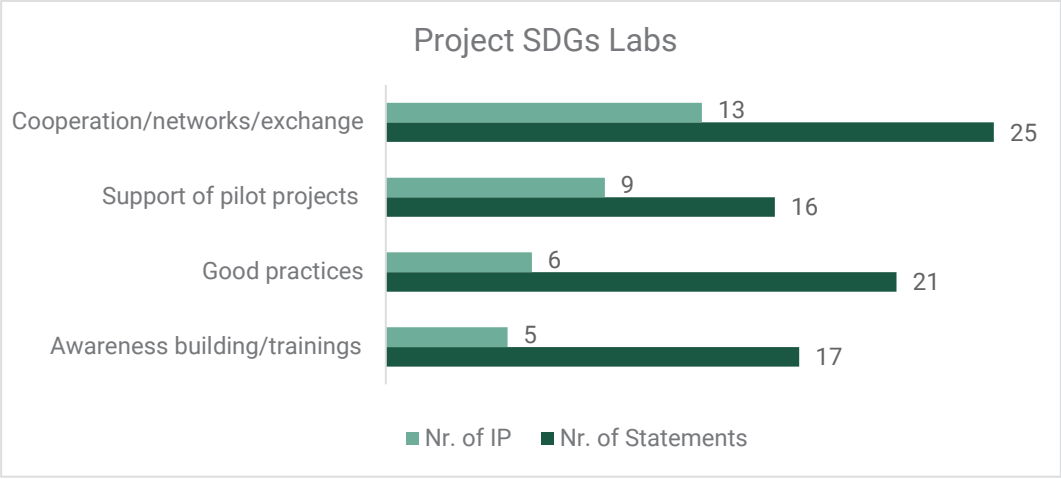

Figure 19: Needs and expectations towards the project SDGs Labs

"Maybe it's also interesting to have working groups that support each other. For example, in a village - what can we farmers do for sustainability in our village? Perhaps not only the farmers, but also the others, tourism in any case, because tourism is totally connected. That partnerships with hotspots should be promoted: I am the farmer of the Bio-valley xy and you the hotelier guarantee me a certain purchase quantity" (IP 6, 2019).

Also, the need for networks among enterprises and universities was addressed. "Since some years, the universities have been moving a little closer to the companies in order to form clusters of exchange of experience, knowledge and attempted cooperation in support programs. The exchange of knowledge that exists between the university and the business sector is very important and I think it was boosted by this" (IP 12, 2019).

The need for more open platforms, perhaps in a digital format, was also raised. "What might be a need, to have a kind of platform that is digital or can be an event where you can simply exchange ideas. Of course, it would be interesting that mainly people who have already done something about sustainability, participate. But newcomer as well, so that you don't always fish in the same pond" (IP 1, 2019).

"The closer you can tie the connections to the companies and to their staff responsible for this field, the better it is for the project, I think. And therefore, it is also important that you have a range of different companies to whom you are talking. And then also keeping the contact" (IP 22, 2019).

The need for cooperation, networks and exchange is also raised in the focus groups, in particular in Vienna.

In addition to the expert interviews, the idea is mentioned to involve politicians or unusual partners. "So, for me, when we meet again here in this circle someone from politics would be very welcome. Someone from the Food Ministry would be very good" (FP 7, 2019). "What has already been mentioned before and what is also very important is to network, to organize and to bundle forces together. Perhaps also to think about unusual partners" (FP 10, 2019).

Also, the exchange with other countries is highly welcome. "Sharing the perspectives on the SDGs from the point of view of other countries is also important" (FP 13, 2019).

But the limits of exchange and networking were discussed as well. "The question is, you can also network too much but that's why I think it's important that there is a good and stable network and a good platform to change something in urban food policy" (FP 8, 2019). "I think exchange is good, but it has limits. I think exchange helps to get inspiration, maybe to learn something or maybe about the methodology. How can I advance it in the company?" (FP 24, 2019).

8.2.2. PILOT PROJECTS

The interest in participating in a practical pilot project is high. More than a third of the interview partners stated their commitment, although the understanding of "pilot project" is different.

Some of them think of the innovation labs where in fact pilot companies are foreseen. To guide pilots through a process of SDGs application is regarded as most supportive. "I understood that you are thinking of working with pilot companies, with test companies. That would be very interesting for us. That you say, OK, we know that there are already many prerequisites, but there is probably a lack of support and the structure that helps the companies to constantly monitor and supervise the sustainability activities for a company over the course of the year in order to optimise themselves. For example, whether it would be possible to take two or three companies by the hand and accompany them for a while" (IP 4, 2019). "If there are a few simple things and you say - you do these 5 things and get something for it, then it is interesting for them. But when a farmer has to fill out 100 pieces of paper, he asks why. It is a pity, because bureaucracy destroys a lot that would ac-

tually be good for the system. But the idea of the SDG farm is good" (IP 6, 2019).

Others interpret pilots more in the sense of tool development, which in fact could be tackled by the SDGs academy. "I wish that there were tools, how you can vary or adapt the SDGs for each individual company. Such a toolbox, that is simply the translation into the practical one, because there is often no time to think about it or to interpret any SDG by yourself" (IP 25, 2019). "The assigning of CSR report topics to the SDGs and a concept for this would be useful" (IP 21, 2019).

In the focus groups, it was also discussed how the expressed needs could be transferred to concrete pilot projects.

In the focus group of South Tyrol, the discussion of pros and cons of measuring the SDGs was quite intensive but generated an interesting idea for the SDGs Labs. "If you want to involve companies, you have to make things measurable. This has also been a thought about the SDGs. There is an institute in New York, the Sustainable Development Solution Network which deals with a set of indicators for the SDGs. You could take them 1:1 and then see which ones are feasible and create a benchmarking. Then you could say these are the 10-15 most important indicators, we want to work through in the SDGs lab, 2-3 critical and 2-3 easier ones" (FP 1, 2019). "So, when we look overseas, whenever something can be measured it has to be good. If we are on a scale of 1-10 and I start with an 8, I don't talk about it. That's what I thought, that's a big problem. If that also happens with SDGs, only those companies apply or are measured that are already good or the scales are set in such a way - see sustainability report - that you can still do a lot about it" (FP 2, 2019). "In the end, I need a number. Just because of the technicians or those who have to implement and who have to justify if they want to do something. But you must never simply define measurements and goals without defining a process" (FP 1, 2019).

8.2.3. GOOD PRACTICES

Good practices are regarded as important to show how the SDGs can be applied in practice.

It starts on the individual level being a good practice yourself. "I go my way and learn permanently and have my task to permanently go beyond my comfort zone and permanently break with habits. I can only try to be an example that you can live with sustainability well, joyfully and with a laugh" (IP 5, 2019).

The interview partners also reflected on how to communicate good practices and provided some interesting ideas. "Best practice - that is the best way to communicate sustainability. To publish an SDGs pilot project in our magazine would have a sensitising and exemplary character for further companies. We also notice this in other projects" (IP 4, 2019). "We have two pages in our employee magazine on sustainability topics. There, in the future will always be some single SDGs as a topic. What is done there, to make it even more plausible for all" (IP 21, 2019). "Maybe also in an indirect, unconscious way, when there is a festivity, to maybe put these SDGs-cubes there. That people get involved with it first. Or when we have a new project and report, so that we don't say 'We're doing the project for the SDG now' in the first place. You tell them about the project and then write down, 'What SDG are we working on with it now?" (IP 25, 2019) "Maybe a kind of best practice collection would also be interesting. So, the whole project SDGs Labs is also about exchange and about different countries and different companies. Often the idea of competition is still there. If somehow such a connection could take place or one could inspire oneself with others through practical examples, I would find that helpful" (IP 25, 2019).

It is also a great idea to look beyond the garden fence and to ask, what do other sectors of our society do about the SDGs. "It would be interesting in the whole public perception, not only for us, how do all institutions use the SDGs, also the municipalities? How is it reflected in press? What

kinds of efforts are there? Does it increase? What are civil associations doing?" (IP 21, 2019)

8.2.4. AWARENESS BUILDING MEASURES, LECUTRES AND TRAININGS

Subsequently to the recognized sustainability challenge, the interview partners expressed their need for awareness building measures. Only five speakers reflected on this point, but the proposed measures were quite concrete.

On the one hand, knowledge about the SDGs is needed; practical knowledge that is directly linked to the realities of the companies and farms and allows them to reflect their daily business in the light of sustainability. "Knowledge of SDGs and on how to relate them to company operations would be good; but it is important to consider the knowledge of different target groups" (IP 25, 2019). "And if you go into that in more detail, you will also understand what they have packed into the SDGs. It's definitely interesting go deeper to get know, what do the SDGs mean" (IP 6, 2019). "For example, we would need training for every farmer. What does the farmer need to achieve these goals? Basically, a farmer lives many of the goals by nature anyway. That is in the DNA, otherwise he would not be a farmer. But nevertheless, it helps everyone, updating the things" (IP 6, 2019).

On the other hand, an appropriate pedagogy / learning approach is needed which reaches the people in their emotions and encourages them to take further actions. "I think the challenge is, they're super, the 17 criteria, only the individual has to feel it. Only through feeling, change can take place. The feeling goes through the body and when certain things arise there, then man is ready for change" (IP 5, 2019). "Something that makes the SDGs interesting, is needed, events, where you can learn playfully. Where the SDGs are translated figuratively somehow. I was once in a quite nice workshop, where you sat on SDGs stools and you were allowed to look at the SDGs once and then interviews were conducted mutually" (IP 25, 2019). "I do not know whether this is possible in the project, but, for example, organize a call for tenders together with the Farmers' Association "We are looking for the most sustainable farm in the country". Anyone can submit, everyone is encouraged, and nobody is excluded" (IP 6, 2019).

There was high commitment in all focus groups that awareness building is key for implementing the SDGs. Some expressed just their need for receiving trainings, others had very concrete proposals on contents as well as on methods.

An interesting new perspective was brought up with the integration of the consumer view. "You have to make it very easy for the consumer out there to understand" (FP7, 2019). "I think it is important that you either concentrate on very specific individual issues such as transport, logistics, packaging, waste at the next workshops. Or you actually open the SDGs and look at them from a consumer perspective" (FP 8, 2019).

Another perspective puts light on the importance of research and education institutions in fostering the implementation of SDGs. "I believe that this knowledge transfer is super important. I believe that universities and research fortunately have a central aspect in our society" (FP 8, 2019). "I just think that we should develop educational offers that help to make everyday life in the company or in general more sustainable in the sense of the SDGs. And it would be helpful that there is an exchange with seminars with the educational institution that is close to the company's headquarters" (FP 20, 2019). "We have to create business-specific and employee-specific trainings" (FP 17, 2019).

In terms of pedagogy, the call for less perfectionism and for more open and self-empowering methods is interesting. "So just say: do something! Without already explaining, that and that has to be done. The person is then challenged and has to make her contribution and ask herself what she can do" (FP 2, 2019). "I don't think you should look for THE solution either. This is a fundamental mistake. There are many different possible solutions. I mean, if we look at the SDGs and how com-

plex and complicated it all is, there's not one" (FP 10, 2019).

8.3. COOPERATION WITH HIGHER EDUCATION INSTITUTES

The cooperation between companies and Higher Education Institutes is crucial for knowledge alliances. Therefore, the feedback on this subject is of utmost value for the project.

Most interview partners have experience in cooperating with HEIs and share the experiences in the interviews. As the graphic shows, 31 statements are positive about the cooperation, ten are

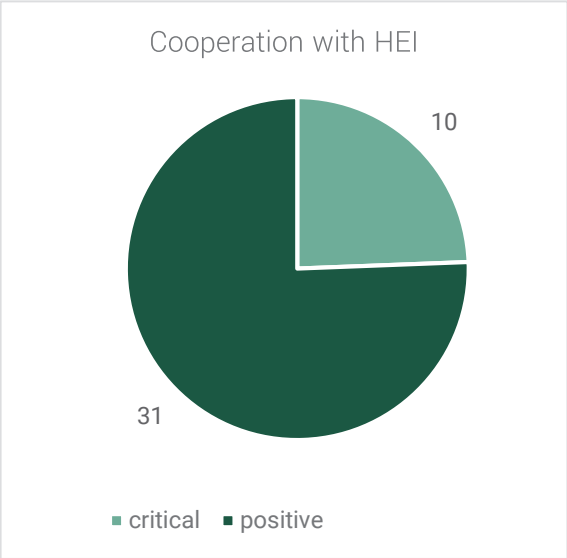

Figure 20: Attitudes to the cooperation with HEI

quite critical.

In the following table the most relevant statements from the expert interviews are summarized and completed with the attitudes of the focus groups.

COOPERATION WITH HIGHER EDUCATION INSTITUTES	
Positive	• Work sharing: company delivers data from practice, university generates studies out of data • Scientific study from university to prove an innovation in agriculture • Strategic collaboration with the university to get access to knowledge • Companies offer practical trainings on site for students • Interesting: a contact point for small practice-oriented research at university • Interesting: knowledge about the scientific background of the SDGs • Interesting: good practice on SDGs from other countries, get a global perspective • Interesting: deeper backgrounds on certain issues, e.g. over a master or PhD thesis • Interesting: sustainability indicator systems for companies • Simplify complex reality with models
Critical	• Too much time for small research questions; results are not relevant anymore after 1 year • Different focus: students have the focus on good papers, not on the practical relevance • Input-output relation in projects: inputs are time-consuming • Curricula of many universities are quite conventional • Innovations should reach universities faster • Studies sometimes don`t serve the cause • Studies are sometimes grounded on unclear sources

8.4. SUPPORT ON A POLICY AND STRUCTURAL LEVEL

Beyond the possibilities of the project SDGs Labs, additional needs, concerning the policy and structural level were addressed. The issues are numerous.

Some pointed to the responsibility of states to create attractive conditions for implementing the

SDGs. "There is also a state responsibility component. In the sense of creating conditions. It is an investment in future, so every Euro they can help companies to invest in some of these goals is useful as long as well applied. I think, states should encourage entrepreneurs to get information and trainings about sustainability issues to realize opportunities of resource optimization in their companies. More training is needed, more information is needed in this area, more dissemination to reach others, so that it reaches the generality of people, entrepreneurs and finally society" (IP 13, 2019).

"Incentives are needed, like e.g. government programs, tax breaks or winning an award, in order to make SDGs attractive for the management" (IP 25, 2019).

Legislation, including tax legislation, is regarded as one of the most effective levers. "It could, of course, provide massive political support by making one law in this direction and not the other. There are many options" (IP 6, 2019). "The CO2 tax or CO2 pricing that is currently discussed in politics will help all companies who are drawing attention on that issue" (IP 24, 2019). "Concerning CO2 certificates and trading, the market went down, and a regulation by law would be needed for avoiding major fluctuations of prices, also as prices for certificates already used to be much higher" (IP 24, 2019).

Creating structures does not necessarily mean waiting for ideal pre-conditions. It is much about self-engagement and self-empowerment. "In South Korea in Seoul there is a small-scale farmers` association, who provides 1.5 million people in Seoul with food only through small farming. There only has to be one initiative. They have joined forces and together they are strong, compared to the big ones. I think there are very few models in Europe that really try to do that as a network" (IP 7, 2019).

In the focus groups, the needs on a political and structural level were discussed. The focus of the discussion differed slightly from region to region.

In Austria, for instance, the need for a systemic change and transformation was proclaimed. A process, where politics should have an important role and fulfil its responsibility. "This actually means that, if you really want to make progress here systemic changes are actually necessary. In other words, what is generally understood by transformation" (FP 10, 2019). "Politics must do something, or it won't work. So, as a small businessman I'm doing a little bit of something and that might bring a little, but not so much" (FP 11, 2019). "Everybody can contribute for themselves but still there has to be a roof somewhere where the whole thing is steered somehow in the right direction" (FP 7, 2019). "Politics has, would actually have the responsibility. A great responsibility to intervene in a controlling way. And we have a great responsibility to raise awareness so that people demand it" (FP 10, 2019). "If you look over to Germany, they have their own system a kind of SDGs Check. Something like that is completely lacking in Austria" (FP 10, 2019).

The discussion in Germany was much more about legal conditions, which are partly seen as a barrier for implementing the SDGs quickly. But participants also want clear, politically reliable targets to achieve the SDGs and for re-thinking a valid financing of the re-structuring process. "It is like this, insects as a source of protein are also such a point. You fail again and again because of such totally absurd conditions. Are they animals? And if so, if we keep them in quantities, is that mass animal husbandry again? And then they are not approved and then the tests are not approved" (FP 21, 2019). "Well, this is our strategy and it can only go step by step, but it needs, clear targets, which are socially in consensus. That makes no sense if politics in the current coalition make a goal setting and the day after tomorrow the goals will be

replaced by another coalition" (FP 22, 2019). "This is a very important point, the question of financing such a restructuring process, which has not yet been resolved. It has been discussed scientifically several times, there are models, but there is no answer to it" (FP 22, 2019).

8.5. CONCLUSION AND OUTLOOK

Even though the issue of key competencies for sustainability seems complex, the interview partners and focus groups participants draw a clear picture of what they need, in terms of competencies as well as concrete learning formats for further developing the SDGs thinking in business.

One finding is that competencies are defined less over certain professional skills or degrees but more over attitudes, mindsets and specific behaviour in certain situations. That supports the view of Rieckmann, who points out that competencies do not only include cognitive aspects, but also affective, motivational and volitional elements (Rieckmann, 2012). It supports Wiek et al.`s view as well, who distinguish five fields of key competencies for sustainability – systems thinking, normative or value thinking, anticipatory or future thinking, strategic or action- oriented thinking and interpersonal or collaboration competencies, added by a sixth field, the personal competencies (Wiek et al., 2011; Riekmann, 2018). This can serve as a frame and proven background for developing the SDGs Labs and SDGs Academies.

The interviews and focus groups reveal a need for exchange, cooperation and networks. Addressing different purposes, various types and settings of exchange are proposed – from small scale focus groups with enterprises working in a similar business field, to working groups on SDGs in a certain geographical area, to trans-regional exchange with businesses from other countries, to large scaled multi-stakeholder networks. These suggestions will be considered particularly in the design of the co-learning labs.

Another finding refers to the need of pilots, although the understanding of pilots is different. Some refer to the pilot cases in the meaning of the innovation labs, others understand pilots more in the sense of testing already developed tools and methods. It is great that enterprises in all regions are ready for being a pilot, because both kinds of pilots are foreseen in the following parts of the project.

A fourth finding refers to good practices, which are regarded as useful for getting an idea of how to translate the SDGs into concrete business cases. Inspirations can be gained either from a similar sector, from other business sectors or even from other sectors of society, like the civil society or communities. These suggestions are also highly relevant for the design of SDGs Labs and SDGs Academies.

Finally, interview partners and focus groups participants stress the importance of awareness building measures, trainings and seminars on the SDGs in the further parts of the project SDGs Labs. Concerning the contents, practice orientation is required as well as a deeper understanding of each single SDG. Concerning the didactic, it seems crucial to touch people in their emotions, thus to work with playful, interactive methods. These references are valuable for designing the SDGs Labs and the SDGs Academies.

SDGs Labs
Making the SDGs our business

9. SUMMARY AND OUTLINE

This chapter gives a summary of the most important findings of the expert interviews and focus groups and gives an outline, how to apply them in the following parts of the project SDGs Labs.

9.1. SUSTAINABILITY CHALLENGES IN THE AGRIBUSINESS AND FOOD PRODUCTION SECTOR

In the following table the most concerning sustainability challenges are summarized. As they tackle highly relevant issues of sustainable development, they can be used as content source for the SDGs Labs and the SDGs Academies.

The ecological challenges are clustered according to three aspects: product-related challenges, production-related challenges and environment-related challenges.

Additionally, the economic challenges are clustered along two perspectives. One is related to the micro-economic perspective pointing to sustainability challenges in the different business functions of a single enterprise. The other reflects the macro-economic perspective which enlarges the horizon to a global dimension.

SUSTAINABILITY CHALLENGES - ECOLOGICAL DIMENSION	
RELATED TO PRODUCTS	
Organic products and organic farming	Conflict: long transport distances for organic products from third countries
	Conflict: higher consumption of land for organic production
	Attitude that organic farming cannot feed the world population
	Conflict: find compromises with conventional farming
Regional and seasonal products	Demand for regional products exceeds the supply
	Definition of regional: radius of 6 or 600 km? Year-round production in heated greenhouses?
	Regional cycles: everything received by plane is not sustainable
	Conflict: lack of organic products but giving guarantees to customers
Biodiversity and monocultures	Biodiversity is to be ranked higher than climate change
	Conflict: mass concepts reduce costs in the short term
	Importance to leave monocultures in all aspects - meat, milk and crops

SUSTAINABILITY CHALLENGES - ECOLOGICAL DIMENSION	
RELATED TO PRODUCTS	
Animal welfare and mass husbandry	Susceptibility for diseases, intensive use of pharmaceuticals
	Conflict: use of pharmaceuticals to avoid intrusion (germs or insects)
	Conflict: need for more resources in free range husbandry
	Adapted feed can avoid metabolic processes
RELATED TO PRODUCTION	
Use of pesticides and fertilizers	Lack of knowledge about the origin and effects of pesticides
	Conflicting cycles: pesticides affect biodiversity, go into the air, soil and water
	Conflicts with other sectors, like tourism
	Challenge of careful application of fertilizers, growth enhancing and crop protection products
Packaging and use of plastics	Alternatives to one-way plastic boxes: reusable boxes, but they have a high cleaning effort
	Alternatives to plastic: biodegradable carton boxes, but they don`t have the same features
	Conflict: reduction of packaging contrasts prolonged durability
	Whole waste industry is challenged in terms of recycling
	Scaling: packaging, delivery, deposit can be optimised through larger quantities
Reuse, upcycling and food waste	Food waste in production and consuming
	Processing surpluses of food is a symptom fight
	Conflict: mass production is able to use all parts of animals
Energy	Energy intensive production and usage of conventional energy sources
	High energy consumption of green houses
	Search for alternative energies like geothermal energy
Logistics and mobility	Long transport routes, calculation with consumer costs not production costs
	Global trade: local production - global retail
	Lack of structures and logistics for small local producers
	Real costs are not charged, e.g. flight cargo
RELATED TO THE ENVIRONMENT	
Water scarcity and management	Water intensive agriculture and food production, deal with water scarcity
	Slowly increasing water scarcity in alpine regions
	Water conflicts between sectors but inside agriculture as well
	Increasing need for irrigation in viticulture, humidity affects the quality
	Conflict: water consumption - high hygiene standards in food processing
Climate change	Consequences of climate change are not recognized directly
	Seasons have changed and are getting less predictable
Soil degradation and disappearence	Soil disappears all over the planet, soil compaction
	Mass concepts are efficient in the short term, but exploit the soil and pollute the ground water

SUSTAINABILITY CHALLENGES - ECONOMIC DIMENSION	
MICRO-ECONOMIC PERSPECTIVE	
Mission, vision and strategy	SD is not anchored in the mission/vision/strategy; remains on the surface
	Issues tackling the company not directly (like biodiversity) are more difficult to implement
	International holdings with different standards in each country
Structure, management and scale	SD is not integrated in the structure and suffers from a lack of resources
	Big constructs who dictate everything: prices, land, plantation
	EU's agricultural policy, which binds subsidies to the size
	Transparency of supply chains
Costs and financing	Higher costs and higher prices for organic and regional products
	Conflict: product prices don't rise in the same relation to production costs
	Consumer don't know the value of food
	Small structured agricultures can't afford technical support, irrigation systems
	Enough family income for small scale farms or closing
	Convince the management that SD pays off in the long term
Certifications, labels and reporting	Growing demand of consumers for certifications as quality criterion
	High bureaucracy for small-scale enterprises and farms
	Social certification is not well developed
Communication and marketing	Small enterprises often have good products but lack resources to communicate it
	Challenge to communicate sustainability: has to be "sexy", not with the index finger
	Communication through certificates, sustainability is a competitive factor
MACRO-ECONOMIC PERSPECTIVE	
Resources scarcity	Scarcity of raw materials and the need to tread raw materials with mindfulness
	Resource preservation is better to understand than climate protection
Market structures	Market concentration on a few big players, global markets, high competition
	Call for growth in all areas, rare good practices for post growth society
	Big players: step into the organic market, consumers are confused
	Conflict: big players compete the small enterprises but act as catalysators for sustainable food
	Competitive thinking; corporate working could make the difference
	Different pre-condition for production in EU; all states are lumped together
	Complex flows of goods in the international trade
Consumer and demand structures	New type of consumers "the paradox consumer"
	Scaling: need for a sufficient amount of consumers to optimize sustainable production
	Consumer call for high standards in organic farming
Economic models	Models of cooperation: to go together in one direction because everyone is affected

SUSTAINABILITY CHALLENGES - ECONOMIC DIMENSION	
MICRO-ECONOMIC PERSPECTIVE	
Conflicting goals	Balance of the ecological, economic and social targets
	Conflict: wilderness - sustain alpine pastures (wolf)
	Conflict: reducing animal population - economic goals of feed producer
	Conflict: nature-oriented measures - legal restrictions (e.g. open stables)
	Conflict: environment friendly products - high CO2 emissions in production (e.g. glass)
SUSTAINABILITY CHALLENGES - SOCIAL DIMENSION	
Working conditions	Attractiveness of the sector for employees: hard physical work, working time, low salaries
	Different social standards in the EU
	Working conditions in countries of the global south: violation of human rights
	Human dignity in work: accommodation for workers, labour exploitation
Labour shortage	High employment rate of migrants - language barriers, cultural barriers
	Lack of manpower, that endangers the harvesting
	Lack of young talents: for a growing number some professions are not attractive anymore
	Challenge to find successors for small farms
Employee development	Low qualifications, low investments in trainings and employee development
	Need for holistic trainings: technical skills, work with computers, culture and history
	Challenge to keep clever brains in the region or to get in new clever brains
	Lack of ESD on different levels (society, enterprises, schools, universities)
Gender equality	Low female rates in all positions
Community development	Lack of cooperation-thinking, science - business dialogue
SUSTAINABILITY CHALLENGES - SOCIAL DIMENSION	
Regional and national policy and regulations	Conflict: politics push organic farming - strict regulations, e.g. greenhouses are not organic
	Conflict: forcing open stables - prohibition through the emission and air - regulations
	Conflict: regulation of meat consumption by the state - interfere in the private sphere
EU policy and regulations	Misalignment in the EU policy programmes: tend to mass and monoculture
	Dependency of farmers on subsidies
	Directives and ordinances from EU
Organisations	Relevant organisations, like chambers, don't foster SD
	Lack of concrete support like implementation advice, access to networks
	Lack of suitable organisations who fight for the interests of the sector
	Lobbying of big conventional producers hinder innovation

Table 8: Summary of sustainability challenges in the agribusiness and food production sector

9.2. OPPORTUNITIES AND BOUNDARIES OF THE SDGS

The following table summarizes the most obvious opportunities and boundaries of the SDGs. As they reflect the view of practitioners, they can be used as basis for translating the SDGs into practice.

OPPORTUNITIES OF THE SDGs	
Inspiration and rethinking of the own business	Booster for the professional and individual development
	SDGs give an idea of diversity
	Inspire to be active in all fields which are covered through the 17 SDGs
	Motivation for cooperation
Innovation and new business models	New business models are elaborated
	Innovation is included in every goal and needed for every goal to be reached
Management tool	Put the SDGs in the focus of a company's strategy
	Tool for systemising sustainability issues
	Internationally agreed on goals which are relevant for corporate decision makers
	Integration of employees in achieving the goals
Tool for reflection and impact assessment	Each SDG can be thought in different contexts
	Find criteria to make the SDGs measurable
	Assessment of sustainability impact on the basis of the SDGs
	Planning of sustainable future actions on the basis of the SDGs
Communication tool	Use an international standard for the communication of sustainability
	Structure of the SDGs as basis for sustainability reports
BOUNDARIES AND CHALLENGES OF THE SDGs	
Formulation and structure of the goals	Too rational formulation of the SDGs
	General formulation on a meta level
	Negative formulation of some SDGs, like "no poverty"
	Global dimension of the SDGs which is difficult to break down to the individual level
	Need for a target group-oriented communication of the SDGs
Problems with application	Conflict between applicability and need for abstraction
	Need for translation of the SDGs to the needs of business
	Missing connection between concrete sustainability actions in companies and the SDGs
Lack of demand and added value	No need for an additional system for reporting or assessing sustainability
	Adaptation to a new system needs time
Structure and size of enterprises	Lack of capacities and structures in small enterprises and farms
	Need for consulting how to implement the SDGs in practice
	High expectations towards large companies regarding implementation of SDGs
	Start with implementation of single, achievable SDGs

Table 9: Summary of perceived opportunities and boundaries of the SDGs

9.3. INNOVATION POTENTIALS OF THE SDGS

The following table gives an overview of examples and ideas for innovation which are connected to the SDGs. As these examples come from practice and cover all types of innovation, they can be used for translating the SDGs into practice as well.

INNOVATION POTENTIAL OF THE SDGs	
Product innovation	"Re-invention" of old, traditional sorts of vegetables
	Unusual use of olives and by-products
	Follow the trend to vegetarian products, develop meat-like products, e.g. out of mushrooms
Process innovation	Circular production and integrated production
	Integration of environmental aspects in concepts of optimization, not only economic aspects
	Search for new logistic and transport concepts
Technological/digital innovation	Growing rates of mechanization: harvesting robots, packaging robots
	Growing importance of digitalisation: e.g. use of smart farming tools
Innovation in organisation and structures	Adaption of working conditions to make the sector more attractive for employees
	Flexible work design to better address the needs of employees, e.g. working times
	New concepts for traineeship and recruitment of employees
	New forms of cooperation and coworking to achieve the SDGs
Innovation in communication and marketing	Tell the stories behind the products
	Integrate the SDGs into the KPIs of an enterprise
	Show the contribution of modern agriculture to sustainability
Social innovation	High impact through a transformation of the societal system (alternative to the capitalist system)
	Great need for innovation in education for sustainable development
	Need for innovation in gender equality, e.g. adapting the pension system for mothers

Table 10: Summary of different types of SDGs related innovation

9.4. NEEDS AND EXPECTATIONS TOWARDS THE PROJECT SDGS LABS

The following table contents needs and expectations towards the project SDGs Labs. These ideas are highly relevant for the further development of the project and can serve as inspiration for designing the formats and methods of the SDGs Labs and the SDGs Academies.

INNOVATION POTENTIAL OF THE SDGs	
Awareness building, lectures and trainings	Need for deep, practice-oriented knowledge on the 17 goals and 169 targets
	Consider knowledge of different target groups
	Appropriate learning approaches and playful, interactive methods
	Importance of integrating scientific research
Cooperation, networks and exchange	Start with internal cooperation within the own organisation
	Small focus groups of 3-4 enterprises dealing with the same SDGs
	Working groups and partnerships on the SDGs between different sectors
	Open platforms on SDGs, also in a digital format
	Clusters of exchange between universities and business
	Exchange on SDGs with other countries
Good practices	Being a good practice oneself
	Publish good practices in employee magazines
	Good practice collection
	Contribution of other sectors of society to the SDGs, like communities or NGOs
Support of pilot projects	Support test companies through monitoring and supervising the sustainability activities over a defined period
	Development and test of tools which adapt SDGs to the needs of single companies
	Make the SDGs measurable to create a benchmark

Table 11: Summary of expectations and needs towards the project SDGs Labs

SDGs Labs
Making the SDGs our business

10. LITERATURE

10.1. THEORETICAL BACKGROUND

SUSTAINABILITY CHALLENGES IN AGROBUSINESS AND FOOD PRODUCTION

Béné C., Oosterveer P., Lamotte L., Brouwer I, de Haan S., Prager S., Talsma E., Khoury C. (2019) When food systems meet sustainabilty – Current narratives and implications for actions. In: World Development 113, 116-130.

Christoph-Schulze I., Hartmann M., Kenning P., Luy J., Mergenthaler M., Reisch L., Roosen J., Spiller A. (2018): SocialLab - Nutztierhaltung im Spiegel der Gesellschaft: erste Ergebnisse und Implikationen. In: Consumer Protect Food Safety 13(2), 145-150.

European Environment Agency (2015): Agriculture and climate change. https://www.eea.europa.eu/signals/signals-2015/articles/agriculture-and-climate-change.

Food and Agriculture Organization of the United Nations (FAO) (2017): Food and agriculture. Driving action across the 2030 Agenda for Sustainable Development. http://www.fao.org/3/a-i7454e.pdf.

FAO (2018): Transforming food and agriculture to achieve the SDGs. 20 interconnected actions to guide decision-makers. Available online: http://www.fao.org/3/I9900EN/i9900en.pdf.

Heinrich Böll Foundation, Friends of the Earth Europe & BirdLife International (2019): Agriculture atlas. Facts and figures on EU farming policy. https://www.boell.de/sites/default/files/agricultureatlas2019_web_190508.pdf?dimension1=ds_agraratlas_2019.

IPES Food (International Panel of Experts on Sustainable Food Systems) (2019): Towards a Common Food Policy for the European Union. Executive Summary. Available online: http://ipes-food.org/_img/upload/files/CFP_ExecSummary_EN.pdf.

McNeil D. (2019): The Contested Discourse of Sustainable Agriculture. In: Global Policy 10(1), 16-27.

Rockström J., Sukhdev P. (2016): Keynote speech. EAT Stockholm Food Forum. https://www.stockholmresilience.org/research/research-news/2016-06-14-how-food-connects-all-the-sdgs.html

Rockström J., Steffen W., Noone K., Persson Å., Chapin F. S., Lambin E. F., Lenton T. M., Scheffer M., Folke C., Schellnhuber H. J., Nykvist B., de Wit C., Hughes T., van der Leeuw S., Rodhe H., Sörlin, S., Snyder P. K., Costanza R., Svedin U., Falkenmark M., Karlberg L., Corel R.W., Fabry V.J., Hansen J., Walker B., Liverman D., Richardson K., Crutzen P., Foley J.A. (2009): A safe operating space for humanity. In: Nature, 461 (7263): 472–475.

Stafford-Smith et al. (2017) / Stafford-Smith M., Griggs D., Gaffney O., Ullah, F., Reyers B., Kanie N., Stigson B., Shrivastava, P., Leach M., O'Connell D. (2017): Integration: the key to implementing the Sustainable Development Goals. In: Sustainability Science 12 (6), 911-919.

Tamásy C. (2014): Intensivierung der Landwirtschaft im Oldenburger Münsterland. Nutztierhaltung im Fokus der Nachhaltigkeit. In: Standort 38, 203–207.

Thünen Institute (2019): Project SocialLab – Society's perception of animal husbandry. Online: https://www.thuenen.de/en/ma/projects/sociallab/.

UN Environment (2019). Global Environment Outlook – GEO-6: Summary for Policymakers. Nairobi.

Weigelt J., Müller A., Janetschek H., Töpfer K. (2015): Land and soil governance towards a transformational post-2015 Development Agenda: an overview. In: Current Opinion in Environmental Sustainability 2015, 15, 57–65.

SUSTAINABILITY DEVELOPMENT GOALS AND BUSINESS

FAO (2017a): Food and agriculture. Driving action across the 2030 Agenda for Sustainable Development. (http://www.fao.org/3/a-i7454e.pdf)

FAO (2017b): FAO and the SDGs. Indicators: Measuring up to the 2030 Agenda for Sustainable Development. (http://www.fao.org/3/a-i6919e.pdf)

FAO (2019): Transforming the world through food and agriculture. FAO and the 2030 Agenda for Sustainable Development. (http://www.fao.org/3/ca5299en/ca5299en.pdf)

OECD/FAO (2016): OECD-FAO Guidance for Responsible Agricultural Supply Chains. OECD Publishing, Paris. (https://mneguidelines.oecd.org/OECD-FAO-Guidance.pdf)

PWC (2015): Make it your business. Engaging with the Sustainable Development Goals. (https://www.pwc.com/gx/en/sustainability/SDG/SDG Research_FINAL.pdf)

Thomsen, B. et al. (2016): Umsetzung der Ziele für Nachhaltige Entwicklung (SDG) durch die Agrarpolitik der EU und Deutschlands. Widersprüche und notwendige Reformen. Kurzstudie. (https://www.meine-landwirtschaft.de/fileadmin/user_upload/downloads/Nachhaltige_Agrarpolitik.pdf)

UN (2011): Guiding Principles on Business and Human Rights. Publishing Service, United Nations, Geneva. (https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf)

UN (2015): Transforming our world: the 2030 Agenda for Sustainable Development. (https://www.unfpa.org/sites/default/files/resource-pdf/Resolution_A_RES_70_1_EN.pdf)

UN (2019): The Sustainable Development Goals Report. (https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf)

WBSCD (2018): Business and the SDGs: A survey of WBCSD members and Global Network partners. (https://docs.wbcsd.org/2018/07/WBCSD_Business_and_the_SDGs.pdf)

DRIVERS OF INNOVATION

Avermaete T., Viaene J., Morgan E. J. & Crawford N. (2003): Determinants of innovation in small food firms. European Journal of Innovation Management, 6(1), 8-17.
Bigliardi B. (2013): The effect of innovation on financial performance; A research study involving SMEs innovation. Management, policy & practice, 15(2), 245–256.
Colurcio M., Wolf P., Kocher P. Y., Russo Spena T. (2012): Asymmetric relationships in networked food innovation processes. British Food Journal, 114(5), 702-727.
Cuc T., Tripa S. (2007): Lean Six Sigma And Innovation. Fascicle of Management and Technological Engineering, 6 (16), 2525-2530.
European Commission (2019): A strategic approach to EU agricultural research innovation. 2016. Online: http://ec.europa.eu/programmes/horizon2020.
Fiore M., Silvestri R., Contò F., Pellegrini G. (2017): Understanding the relationship between green approach and marketing innovations tools in the wine sector. Journal of Cleaner Production, 142, 4085–4091.
Food Drink Europe, 2019. Data and Trends, 1-14. Online https://www.fooddrinkeurope.eu/uploads/publications_documents/FoodDrinkEurope_-_The_path_towards_Sustainable_Food_Systems.pdf
Geradts T., Bocken N. (2019): Driving Sustainability – oriented Innovation. MIT Sloan Management Review 60(2).
Jacobsen S.E., Sørensen M., Pedersen S.M., Weiner J. (2013): Feeding the world: Genetically modified crops versus agricultural biodiversity. Agron. Sustain. Dev, 33, 651–662.
Materia V. C., Dries L., Pascucci S. (2014): Innovation in agro-food supply chains - The EU policy context, (Wageningen University:Netherlands).
Olsen N., Elvekrok I., Nilsen E.R. (2012): Drivers of food SMEs network success. 101 tales from Norway. Trends in Food Science & Technology, 26(2),120-128.
Organisation for Economic Cooperation and Development-OECD (2005): Oslo Manual. Proposed Guidelines for Collecting and Interpreting Technological Innovation Data (third edition: Paris, 2005).
Pandey G. (2018): Challenges and future prospects of agri-nanotechnology for sustainable agriculture in India. Environ. Technol. Innov., 11, 299–307.
Schumpeter J. A. (1934): The theory of economic development. An inquiry into profits, capital, credit, interest and the business cycle (Oxford University Press: London).
Sodano V. (2019):. Innovation Trajectories and Sustainability in the Food System. Sustainability, 11, 1271, 2-19.
Soltani S., Hosseini S. J. F. (2012): Key factors influencing organizational innovation in smallrural food industries. Case study of Iran, African Journal of Business Management, 6(9), 3553-3561.

SUSTAINABILITY RELATED COMPETENCIES

Barth M., Godemann J., Rieckmann M., et al. (2007): Developing key competencies for sustainable development in higher education. International Journal of Sustainability in Higher Education 8(4): 416–430.
Biberhofer P., Lintner C., Bernhardt J., Rieckmann M. (2019): Facilitating work performance of sustainability-driven entrepreneurs through higher education - The relevance of competencies, values, worldviews and opportunities. The International Journal of Entrepreneurship and Innovation 20(1): 21–38.
de Haan G. (2010): The development of ESD-related competencies in supportive institutional frameworks. International Review of Education 56(2): 315–328.
Foucrier, T and Wiek A (2011) A Process-Oriented Framework of Competencies for Sustainability Entrepreneurship. Sustainability 11.

Glasser H., Hirsh J. (2016): Toward the Development of Robust Learning for Sustainability Core Competencies. Sustainability: The Journal of Record 9(3): 121–134.
Hesselbarth C., Schaltegger S. (2014): Education future change agents for sustainability-learnings from the first sustainability management master of business administration. Journal of Cleaner Production 62: 24–36.
Lans T., Blok V., Wesselink R. (2014): Learning apart and together: towards an integrated competence framework for sustainable entrepreneurship in higher education. Journal of Cleaner Production 62: 37–47.
Osagie E. R., Wesselink R., Blok V., Lans T., Mulder M. (2016): Individual competencies for corporate social responsibility: A literature and practice perspective. Journal of Business Ethics 135: 233–252.
Ploum L., Blok V., Lans T., Omta O. (2018): Toward a Validated Competence Framework for Sustainable Entrepreneurship. Organization & Environment 31(2): 113–132.
Rieckmann M. (2012): Future-oriented higher education: which key competencies should be fostered through university teaching and learning? Futures 44(2): 127–135.
Rieckmann M. (2018): Chapter 2 - Learning to transform the world: key competencies in ESD. In: Leicht A., Heiss J., Byun W. J. (Eds.): Issues and trends in Education for Sustainable Development. UNESCO, Paris (pp. 39-59). http://unesdoc.unesco.org/images/0026/002614/261445E.pdf.
Sterling S. (2010): Transformative learning and sustainability: sketching the conceptual ground. Learning and Teaching in Higher Education (5): 17–33.
Sterling S., Glasser H., Rieckmann M., et al. (2017) 'More than scaling up': a critical and practical inquiry into operationalizing sustainability competencies. In: Corcoran PB, Weakland JP and Wals AEJ (eds) Envisioning Futures for Environmental and Sustainability Education. The Netherlands: Wageningen Academic Publishers, pp. 153–168.
UNESCO (2017): Education for Sustainable Development Goals. Learning Objectives. Paris: UNESCO. http://unesdoc.unesco.org/images/0024/002474/247444e.pdf.
Wesselink R., Blok V., van Leur S., Lans T., Dentoni D. (2015): Individual competencies for managers engaged in corporate sustainable management practices. Journal of Cleaner Production 106: 497–506.
Wiek A., Withycombe L., Redman C.L. (2011): Key competencies in sustainability: a reference framework for academic program development. Sustainability Science 6(2): 203–218.
Wiek A., Bernstein M.J., Foley R.W., et al. (2016): Operationalising competencies in higher education for sustainable development. In: Barth M, Michelsen G, Thomas I, et al. (eds.) Routledge Handbook of Higher Education for Sustainable Development. London: Routledge, pp. 241–260.

10.2. RESEARCH DESIGN

Babou S. (2008). „What Is Stakeholder Analysis?". The Project Management Hut. PM Hut.
Drescher P. (2003): Moderation von Arbeitsgruppen und Qualitätszirkeln. Ein Handbuch. Vandenhoeck & Ruprecht, S. 36.
Eden C., Ackermann F. (2013): Making Strategy: The Journey of Strategic Management. SAGE. p. 123.
Glaser B. G., Strauss A. L. (1967): The discovery of grounded theory. Chicago: Aldine.
Gläser J., Laudel G. (2010): Experteninterviews und qualitative Inhaltanalyse. 4. Auflage. VS Verlag für Sozialwissenschaften, Wiesbaden.
Holleis P. (2008): Integration usability models into pervasive application development. Universität München, Fakultät für Mathematik, Informatik und Statistik, Dissertation http://edoc.ub.uni-muenchen.de/9571/1/Holleis_Paul.pdf
Krueger R. A., Casey M. A. (2009): Focus groups. A Practical Guide for Applied Research. Sage, S. 15.
Kruse J. (2015): Qualitative Interviewforschung: ein integrativer Ansatz; 2. Aufl. Weinheim und Basel; Verlag Beltz Juventa.
Kuckartz U. (2016): Qualitative Inhaltsanalyse. Methoden, Praxis, Computerunterstützung. Band 1, 4. Aufl. S. 1-97. München; Wien.

Marshall M. N. (1996): Sampling for qualitative research. Family Practice, 13, 522-525.
Meuser M., Nagel U. (2009): Das Experteninterview. Konzeptionelle Grundlagen und methodische Anlagen. In: Experteninterviews. Theorien, Methoden, Anwendungsfelder. 3. Aufl. S. 35-60. Wiesbaden: VS Verlag für Sozialwissenschaften.
Patton M. Q. (2002): Qualitative research and evaluation methods. Thousand Oaks, CA: Sage.
Reinders H. (2005): Qualitative Interviews mit Jugendlichen führen. Ein Leitfaden. München, Oldenbourg.

SDGs Labs
Making the SDGs our business

ANNEX A
PRACTICAL GUIDE FOR PREPARING, CONDUCTING AND ANALYSING EXPERT INTERVIEWS

1. PREPARATION OF INTERVIEWS

1.1. SELECTING THE INTERVIEWER

It is reasonable that one person is in charge of conducting all interviews in the region. As the interviews are more than just working through a questionnaire, it is important to choose experienced interviewers, who bring along the following skills:

- Communication skills to set up an open and fruitful dialogue
- Experience with conducting interviews to be able to ask questions beyond the script
- Knowledge and experience in working with companies (knows how an enterprise works)
- Good knowledge about the SDGs and their relevance for the agribusiness and food production

Interviewers should not only conduct the interviews but should be involved in the whole process of preparation and analysis of the interview results.

1.2. SELECTING THE INTERVIEW SAMPLE

The selection of the interview partners according to a defined sampling strategy is crucial for the success of the analysis and for the upcoming parts of the project. The following criteria may support the selection process.

(a) Companies and business associations

Main target groups are companies (profit oriented) from the agribusiness and food production sector. Business oriented associations, like organic farmer associations or start up-hubs, are interesting as well, as they summarize smaller companies to larger units. Non-profit organisations are not addressed at this stage of the project, but they are interesting for later steps of the project/ research (e.g. focus groups).

Regarding the size of the interviewed companies or asociations there are no specifications, but we recommend entities with a certain size, as we want to learn from the experiences of fully developed companies. One-person enterprises are not recommended. Start-ups shouldn`t be too small and should bring along at least two or three years of experience in their business.

(b) Value chain

It makes sense to cover different stages of the value chain as we assume that more - in best case - all SDGs are addressed.

For the subsequent transregional analysis all regions should integrate the proposed stages:

- agriculture
- food production
- packaging, logistic, waste management
- trade (regional and/or international)
- consumption (tourism,…)

(d) Implementation of sustainability and SDGs

It makes things easier, if targeted companies work already with the SDGs but it is not a precon-

dition. Nevertheless, it has to be ensured that they work with sustainability on a deeper level. The following indicators can be of use:

- sustainability/SDGs mentioned in the strategy or mission statement
- sustainability department
- sustainability report
- sustainability certifications (e.g. EMAS, Blauer Engel, ÖUZ, Fairtrade, GLOBALG.A.P.)
- participation in sustainability awards (e.g. Trigos in Austria)

Prior to the interviews, a brief description of how each of the above-mentioned sustainability aspects is relevant or already applicable for the interviewed organisation should be noted for later comparison and analysis.

1.3. FINDING THE APPROPRIATE INTERVIEW PARTNER

The next step is to find appropriate interview partners within the pre-selected organisations. Depending on the size and internal structure it could be the CEO or a department manager. Criteria for selecting the interview partner are:

- responsibilities and tasks within the company
- decision making power
- knowledge about implementation of sustainability/SDGs in the company

Ask your colleagues about previous or current contacts or projects with the selected interview partner, as the entry into a company is much easier over existing personal contacts.

1.4. APPOINTMENT

After selecting interesting interview partners, appoint a meeting.

Best to do it in three steps:

- Phone call, normally with the office
- E-mail with a short description of the project
- Phone call with the envisaged interview partner

Make sure that the interview partner is familiar with the SDGs.

If he/she doesn`t know about the SDGs but is interested, find a way to bridge the gap (e.g. link to a website, summary of SDGs)

1.5. BENEFITS FOR THE INTERVIEW PARTNERS

Recall the reasons why a company should participate in the interview/project

Interviews

- Get a different view on sustainability-driven business through the lens of the SDGs
- Get impulses for the own business
- Opportunity to co-create the following parts of the project – SDGs Labs and SDGs Academies – according to own needs

Focus groups

- Contact to other companies and key actors of the sector and opportunity to exchange experiences with them.
- Results of expert interviews of four European regions
- Impulses and experiences from good practices

SDGs Innovation Labs

- Opportunity to be selected as a pioneer company
- Opportunity to develop a tailored SDGs innovation lab, including the whole process from

sustainability challenges to implementation of innovative solutions
- Get deep knowledge about SDGs in the specific context of the company
- Get fresh ideas and impulses for innovations through involvement of unusual experts
- Support and guidance through the experts from the project team

SDGs Co-Learning Labs
- Exchange and co-learning with different stakeholders of the sector
- Get deeper knowledge about the SDGs linked with the sector
- Get fresh ideas and impulses for innovations
- Network creation, visibility, new consumers
- SDGs Pioneers' Academy
- Standardised training for implementing SDGs
- Economic evaluation of SDGs driven innovations

1.6. GENERAL INFORMATION ABOUT THE COMPANY/ASSOCIATION

Try to find out as much information as possible about the selected company over websites, media, brochures, phone call before the interview. Draw attention on anchoring sustainability in general and the SDGs in particular in the company`s strategy.
- Are sustainability issues mentioned on the website? If yes, on which position?
- Does the organisation foresee a sustainability management? If yes, how is it organised?
- Does the company provide a sustainability report?
- Does the company work with sustainability certifications? Which certifications? For which products?
- Are the SDGs mentioned on the website/in print media?
- Are there any other hints, showing that the company is familiar with the SDGs?
- Or at least: is the company interested in working with the SDGs?

1.7. PREPARATION OF THE INTERVIEWS

Introduction of the project

Prepare a short introduction of the project
- Vision and objectives
- Involved project partners and regions
- Main parts of the working programme
- Possibilities to be involved beyond the interviews

Warm up questions

In preparation of each interview, recall the unique contribution it may give to the project.

Select questions which help to build a relation. Figure out, the attitude and understanding of sustainable development.

Sustainability challenges

Keep in mind the regional/global main sustainability challenges in the agribusiness and food production sector. It could give additional ideas to distinguish between various levels: global – regional – company.

SDGs

Start this section with questions on the SDGs, following the guiding questions, but be prepared to give a short introduction and summary of the SDGs, the vision behind, the structure and the interlinks between the single SDGs.

Make yourself familiar with all 17 SDGs and the 169 targets behind. Prepare examples for each SDG in the context of the agribusiness and food production sector.

Innovation

Start this section with questions on innovation, following the guiding questions, but be prepared to extend the definition of innovation, if the answers are too narrow. Have a clear picture of the

nature of innovation in general and sustainable innovation in particular.

Make yourself familiar with the functions of a company and the potential of innovation in every business area.

Needs

Start this section, following the guiding questions, but be prepared to clarify the term competences.

Keep in mind the following parts of the project – SDGs Labs and SDGs Academies

1.8. CORPORATE DESIGN OF SDGS LABS

It is important to use the corporate design of SDGs Labs for every document we provide to our partners. For letters: Logo of Erasmus, Logo of EU; Logo of SDGs Labs; Logo of involved partners (depends on the purpose)

2. CONDUCTION OF INTERVIEWS

Face to face interview

The interviews are designed as face to face dialogues. That allows to set up a personal contact and to get additional non-verbal impressions. Skype interviews are not appropriate as door openers for personal contacts and should be used only, if you already know the interview partner.

Environment

The environment is part of the interview, as it gives the opportunity to get to know the company as well. If possible, conduct the interview on site in the rooms of the company. In many cases, interview partners offer a short visit. Make sure that you are not disturbed through background noises (e.g. loud music)

Duration

An average interview lasts between one and one and a half hours. Inform your interview partner about the length and make sure that he/she has reserved this time.

Language

The interviews are conducted in the regional language, what supports the flow of the dialogue. Make sure that you have an appropriate translation of the guiding questions.

Introduction

Introduce yourself and your organisation. Furthermore, give a short overview of the project and the structure of the interview. Give also an outline of the purpose of the interview and how you will proceed with the outcomes.

Record & Anonymity

To transcribe and analyse the interviews afterwards it is crucial to record them. Ask your interview partner, if you are allowed to record the interview. Ask, if you are allowed to name the company, the interview partner or if he/she wants to stay anonymous. It is useful to work with Written Consents.

Questions

The interviews are designed as semi-standardized interviews. Therefore, the questions serve as frame for a dialogue and not as a questionnaire. But for reasons of comparability of the results it is vital to tackle every mentioned issue.

Examples

Prepare examples to explain questions in detail but use them just to forward the dialogue, if it`s stocking. Bear in mind that every example influences the outcome of the interview.

Termination of the interview

To complete the interview, give the opportunity to add aspects not mentioned before.

Give an outline how the outcomes will be treated and how they will be reflected to the interview

partner. Offer possibilities for further involvement in the project.

End up with thanks for the interview.

After the interview

Take notes immediately after the interview.

Write a thanks e-mail to the interview partner with an invitation to the Focus Group in your region.

3. ANALYSIS OF INTERVIEWS

The analysis is a multistage process, partly conducted by the project partners on a regional level, partly conducted by the WP-leader on a transregional level.

On a regional level

(1) Transcription

Transcribe the interviews in the language, in which you have conducted the interviews.

Use common transcription rules.

(2) Coding I

Read the interview carefully to get a deeper understanding of the content.

Go through the interview line by line and mark key phrases or parts of the text which promise to give answers on the research question. When marking the text, find coding units which are units in terms of meanings as well. Coding units should be intelligible beyond the context of the interview but should not be too voluminous.

Assign the main categories, which are given deductively through the main issues outlined in the guiding questions for the expert interviews, to the coded text passages.

In a next step, collect all coded text passages referring to the different main categories.

Example for main categories: Sustainability challenges of the agribusiness and food production sector

(3) Summary of main ideas

Summarize the statements of each coding unit and find appropriate headlines, which express the main idea of the coding unit. It is the first inductive step of building sub-categories.

Example for headlines: water scarcity, lack of employers

(4) Translation into English

Translate the main outcomes of the regional pre-analysis from the regional language into English to enable the following transregional analysis.

Transcripts in German: Provide the WP-leader with the regional pre-analysis in English and the full transcripts in German.

Transcripts in Portuguese: Provide the WP leader with an extended pre-analysis in English or if possible, the full transcripts in English together with the normal pre-analysis.

On a transregional level

(5) Development of sub- categories

In a next step, the WP-leader collects the pre-analyses of all regions and compares them. The aim is to figure out commonalties in codings but differences as well. Depending on the logic of the data, the WP-leader summarizes single sub categories to larger units and develops a structure for the sub categories. This structure is the basis for the analysis frame, which is discussed and agreed in a feedback process amongst all involved project partners.

Example for building of sub-categories:

The sub-categories of “Sustainability challenges” could be structured according to the dimensions of sustainability (ecological – social – economic) or according to different levels of action (global – regional – organisational) or to a completely different criterion, emerging in the data.

On a regional level

(6) Coding II

Building on the results of the first coding process, refine and extend the coding according to

the committed analysis frame. It should be the exception that new sub-categories evolve through the repeated coding process but if so, they have to be descripted and argued carefully.

On a transregional level

(7) Analysis

The WP-leader collects the refined regional pre-analyses and conducts the final analysis with a focus on similarities and differences between the four participating project regions. All steps of summary, interpretation and conclusion are directed by the question, in how far they contribute to our research questions.

(8) Commitment on the analysis

In a final step, the draft is refined and completed through feedback loops with the partners.

The WP-leader provides the partners with a summary or in best case with the complete transregional analysis in time, to have it available for the regional focus groups.

(9) Translation into the regional language

The main outcomes of the interviews have to be translated back into the regional language to ensure the full participation of all participants and a fluent and active dialogue in the focus groups.

Analysis software

All steps of the analysis can be supported by using software tools. If the project partners agree on a computer-aided analysis, it is recommended to use the same tool, to ensure compatibility.

SDGs Labs
Making the SDGs our business

ANNEX B
GUIDING QUESTIONS FOR EXPERT INTERVIEWS

INTRODUCTION

For interviewers:

Give a summary of the project "SDGs Labs"

Outline the aim and purpose of the interview

Ask, if you may record the interview

Inform that all data will be used anonymous and that data are treated confidentially (General Data Protection Regulation)

1. GENERAL INFORMATION

Interview	
Time: date & duration	
Location:	
Interviewer: project partner, name	
Interview partner	
Name:	
Position, role:	
Organisation	
Name:	
Location:	
Size:	
Sector:	
Indicators for sustainability:	

2. WARM UP QUESTIONS

- How would you describe the main business field of your company/association?
- What is your understanding of sustainable development?
- What are the efforts/activities/contributions of your company/association to sustainable development?

3. SUSTAINABILITY CHALLENGES IN THE AGRIBUSINESS AND FOOD PRODUCTION SECTOR

- Thinking of the agribusiness and food production sector, what are the main sustainability challenges?
- Name the three most important sustainability challenges for your company/association?
- How do you respond to the mentioned challenges?

4. SUSTAINABILITY DEVELOPMENT GOALS

For interviewers: Start with the following questions but be prepared to give a short introduction to the SDGs.

- Thinking of the Sustainable Development Goals (SDGs), what is your feeling and opinion about them?
- Does your company/association work/has experience with the SDGs?
- What do you think, are limits of the SDGs for the agribusiness and food production sector?
- What do you think, are opportunities of the SDGs for the agribusiness and food production sector?

5. IDEAS FOR INNOVATION

For interviewers: Start with the following questions but make sure that innovation is understood in a holistic sense (not only product innovations).

- What does innovation mean to you?
- In what way could the SDGs be drivers of innovation in the agribusiness and food production sector?
- Do you have ideas for SDG-driven innovation in your own business?

6. NEEDS FOR SDGS RELATED COMPETENCIES

For interviewers: Start with the following questions but make sure that competencies are understood in a wider sense (e.g. including knowledge, skills, attitudes, motivations…).

- Thinking of competencies, which are necessary for better integrating the SDGs in business?
- How can these competencies be developed?
- How can learning about the SDGs be facilitated in business?
- Which expectations and wishes do you have for cooperation with higher education institutions?
- Regarding the participation in the planned further parts of the project (e.g. SDGs Labs), in which case would it be successful for you?

7. ADDITIONAL

Is there anything you want to add, that was not mentioned in the interview?

CHECK OUT

For interviewers:

Give an outline what will happen with the interviews

Outline the next steps in the project and invite to the focus group

Thank you for your time and openness!

SDGs Labs
Making the SDGs our business

ANNEX C
ANALYSISFRAME
FOR EXPERT INTERVIEWS

NR	CODES
Topic 1: SUSTAINABILITY CHALLENGES IN AGRI-BUSINESS & FOODPRODUCTION	
1.1.	AWARENESS
1.1.1.	Awareness/philosophy
1.2.	SUSTAINABILITY CHALLENGES - ECOLOGICAL DIMENSION
1.2.1.	Biodiversity/monocultures
1.2.2.	Animal welfare/mass husbandry
1.2.3.	Organic food/organic farming
1.2.4.	Regional & seasonal products
1.2.5.	Use of pesticides/fertilizers/pharmaceuticals
1.2.6.	Packaging/use of plastics
1.2.7.	Reuse/upcycling/food-waste
1.2.8.	Energy
1.2.9.	Logistics/mobility
1.2.10.	Climate change
1.2.11.	Water: management/scarcity
1.2.12.	Soil: disappearance/degradation
1.3.	SUSTAINABILITY CHALLENGES - ECONOMIC DIMENSION
1.3.1.	Mission/vision/strategy
1.3.2.	Structure/management/size
1.3.3.	Costs/finance structures
1.3.4.	Certifications/labels/reporting
1.3.5.	Marketing/communication
1.3.6.	Resources/scarcity
1.3.7.	Market structures
1.3.8.	Consumer/demand structures
1.3.9.	Conflicting goals
1.4.	SUSTAINABILITY CHALLENGES - SOCIAL DIMENSION
1.4.1.	Working conditions
1.4.2.	Labour shortage
1.4.3.	Employee development
1.4.4.	Education/training
1.4.5.	Gender equality
1.5.	SUSTAINABILITY CHALLENGES - POLICY/ STRUCTURAL DIMENSION
1.5.1.	EU policy/regulations
1.5.2.	Regional & national policy/regulations
1.5.3.	Public institutions/organizations
Topic 2: SUSTAINABILITY DEVELOPMENT GOALS	
2.1.	EXPERIENCE WITH SDGS
2.1.1.	Unknown
2.1.2.	Known but not applied
2.1.3.	Experience in application
2.2.	ATTITUDES TOWARDS THE SDGs
2.2.1.	Positive
2.2.2.	Critical
2.2.3.	Attitudes towards single SDGs
2.3.	OPPORTUNITIES OF THE SDGs
2.3.1.	Inspiration/rethink own business
2.3.2.	Innovation/new business models

2.3.3.	Management tool
2.3.4.	Tool for reflection/impact assessment
2.3.5.	Communication tool

2.4.	BOUNDARIES OF THE SDGs
2.4.1.	Formulation/structure of the goals
2.4.2.	Problems with application
2.4.3.	Lack of demand/added value
2.4.4.	Structure/size of enterprises

Topic 3: INNOVATION

3.1.	DEFINITION OF INNOVATION
3.1.1.	Definition of Innovation

3.2.	INNOVATION POTENTIAL
3.2.1.	Products/services
3.2.2.	Processes
3.2.3.	Technological/digital
3.2.4.	Organization/structures
3.2.5.	Communication/marketing
3.2.6.	Social innovation

Topic 4: NEEDS

4.1.	COMPETENCIES
4.1.1.	Systemic thinking competencies
4.1.2.	Anticipatory competencies
4.1.3.	Normative competencies
4.1.4	Personal competencies
4.1.5.	Strategic competencies
4.1.6.	Social competencies

4.2.	PROJECT SDGs LABs
4.2.1.	Awarenessbuilding/lectures/trainings
4.2.2.	Cooperation/networks/exchange
4.2.3.	Good practices
4.2.4.	Support of pilotprojects

4.3.	COOPERATION WITH HIGHER EDUCATION INSTITUTES
4.3.1.	Positive
4.3.2.	Critical

4.4.	POLICY/STRUCTURAL LEVEL
4.4.1.	Support on a policy/structural level

SDGs Labs
Making the SDGs our business

ANNEX D
PRACTICAL GUIDE FOR PREPARING, CONDUCTING AND ANALYSING FOCUS GROUPS

1. .PREPARATION OF FOCUS GROUPS

1.1. SELECTING THE FACILITATORS

For the focus groups two persons or "facilitators" are recommended. One, who facilitates the discussion and asks the questions and the other who will take minutes. It is important to choose experienced moderators, who bring along the following skills:

- Communication skills to set up an open and fruitful dialogue and facilitate discussions
- Experience with facilitating groups and lead discussions
- Good knowledge about the SDGs and their relevance for the agribusiness and food production sector

The rapporteur should be a native speaker and have a good knowledge about the agribusiness and food production sector, thereby he really can follow the discussions and be quick with taking minutes about the outputs of the discussion or dialogue and eventually take notes at the flipchart. The facilitators should not only conduct the focus group but should be involved in the whole process of preparation and analysis of the results.

1.2. SELECTING THE PARTICIPANTS

The focus groups are conducted after the expert interviews with the aim to deepen and sharpen the outcomes of the expert interviews. To enrich the discussion, it might be useful to invite additional participants, beside the interview partners.

(a) Interview partners from the expert interviews

The main target group are the partners from the preceding interviews, that means representatives of companies and business associations out of the agribusiness and food sector.

(b) Additional Stakeholders

Further participants out of broader stakeholder circle can be invited, from whom valuable contributions are expected. All participants should be concerned with the agribusiness and food production sector and should have experience with sustainability issues or in best case with the SDGs.

- Educational sector: e.g. universities, research institutions
- Politics: e.g. local or regional politicians, intermediaries, representatives of chambers
- NGOs: e.g. consumer organizations, ecologic or social associations
- Additional enterprises: e.g. small farmers, micro enterprises

Even though diversity vivifies a discussion and enables a broader range of views, be careful in selecting further participants in order to fragment the discussion not too much. The group shouldn`t exceed eight to maximal ten participants.

1.3. INVITATION

Interview partners: Agree on two or three possible dates for the focus group with your team and check these dates with the interview partners directly after the interview.

Additional stakeholders: Invite them as soon as possible. Make sure that they have sufficient information about the project and the previous expert interviews, either by e-mail or in a personal meeting.

1.4. PREPARING THE DESIGN OF THE FOCUS GROUP

The focus groups build on the results of the expert interviews. As such, it is crucial to find an appropriate design, that gives insights in the interview results but allows new and fresh ideas at the same time. The focus group should contain the following parts, but the order will influence the outcomes. It is up to you, whether you start with the outcomes of the expert interviews or with the group discussion.

Introduction of the project and the participants

Prepare a short introduction to the project, the purpose of the focus group and the programme of the event. Furthermore, decide, what is important to know of each other and which introduction method is appropriate.

Presentation of the results of the expert interviews

Decide, how you will present the outcomes of the trans-regional expert interviews and prepare supporting tools for visualization, e.g. a powerpoint presentation or flip charts. Select the points which are important for the further discussion, e.g. particularities of your region, similarities between all regions.

Discussion on the main issues

The main issues will be outlined in a guiding questionnaire which is provided by the WP leader after the pre-analysis of the expert interviews. Adapt the questions to the particularities and needs of your region but make sure that the main issues are tackled:

- Sustainability challenges of the agribusiness and food production sector
- SDGs: opportunities and challenges in implementing in the agribusiness and food sector
- Innovations: ideas on how the SDGs could work as driver for sustainability innovations
- Needs: necessary competences and formats of trainings and workshops to gain these competences

Conclusion and outline of the next steps

Decide the method for collecting and summarizing the main outcomes of the focus group and prepare the supporting visualization tools.

1.5. RECORDING THE FOCUS GROUP

Several methods exist for recording group discussions - audio recording, video recording or flip chart and minutes. As it's difficult to record a discussion with a voice recorder and as not all participants are open for video recording, we propose to work with flipchart and minutes. In that case, the moderator can track main outcomes of the statements and discussions on flipchart, while the rapporteur writes the main outcomes and important discussion fragments down (preferably digital). The rapporteur should also take photos of the participants and of the used flipcharts for the protocol.

2. CONDUCTION OF FOCUS GROUPS

Group discussion

The focus groups are designed as discussions with more or less homogeneous groups from five to eight participants. Sitting in a circle, the par-

ticipants can see each other and are able to start fruitful dialogues and lively discussions.

Environment

The environment is important for the focus groups as well. Either they take place in the rooms of one of the participants or you choose a neutral place. If possible, organize the focus groups in sufficiently large spaces with a nice ambience (bright and friendly), pleasant room temperature, with windows to allow to get some fresh air, some fresh water for everyone and soundproof walls so the participants are not disturbed through background noises.

Duration

An average focus group lasts between two and three hours. If they exceed two hours, plan a short break. Inform your participants about the length and make sure that they have reserved the time.

Language

The focus groups are conducted in the regional language, what supports the flow of the dialogue. Make sure that you have an appropriate translation of the guiding questions.

Introduction

Introduce yourself and your organisation and give the participants enough space to get to know each other. Furthermore, give a short overview of the project and the agenda. Give also an outline of the purpose of the focus group and how you will proceed with the outcomes.

Record & Anonymity

To analyse and use the outcomes afterwards, it is crucial to have some protocolling. Ask for the commitment to the chosen recording method and ask, if you are allowed to name the company and the single participants or if they want to stay anonymous. It is useful to work with Written Consents.

Presentation of the outcomes of the Expert Interviews

The aim of the presentation is to get attitudes and inspirations from actors in the agribusiness and food production sector of your region but from the other regions, participating in the project, as well.

Discussion on the main issues

The group discussion is centre-staged. It is supported by the guiding questions, which serve as frame for the dialogue. Be prepared to raise additional questions to deepen certain issues or to give short explanations on terms or concepts. Take an attitude of active listening and asking but never lose the control over the discussion.

Summary and focus

In the last part, give a summary of the discussed issues, by pointing out common attitudes but outstanding opinions as well. Put a clear focus on the addressed needs and on ideas for next steps. The participants should leave the focus group with high motivation to co-create the further parts of the project.

Termination of the focus group

To round up the discussion give the participants the opportunity to add aspects not mentioned before. Give an outline, how the outcomes will be treated and how they will be reflected. Furthermore, offer possibilities for further involvement in the project. End up with thanks for the participation.

After the focus group

Read the protocol immediately after the meeting to be sure that all important information has been noted. Write a thanks e-mail to the participants.

3. ANALYSIS OF THE FOCUS GROUPS

The analysis depends on the method chosen for recording. If you work with audio or written recording, it can be conducted similar to the expert interviews. It is also conducted on two levels, on a regional and transregional level.

On a regional level

(1) Transcription

Transcribe the part of the group discussion in case you have an audio record. If you have a written protocol, you can use that one.

(2) Coding I

Read the transcript carefully to get a deeper understanding of the content.

Go through the transcript line by line and mark key phrases or parts of the text which promise to give answers on the research question. When marking the text, find coding units which are units in terms of meanings as well. Coding units should be intelligible beyond the context of the group discussion but should not be too voluminous.

Assign the main categories, which are given deductively through the main issues outlined in the guiding questions for the focus groups, to the coded text passages.

In a next step, collect all coded text passages referring to the different main categories.

(3) Summary of main ideas

Summarize the statements of each coding unit and find an appropriate headline, which express the main idea of the coding unit. It is the first inductive step of building sub categories.

(4) Translation into English

Translate the main outcomes of the regional pre-analysis from the regional language into English to enable the following transregional analysis.

Transcripts in German: Provide the WP-leader with the regional pre-analysis in English and the full transcripts in German.

Transcripts in Portuguese: Provide the WP leader with an extended pre-analysis in English or, if possible, the full transcripts in English together with the pre-analysis.

On a transregional level

(5) Development of sub-categories

In a next step, the WP-leader collects the pre-analyses of all regions and compares them. The aim is to figure out commonalties in codings but differences as well. Depending on the logic of the data, the WP-leader summarizes single sub-categories to larger units and develops a structure for the sub-categories. This structure is the basis for the analysis frame, which is discussed and agreed in a feedback process amongst all involved project partners.

On a regional level

(6) Coding II

Building on the results of the first coding process, refine and extend the coding according to the committed analysis frame. It should be the exception that new sub-categories evolve through the repeated coding process but if so, they have to be descripted and argued carefully.

On a transregional level

(7) Analysis

The WP-leader collects the refined regional pre-analyses and conducts the final analysis with a focus on similarities and differences between the four participating project regions. All steps of summary, interpretation and conclusion are directed by the question, in how far they contribute to our research questions.

(8) Commitment on Analysis

In a final step, the draft is refined and completed through feedback loops with the partners. The WP-leader provides the partners with a summary or in best case with the complete transregional analysis in time, to have it available for the regional focus groups.

(9) Translation into the regional language

The main outcomes of the interviews have to be translated back into the regional language to ensure the full participation of all participants and a fluent and active dialogue in the focus groups.

Analyse software

All steps of the analysis can be supported by using software tools. If the project partners agree on a computer-aided analysis, it is recommended to use the same tool, to ensure compatibility.

Report and summary

The outcomes of the analysis of the interviews and focus groups are summarized in a report. For dissemination purpose it makes sense to create a summary of the report. Interview partners and participants of the focus groups should be provided with the report or at least with the summary as conclusion of this first step of the project.

Translation into the regional language

It is not a must but if possible, translate at least the summary of the analysis back into your language.

SDGs Labs
Making the SDGs our business

ANNEX E
GUIDING QUESTIONS FOR FOCUS GROUPS

INTRODUCTION

For interviewers:

Give a summary of the project "SDGs Labs"

Outline the aim and purpose of the interview

Ask, if you may record the interview

Inform that all data will be used anonymous and that data are treated confidentially

1. SUSTAINABILITY DEVELOPMENT GOALS

- Thinking of the Sustainable Development Goals (SDGs), what relevance do they have for you and your enterprise?
- How could we manage the transition from a "single SDGs view" to an integrated and holistic view of the SDGs?
- Which role can business associations, cooperatives or chambers play in supporting SMEs in the implementation of the SDGs?

2. IDEAS FOR INNOVATION

- Which kind of innovation is needed to apply the SDGs in daily business?
- What are the driving forces for innovations in enterprises? (e.g. employees, innovation department, market impulses, unsolved problems)
- What are the pre-conditions for a fruitful innovation climate in a region?
- Which framework conditions are necessary to foster innovation in enterprises?

3. NEEDS

Competencies

- Thinking of competencies, which are necessary for better integrating the SDGs in business?

In the project SDGs Labs

- How could the project SDGs Labs support the integration of the SDGs in business?
- Awarenessbuilding, trainings:
  Which kind of lectures, trainings, workshops?
  Which contents and methods?
- Good practices: Which kind of presentation could be supportive? (e.g. case studies, excursions)
- Pilotprojects in enterprises: How could the SDGs Labs in enterprises be designed?
- Networks/cooperation: With whom would you like to exchange/cooperate?

Cooperation with HEI

- What do you expect from a cooperation with universities/HEI?
- What is realistic in a cooperation with HEI from your experiences?
- How could the SDGs Labs team support co-operation with HEI?

4. ADDITIONAL

Is there anything you want to add that was not mentioned in the discussion?

5. CHECK OUT

For interviewers:

For facilitators: Give an outline what will happen with the results of the focus group

Outline the next steps in the project and invite to the following SDGs Labs

Thank you for your time and openness!

SDGs Labs
Making the SDGs our business

ANNEX F
GUIDING QUESTIONS FOR FOCUS GROUPS

NR	CODES
Topic 2: SUSTAINABILITY DEVELOPMENT GOALS	
2.1.	EXPERIENCE WITH SDGS
2.1.1.	Unknown
2.1.2.	Known but not applied
2.1.3.	Experience in application
2.2.	ATTITUDES TOWARDS THE SDGs
2.2.1.	Positive
2.2.2.	Critical
2.2.3.	Attitudes towards single SDGs
2.3.	OPPORTUNITIES OF THE SDGs
2.3.1.	Inspiration/rethink own business
2.3.2.	Innovation/new business models
2.3.3.	Management tool
2.3.4.	Tool for reflection/impact assessment
2.3.5.	Communication tool
2.4.	BOUNDARIES OF THE SDGs
2.4.1.	Formulation/structure of the goals
2.4.2.	Problems with application
2.4.3.	Lack of demand/added value
2.4.4.	Structure/size of enterprises