



Training Package Content

**Module 2, Business opportunity
recognition: food and agriculture**

**By Erasmus+ Knowledge Alliance for
Business Opportunity Recognition in
SDGs – SDG4BIZ (2021-2023)**

Co-funded by the
Erasmus+ Programme
of the European Union



SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ

Project	621458-EPP-1-2020-1-FI-EPPKA2-KA/ Knowledge Alliance for Business Opportunity Recognition in SDGs – SDG4BIZ
WP	WP 4, Content Co-Creation
Deliverable number and name	D7. (WP4.2) Training package content
Chapter number and name	Module 2: Module 2, Business opportunity recognition: food and agriculture
Language (select)	EN
Nature of document	Document, OER
Submission date (final for final report)	15.11.2023
Responsible partner	P8, Yasar University
Status (draft, final, submitted)	Final, submitted
Edited (Chapter)	Yasar University (content), Haaga-Helia UAS (Introduction)
Authors	Module 2 Team: P8, Yasar University; P1, Metropolia UAS
Original SDG4BIZ Graphics	P2, Haaga-Helia UAS, SDG4BIZ logo, Students of Metropolia UAS
Reviewer(s), improvements and final quality check	P2, Haaga-Helia UAS, P7, TKNIKA
Deliverable Type	Publication, electronic, online
Dissemination Level	Public
Partners	Parties to which reference has been made, Main effort by, Yasar University, Metropolia UAS
Open educational resources statements and courtesy	OER: Unless otherwise specified, Non-Commercial 4.0 (CC-BY-NC-SA) Citation Unless otherwise specified, Courtesy to SDG4BIZ Erasmus+ project partners SDG4BIZ Training Package Content, Module 2, Business opportunity recognition: food and agriculture, 2022 For end-users: when enriching your own teaching material, for example with suggested materials, make sure to verify what agreements and legal practices bind your organisation in relation to each material.
<p>The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

Table of Contents

Introduction.....	4
Learning goals.....	6
How to use this material	7
0. What's in it for me?.....	8
1. Sustainable Development Goals (SDGs).....	12
2. Context	20
3. Motivation	35
4. Resources and networks	51
5. Business modelling	57
Next steps and test.....	62
Annexes	71



Introduction

You are holding in your hands the second part of the SDG4BIZ course material description which hopes to contribute to a more effective involvement of the private sector in the achievement of the UN's Sustainable Development Goals. The material is intended to be used by higher education institutions in entrepreneurship education. In addition to the academics, this material can also be used by the companies of the various kinds to train their own employees and executives and secondary education. The training material was created by the Erasmus+ Knowledge Alliance for Business Opportunity Recognition In SDGs - SDG4BIZ project team during autumn 2021 and spring 2022. The material was tested and piloted before the final version of this document was completed and published in the autumn of 2023. Although this package is mainly the result of the work of entrepreneurship education experts and researchers from two higher education institutions in Finland, it has been directly and indirectly influenced by the views and expertise of all SDG4BIZ project partnership.

The starting point for the development of this material has been that the Sustainable Development Goals (SDGs) set by the United Nations 2015 are likely not met by the target year 2030, if companies do not recognize and utilize the business opportunities inherent in them. It has been estimated that up to 80 million jobs would be created and €10 trillion in business opportunities would be unlocked, if SDGs were realized by 2030. However, the companies have not been able to utilize this growth potential so far. In addition, higher educational institutions (HEIs) focusing on business studies have not offered adequate training and support the competence building of future managers for solving the world's most urgent problems. The mainstream of the training efforts of SDGs, still focus on the awareness building only, not business opportunity recognition related to SDGs. We hope that the effort in SDG4BIZ project and the quality of this material will also motivate other educational institutions and organizations to adopt the training content.

The complete material of SDG4BIZ training consists of five parts, modules. This document, Training Package Content of Module 2 is the second part. It is titled: Business opportunity recognition: food and agriculture. The other four modules, address specific opportunities in:

- Sustainable development goals in business opportunity recognition (Module 1)
- Cities (Module 3)
- Energy, materials and industry (Module 4)
- Health and wellbeing (Module 5)

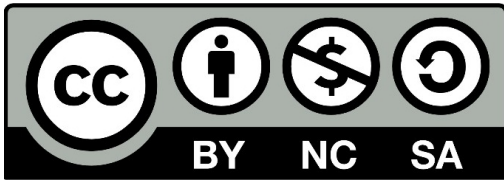
Each module is equivalent to five credits (ECTS). Please note, that there is a description in a separate document for each module. The set of these descriptions of the five modules is supported by the curriculum (SDG4BIZ curriculum and training package description) and a learning platform (sdg4biz.itslearning.com). This material is available in several languages: in English, Finnish, Spanish, Slovak, German and Turkish. These language versions are more modest workflow-related text files, the function of which was to support the export of translated versions to the learning platform.

In the case that the pedagogical flow, a study path, is matter of interests as it is mounted on a learning platform, please, go to the project page at <https://www.sdg4biz.eu/en/>. On this page the final policy on how this pedagogical pathway, as implemented in the learning platform, will be accessible after the project.

This module 2 was created by two partner organizations of the SDG4BIZ consortium: Yasar University, Turkey and Metropolia UAS, Finland.

SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ










OER: Unless otherwise specified, Non-Commercial 4.0 (CC-BY-NC-SA)

Citation Unless otherwise specified, Courtesy to SDG4BIZ Erasmus+ project partners SDG4BIZ Training Package Content, Module 2, Business opportunity recognition: food and agriculture, 2022

Learning goals



This module, Business opportunity recognition: food and agriculture, is divided into an orientation (0) and five sections (1-5) containing actual learning support materials. The orientation, the actual learning section and the expected learning outcomes are as follows.

Sections of module 2	ECTS	At the completion of the section...
	0	<p>Orientation</p> <p>0. the learner knows the overall structure of module 2 and how to utilize the learning diary.</p>
	1	<p>Sustainable growth (SDGs)</p> <p>1. the learner familiarizes his-/herself how economic development contributes to SDGs.</p>
	1	<p>Context</p> <p>2. the learner identifies different stakeholders and approaches (quadruple helix model) for business opportunities in food and agriculture.</p>
	1,5	<p>Motivation</p> <p>3. the learner comprehends the link between sustainability and food and agriculture; the learner understands the earth's environmental situation now, the planetary boundaries, and how food and agriculture business is affecting them.</p>
	0,5	<p>Resources and networks</p> <p>4. the learner becomes aware of the state and regulatory authorities' role in facilitating sustainable peatland management.</p>
	1	<p>Business modelling</p> <p>5. the learner understands the role of marketing in the emerging food and agriculture industry; the learner is able to apply feasibility evaluation methods for his/her business and to prepare a project report for grant applications.</p>
	0	<p>Next steps</p> <p>i. the learner is ready to select the next module and answers for the call for action.</p>

How to use this material

The structure of the document has been chosen specifically to help you build an online course using this material. The package can also be used in the classroom although in that case, the pedagogical material, such as workshop manuals or lecture notes, must be further developed. In other words, this material provides rich content and tips for the classroom yet requiring some adaptation.

In addition to the orientation and final parts of the Module, the course is divided into seven different sections. In this document, these sections are numbered. The structure of the sections is displayed in a table with two columns. The left column of the table points out a number and a title as well as the order in which the items are designed to be presented. Regarding the content itself is in the right column. Not all the components carry a title nor a number. These elements fall under the headings above them. The intention is to emphasise the specificity of the content block in relation to the preceding ones, and to suggest certain order for the presentation of the items. The structure is demonstrated in the picture below: 1.2. indicates the place of the item in the study path, "Role of Agriculture in..." is a sub-title and the content itself, in this case preceded by a suitable picture, is in the right column.

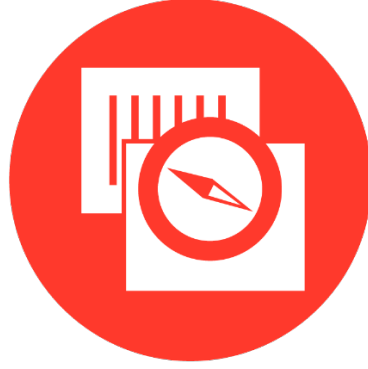
1.2. The Role of Agriculture in the World Economy	<p>(image)</p> <ul style="list-style-type: none"> • <i>As of 2018, agriculture only represents 3% of the world's GDP, down from 4% in 2010.</i> • <i>Even though agriculture represents a small share of the world's economic output, this industry employs almost 30% of all workers.</i>
---	--

As SDG4BIZ course is designed to be a self-study course, the learning diary and multiple-choice questions play an important role in verifying learning. Occasionally, the same questions are repeated in the immediate quizzes (Self-tests) and in the final examination (Actions to finalize the course, test). Poll questions (VOTE), in turn, have an orienting function. Poll questions, discussion questions and reflection exercises can also be used in the classroom.

The bibliography and references for each section can be found at the end of the section. Third-party material, books, videos and images form an important part of the study path. However, these have been removed from this material e.g. for copyright reasons. On the other hand, simple search functions, either on the international information network (known as Internet) or in library databases, enables one to replace the indication text (video, picture, article etc.) with updated resources available. In some cases, the material also includes a suggestion on the length of a video or a podcast. The selection of the original links (2021-2022) is added on annexes.

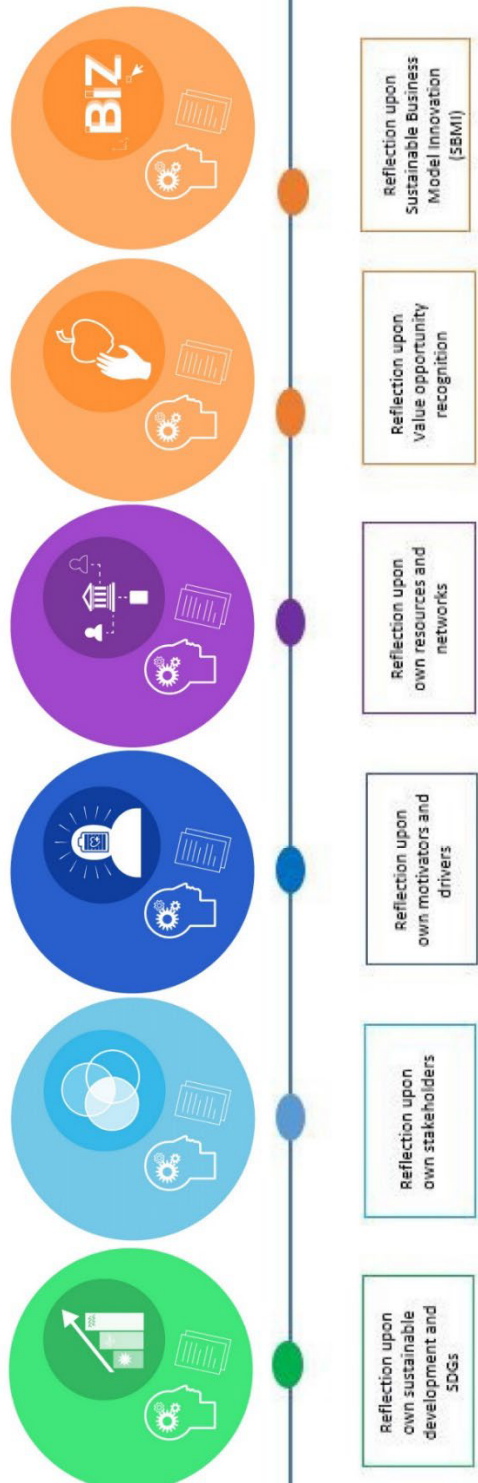
In the annexes you will find other material added to the course such as the lectures and the transcript frameworks.

0. What's in it for me?



Item: Welcome to the course

Page	Content
	<p>Description</p> <p>This module on food & agriculture aims to equip learners with skills, knowledge and tools for business opportunity recognition in food and agriculture sector.</p> <p>LEARNING OBJECTIVES</p> <ul style="list-style-type: none"> • Recognize opportunities in food and agriculture goals of SDGs • Evaluate and control the feasibility of business opportunities in food & agriculture related SDGs. • Generate ideas in food and agriculture related sectors towards food & agriculture related SDGs.
0.1. Welcome to the Module 2	<p>A warm welcome to the course!</p> <p>Food is essential for life. Sustainability in food and agriculture is essential for the future of the earth and our lives!</p> <p>Thank you for registering to the SDG4BIZ module on food and agriculture. In this module, you will read and watch valuable lectures of professors from Yasar University (Izmir, Turkey) and Metropolia University of Applied Sciences (Helsinki, Finland)</p>

	<p>who are experts in international trade and finance, business, economics, tourism, political economy and smart and clean solutions. This multidisciplinary collaboration enables a diverse exploration of perspectives on <i>sustainability in connection to green marketing, behavioral finance, economic development, innovation, tourism management, social innovation, and circular economy</i> to name a few.</p> <p>By taking this module on food and agriculture, you will be able to...</p> <p>Recognize opportunities in food and agriculture goals of SDGs. Evaluate and control the feasibility of business opportunities in food & agriculture related SDGs. Generate ideas in food and agriculture related sectors towards food & agriculture related SDGs.</p>
0.2. Orientation to the Module	(image)
0.3 Meet the team	(image)
0.4 What is a learning diary?	<p>What is a learning diary? Throughout this module, we will strongly encourage you to reflect on your own learning. Your needs and wishes to apply the course contents to your everyday work environments may vary heavily due to the various backgrounds you come from.</p> 

	<p>If you reflect upon your learning on a regular basis and document your insights carefully, at the end of the course you have something tangible to start making the change happen!</p> <p>The learning diary is the concrete tool and we have designed the following path for you to follow. Please document your insights using the file format that suits you best and do save the documentation in your own files. The reflections may vary from text to mind maps and other visualizations.</p> <p>(image)</p> <p>You are not expected to submit the learning diary to us. However, you might want to share insights, for example, with your colleagues or business partners with whom you are developing your sustainable business opportunities or your everyday work practices.</p> <p>Enjoy the journey!</p>
<p>0.5 How to activate a personal Learning Diary</p>	<p>Activation of a personal Learning Diary</p> <p>Here is a step-by-step instruction how can you activate your own Learning Diary if that was not done as a part of the Welcome module. Learning Diary is basically a Blog that is available in ePortfolio.</p> <p>In the right upper corner, click your own name and choose ePortfolio from the menu</p> <p>Click Global settings</p> <p>Activate your Blog with the below setting</p> <p>You may share your Learning Diary to others (e.g. peers and colleagues) with the following setting if you wish</p> <p>Nobody can see and read your Learning Diary if you decide not change Access settings</p> <p>Remember to save at the end</p> <p>By clicking the below pdf file, you may keep the above instructions open while activating your Learning Diary.</p> <p>Open the above activation instructions into a separate browser tab</p>
<p>0.6 Pre-course Survey</p>	<p>Pre-course survey</p>

	<p>What is your field?</p> <ul style="list-style-type: none"><input type="radio"/> Student<input type="radio"/> Researcher/Professor<input type="radio"/> Professional<input type="radio"/> Entrepreneur <p>How are you participating in this module?</p> <ul style="list-style-type: none"><input type="radio"/> It is a part of my studies / recommended by my professor.<input type="radio"/> I'd like to recognize, realize and incorporate business opportunities in SDGs in my field.
	<p>Now that you are familiar with the content and structure of the module you can proceed to the next section in which you will start to explore food and agriculture related SDGs and policy background.</p>

1. Sustainable Development Goals (SDGs)



Page	Content
	<p>Description</p> <p>This introductory chapter deals with the UN Sustainable Development Goals, and specifically those goals that most relate to sustainable agriculture. Among the clues offered by the SDGs for business opportunity recognition, we will focus especially on how sustainable agriculture can provide local communities with employment and thereby help to sustain economic life and living standards.</p> <p>LEARNING OBJECTIVES</p> <ul style="list-style-type: none"> • Understand the economic significance of agriculture and its contribution to sustainability in practice • Gain knowledge of the food and agriculture policy environment • Identify food and agriculture-based sustainable business opportunities
	SDG4BIZ-SDGs orientation section.mp4 (video)

<p>1.1 SDGs and Agriculture</p>	<p>The UN declared that the 2030 Agenda for Sustainable Development including the 17 Sustainable Development Goals (SDGs). These goals focus on water, energy, climate, oceans, urbanization, transport, science and technology to improve human well-being and to protect the environment. These goals are important tools for nutrition, food security and sustainable agriculture as well.</p> <p>As the world population grows, COVID-19 pandemic and other global changes, more effective policy implications are needed for sustainable and productive agricultural production. It is clear that this goal is strongly linked to supply change, food losses and food waste, and also nutrition. Moreover, empowering small farmers, promoting gender equality in economy, ending rural poverty and ensuring human well-being are other tools to achieve these goals.</p> <p>As a conclusion, 17 SDGs are a call for action to all countries to improve the planet and the lives. On this agenda, SDGs stand for:</p> <ul style="list-style-type: none"> • Small farmers/food producers empower, • Hunger and malnutrition ended, • Sustainable agriculture, food security and nutrition, • More productive and less wasteful food systems organized, • International trade policies reshaped. <p>All these goals are also in the agenda of 2020 World Food Security Committee.</p> <p>(image)</p> <p>RELEVANCE TO THE UNSDGs</p> <p>These goals aim to strengthen national capacities to redesign and implement agricultural policies.</p> <p>End poverty in all its forms (1) End hunger achieve food security and improved nutrition and promote sustainable agriculture (2) Achieve gender equality and empower all women (5) Reduced inequality within and among countries (10) Sustainable forest management, combat desertification, halt and reverse land degradation, halt biodiversity loss (15) Revitalize the global partnership to achieve the goals (17)</p> <p>(image)</p>
<p>1.2. The Role of</p>	<p>(image)</p>

<p>Agriculture in the World Economy</p>	<ul style="list-style-type: none"> ● <i>As of 2018, agriculture only represents 3% of the world's GDP, down from 4% in 2010.</i> ● <i>Even though agriculture represents a small share of the world's economic output, this industry employs almost 30% of all workers.</i> <p>Contributions of Agriculture in an Economy Governments intervene the agricultural markets through price stabilization (price floor/price ceiling), tax, subsidies, import and export tariffs and quotas, product restrictions etc. The structure of the Economy determines which agricultural policies are more likely to be appropriate in different countries (Stiglitz, 1987). Thus, agricultural policies are key to achieve sustainable development and growth in every development level of a country.</p> <p>According to Johnston and Mellor (2020) agriculture's contributions in an Economy can be summarized in five ways:</p> <ul style="list-style-type: none"> ● Providing increased food supply, ● Enlarged agricultural exports, ● Transfer of labor force from agricultural sector to non-agricultural sector, ● Agriculture's contribution to capital formation, ● Increased rural net cash income as a stimulus to industrializing. ● Agriculture plays a crucial role in an Economy by providing food, income and labor force to rural areas. Moreover, improvements in agriculture are fundamental to achieving food security, income redistribution, poverty reduction and overall sustainable Economic development. Agriculture is also crucial to economic growth: in 2018, it accounted for 4% of global gross domestic product (GDP) and in some developing countries, accounted more than %25 of the GDP (WB, 2022).
<p>1.3. Aspects of Agricultural Policies</p>	<p>According to Stiglitz (1987) five theoretical aspects of agricultural policies are relevant:</p> <ul style="list-style-type: none"> Incomplete markets in insurance and credit. Public goods and increasing returns. Imperfect information. Externalities. Income distribution. <p>Policy implications are based on 3 clusters: assets, markets, labor and contain the following emphases:</p> <p>Asset accumulation: land, water, livestock, equipment, savings and the insurance services to protect them. Support for social protection targeted to the poorest, infrastructure and output markets to reduce risk and protect accumulation;</p> <p>Improving the functioning of labor markets for farm workers;</p>

<p>1.4. Policy Implications - Asset Cluster</p>	<p>Enhancing gender equality: the contribution of agricultural policies and programmes; A stronger emphasis on environmentally sustainable farming (Lenhardt et al., 2012).</p> <p>Lack of assets is frequently identified as a crucial factor of poverty. These assets are usually grouped into five types of capital:</p> <ul style="list-style-type: none"> • physical (productive assets, housing); • natural (land); • human (knowledge, skills, health); • financial (cash, bank deposits, livestock, other stores of wealth); • social (the networks and informal institutions that facilitate coordination and cooperation) (Lenhardt et al., 2012). <p>Physical Asset: The impacts of asset ownership on household welfare, income and expenditure. The focus is on accumulating productive farm assets and maximum returns from them.</p> <ul style="list-style-type: none"> • Small animals, cattle and plough livestock • Affordable intermediate farm mechanization has scope to increase crop yields, crop diversification and incomes, • Local infrastructure development, such as of storage and processing facilities, allows poor farmers to maximize returns from those assets they do hold (Lenhardt et al., 2012). <p>Natural capital (land and water): There is a direct link between asset accumulation and income distribution.</p> <ul style="list-style-type: none"> • Providing enhanced access to land, • A worked-through commitment to poverty reduction needs to accompany any land redistribution, • Land is not productive without water, so equitable water access rights (Lenhardt et al., 2012). <p>Human capital (education, labour, health and nutrition):</p> <ul style="list-style-type: none"> • Education gives people the knowledge to improve their livelihoods and provides access to formal (salaried or wage) employment. • The purpose of agricultural development is not only to maximize outputs and economic returns, but also, fundamentally, to produce safe and nutritious food for the development of healthy people. • Education has also high returns for smallholders contracting with intermediaries and gives farmers an opportunity to barter equitably with traders (Lenhardt et al., 2012). <p>Social capital is also often the primary means of information transfer in rural areas, with farmers sharing price information and techniques in informal gatherings or through formal producers' groups.</p>
---	--

	<ul style="list-style-type: none"> Public interventions can ease the stress members of informal risk-sharing groups experience. Policy implementers can harness social networks to identify vulnerable ‘unseen’ individuals, or use them as a policy outreach tool, as in the case of farmer extension (Lenhardt et al., 2012).
<p>1.5. Policy Implications - Market Cluster</p>	<p>Well-functioning markets lead to decrease market failure including imperfect market conditions, and market failure. Adequate public expenditure and supply of infrastructure are the critical factors underpinning for well-functioning markets. Finance markets have often been dysfunctional, such as financial services including lack of credit and insurance.</p> <p>Governments can set floor prices, price ceiling or revenue-sharing agreements and provide help (e.g. financial incentives), encourage more responsible corporate governance and support efforts to increase representation of farmer organizations (Lenhardt et al., 2012).</p> <p>(image)</p>
<p>1.6. Policy Implications - Labor Cluster</p>	<p>Agricultural education could be a part of this, since most discriminated households are agricultural. A number of factors, such as low education levels, poor health and discrimination, affect the ability of rural workers to obtain favorable job opportunities, whether in the farm or the non-farm sectors. Education and skills training can serve as one of the most effective ways of increasing employability.</p> <p>Social security programmes, tax policies, anti-discrimination policies may be necessary to help to increase labor force participation rate as well.</p> <p>(image)</p>
<p>1.7. Output of Agricultural Industry in EU</p>	<p>Agricultural markets have several key disadvantages:</p> <ul style="list-style-type: none"> Farmers’ income is around 40% lower compared to non-agricultural income; Agriculture depends more on the weather and the climate than many other sectors which leads uncertain crop size, There is an inevitable time gap between consumer demand and farmers being able to supply, Higher transaction costs, (EU, 2022; Stiglitz, 1987). <p>The value of everything that the EU’s agricultural industry produced in 2020 was an estimated EUR 414.1 billion; this includes the value of crops, of animals, of agricultural services, as well as some goods and services that were not strictly agricultural but which could not be separately measured.</p> <p>About one half (53.0 %) of the value of the total output of the EU’s agricultural industry in 2020 came from crops (EUR 219.5 billion), within which vegetables and horticultural plants and cereals were the most valuable crops (Eurostat, 2022).</p> <p>More than one half (58.7 %) of the total output value of the EU’s agricultural industry came from the ‘big four’ of</p>

<ul style="list-style-type: none">• France (EUR 76.3 billion),• Germany (EUR 57.6 billion),• Italy (EUR 56.9 billion) and• Spain (EUR 52.3 billion). <p>The next grouping of Member States was the Netherlands (EUR 28.2 billion), Poland (EUR 26.4 billion) and Romania (EUR 16.8 billion). Three quarters (76.0 %) of the total value of EU's agricultural industry in 2020 came from these seven Member States (Eurostat, 2022).</p> <p>(image)</p> <p>Farmers had to make purchases of goods and services to be used as inputs in the production process; they bought items like seeds, fertilizers, animal feeding stuffs and fuel for their tractors as well as veterinary services, among other things. These input costs are termed 'intermediate consumption' for the agricultural industry came to a total of EUR 235.8 billion for the EU as a whole in 2020. Some costs are associated with the farming of animals; they required feed, which accounted for approaching two-fifths (38.3 %) of total intermediate consumption costs.</p> <p>Developments in Output and Consumption of the Agricultural Industry</p> <p>The gross value added generated by the EU's agricultural industry in 2020 also fell back from its peak in 2019. Intermediate consumption costs for the EU's agricultural industry were an estimated EUR 235.8 billion in 2020.</p> <p>(image)</p> <p>Agricultural Labor Productivity</p> <p>Over the long-term, the amount of agricultural labour used has been in steep and steady decline</p> <p>Total agricultural labour input declined sharply in almost all Member States during the period between 2005 and 2020; the sharpest declines were in Bulgaria (an average -8.0 % per year), Slovakia (-5.5 %per year), Estonia (-5.1 % per year), Latvia (-4.5 % per year) and Romania (-4.4 % per year).</p> <p>(image)</p> <p>Agricultural Income Per Annual Work Unit</p> <p>Agricultural income as defined by real factor income per AWU for the EU fell slightly in 2020 (-0.8 %)</p>	
---	--

	<p>Agricultural income, as defined by deflated (real) factor income per AWU and expressed as an index (called Indicator A), for the EU as a whole in 2020 was an estimated 0.8 % less than in 2019. This reflected a lower (-3.6 %) level of factor income compared with 2019 that was notionally shared amongst a reduced agricultural labour input (down -2.9 %)</p> <p>(image)</p>
<p>1.8. EU Common Agricultural Policy (CAP)</p>	<p>There are about 10 million farms and 22 million labor force work in the agriculture sector in the EU.</p> <p>The EU Common Agricultural Policy (CAP) was first launched in 1962. The new CAP (2023-2027) was agreed on 2 December 2021 for a fairer, greener and more performance-based CAP which provides more targeted support to relatively smaller firms.</p> <p>€387 billion in funding has been allocated to the CAP for the 2021-27 period (Eurostat, 2022).</p> <p>The objectives are:</p> <ul style="list-style-type: none"> • to ensure a fair income for farmers; • to increase competitiveness; • to improve the position of farmers in the food chain; • climate change action; • environmental care; • to preserve landscapes and biodiversity; • to support generational renewal; • vibrant rural areas; • to protect food and health quality; • fostering knowledge and innovation
	<p>Power point presentation version of the section with voice over</p> <p>Here you can watch the lecture presentation of previous sections as a whole.</p>
<p>References</p>	<p>EU (2022). The Common Agricultural Policy at Glance. https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cap-glance_en (access date 5 March 2022).</p> <p>Eurostat (2022). Performance of the Agricultural Sector. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector#Value_of_agricultural_output (access date 5 March 2022).</p>

	<p>Johnston, F.B. and Mellor, J.W. (2020). The Role of Agriculture in Economic Development. <i>The Role of Economic Review</i>. 51(4): 566-593.</p> <p>Lenhardt, A. et al. (2012). Agriculture Policy Guide. Chronic Poverty Advisory Network.</p> <p>Meijerink, G. and Roza, P. (2007). The Role of Agriculture in Economic Development. <i>Markets, Chains, and Sustainable Development Strategy & Policy Papers</i>. Wageningen.</p> <p>Stiglitz, J.E. (1987). Theoretical Aspects of Agricultural Policies. <i>The Worldbank Research Observer</i>. 2(1): 43-60.</p> <p>UNCTAD (2022). Trade and Agricultural Policies to Support Small Scale Farmers and Enhance Food Security. https://unctad.org/fr/node/27525 (access date 5 March 2022).</p> <p>WB (2022). Agriculture and Food. https://www.worldbank.org/en/topic/agriculture/overview#1 (access date 5 March 2022).</p>
--	--

2. Context



Page	Content
Description	<p>All of us need to eat. Not only that, we are dependent on our planet for clean air, fresh water, and for the well being provided by access to nature. In this section of the module, we will explore the quadruple helix model innovation, partnership opportunities and investments in food and agriculture.</p> <p>LEARNING OBJECTIVES</p> <ul style="list-style-type: none"> • Identify different stakeholders and approaches (quadruple helix model) for business opportunities in food and agriculture • Analyse the progress of SDG indicators on food and agriculture • Learn about the international organizations' opportunities on food and agriculture
	SDG4BIZ-Context orientation section.mp4
2.1. Food and Agriculture Organization (FAO) and SDGs	(image)
	Global challenges facing food and agriculture

	<p><i>Rapid changes in food systems call for effective national and international governance</i></p> <p>(image)</p> <ol style="list-style-type: none"> 1. Sustainably improving agricultural productivity to meet increasing demand 2. Ensuring a sustainable natural resource base 3. Addressing climate change and intensification of natural hazards 4. Eradicating extreme poverty and reducing inequality 5. Ending hunger and all forms of malnutrition 6. Making food systems more efficient, inclusive and resilient 7. Improving income earning opportunities in rural areas and addressing the root causes of migration 8. Building resilience to protracted crises, disasters and conflicts 9. Preventing transboundary and emerging agriculture and food system threats 10. Addressing the need for coherent and effective national and international governance
<p>2.2. Quadruple Helix Model Innovation and Social Innovation</p>	<p>(image)</p> <p>(Carayannis & Campbell, 2009)</p> <p>Configuring the national innovation environment consists of streams and connections between industry, government, university, and economy. It represents an important economic determinant of a modern society in the field of science, technology and innovation development (OECD, 1996). Understanding the significance of knowledge, technology and innovation for the growth, development and maturation of contemporary society, led to the study of a "knowledge-based economy" (Chen & Dahlman, 2005). A knowledge-based economy implies the existence of a national innovative environment, and the introduction of a Quadruple Helix model. Functioning of the Quadruple Helix model presumes four key actors (university-industry-government-civil society) that act on the principles of open circulation of ideas and knowledge, based on a continuous learning process, communication and mutual cooperation (Carayannis & Campbell, 2009). Such spiral connections result in the capitalization of knowledge, creating new forms (organizations, projects) in the processes of key actors interaction and do not belong exclusively to any of them (Carayannis & Campbell, 2009).</p>

	<p>(image) (https://people.utm.my/nurazaliah/2020/05/10/quadruple-and-quintuple-innovation-helix-framework/)</p> <p>The quadruple and quintuple innovation helix framework describes university-industry-government-public-environment interactions within a knowledge economy.</p> <p>In innovation helical framework theory, first developed by Henry Etzkowitz and Loet Leydesdorff and used in innovation economics and theories of knowledge, such as the knowledge society and the knowledge economy, each sector is represented by a circle (helix), with overlapping showing interactions.</p> <p>The Carayannis and Campbell quadruple helix model incorporates the public via the concept of a ‘media-based democracy’, which emphasizes that when the political system (government) is developing innovation policy to develop the economy, it must adequately communicate its innovation policy with the public and civil society via the media to obtain public support for new strategies or policies.</p>
	<p>Four people-centered innovation areas for food systems transformation</p> <p>Innovation should be understood in a broad-based, inclusive way on how we collaborate with different stakeholders, including the most vulnerable, and how we use existing and new knowledge and technologies – scientific, indigenous and of other kinds – to inform those evidence-based solutions through an ecosystem approach.</p> <p>The Innovation Lever identified four Innovation areas to support national food systems pathways to fast-track transformation by fostering holistic and inclusive innovation:</p> <p>National and Regional Ecosystems, to improve how we innovate nationally and regionally</p> <p>Societal and Institutional Innovation, to improve how we collaborate</p> <p>Knowledge and Technological Innovation, to improve knowledge systems and technology solutions</p> <p>Data and Digital Innovation, to improve and integrate data and digital systems</p>
	<p>(image)</p> <p>A Roadmap for Innovation: actions for a holistic transformation</p> <p><i>As part of the Innovation Lever, an array of public, private and non-profit actors collaborated to define technical, organizational, institutional and political interventions that pave the way for country stakeholders to fast-track food systems transformation by encouraging innovation.</i></p>

	<p><i>To help countries to accelerate their food systems transformation, the Innovation Lever will continue to support country stakeholders to take advantage of innovation opportunities. The Innovation Lever will act as a resource that countries can use to share knowledge and engage potential partners to take actions that implement the four innovation areas:</i></p> <p>Promoting national and regional innovation ecosystems by creating inclusive national innovation strategies that are adequately supported, committed to and resourced. The Innovation Lever identified the Food Innovation Hubs as a potential delivery mechanism for countries to stimulate innovation at national and regional levels through collaborative multistakeholder action using knowledge, technology, data and institutional capacity to develop locally driven innovation ecosystems.</p> <p>Encouraging societal and institutional innovations that improve existing models of collaboration and partnerships, and create new ones, to ensure and protect the right of all stakeholders – be they small-scale producers, women, Indigenous peoples, community-based organizations, entrepreneurs or others – to participate fairly in decision-making in relation to food systems. The Innovation Lever created principles for multistakeholder collaboration that the UN Development Programme is taking forward as part of an initiative to realize greater participation in food system decision-making.</p> <p>Employing and supporting new and existing knowledge and technology to create and implement net-zero nature-positive solutions that work for people. The Innovation Lever identified the 100 Million Farmers platform as a way to incentivize farmers and enable consumers to place climate, nature and resilience at the core of the food economy to boost nature-positive production, advance equitable livelihoods and build resilience to vulnerabilities, shock and stress.</p> <p>Improving and integrating data and digital systems to ensure they are aligned, agile and interoperable and can support a climate-smart and inclusive food systems transformation. The Innovation Lever identified the Global Coalition for Digital Food Systems Innovation,⁴ as a coalition with the capability to support countries to employ data in inclusive and responsible ways, thus creating new visibility of, and opportunities within, food systems.</p>
	<p>Societal and institutional innovation <i>To improve how to collaborate to transform food systems:</i></p> <ul style="list-style-type: none"> • Develop a shared understanding of the key issues to be addressed, considering the long-term outcomes. Ask yourself: Have you analysed the problem? Have you checked with other stakeholders? • Collaboration should be context-specific, locally owned and aligned with country and global goals, with an effort to keep food consumption as a driver. Ask yourself: Does the effort support national priorities? Are you working with local champions?

	<ul style="list-style-type: none"> • Establish multistakeholder structures that are accessible and inclusive from the beginning. Ask yourself: Are you involving affected people in decision-making? Are you reducing barriers for marginalized communities and supporting them to participate? Who is missing? Are there other groups working on the same issue? • Design for an inclusive and adaptable journey that addresses emerging trends, power imbalances and challenges from different perspectives. Ask yourself: Are you starting with questions or answers? Have you addressed power imbalances between the group and/or others you work with? Will you review partnership strategies? Are you monitoring the situation to ensure you are helping those you intend to? • Proactively promote and reinforce the right to effective participation and to think differently about implementation. Ask yourself: Are all actors able to have a say and input into solutions? • Gauge and manage risk in multistakeholder dialogues. Ask yourself: Have you created a safe space? What are the risks? Are risks of misuse of power being addressed? • Develop common and agreed-upon food- related policies that balance different interests and goals. Ask yourself: Are public and private actors involved? How will this affect other areas of the food system? Are you promoting a common approach across the public sector?
<p>2.3. Social Innovation cases in Food and Agriculture</p>	<p>Enabling innovation platforms and design sprints (image)</p> <p>How social innovation contributes to more sustainable food systems</p> <p>The changes of food system towards more sustainable models correspond to different paths and dynamics of the value chain (Cristovão & Tibério, 2009), that is i) consumption of local produced food; ii) establishment of direct relations between producers and consumers; iii) revitalization of distribution, processing and production structures; iv) networks of producers, local governments, entrepreneurs and other leaders; v) promotion of local economy and rural development.</p> <p>In the agri-food system, social innovation has been developing over the last decades through a large diversity of forms, both in advanced countries (Adam 2006; Larsson, 2012; Jolink & Niesten, 2015) and developing countries (Seelos & Mair, 2005; Bansal et al, 2019). It is characterized by the active involvement of consumers, and not only of producers. On the part of consumers, it ranges from a new attitude regarding fair trade, concerns with healthy and quality produces and purchase decisions influenced by the environmental impact of their choices. On the part of producers, a variety of responses has been created under the growing awareness of environmental impacts, animal wellbeing issues and the need for a healthy food supply.</p> <p>The empowerment dimension of social innovation is about increasing the socio-political capabilities of individuals and communities (Moulaert et al. 2005) by including people in decision-making and service provision and creating common visions for change (González et al. 2010). Empowering people means increasing the recognition, access and voice rights of</p>

	<p>marginalised groups (Martinelli 2010). Renting et al. (2012) suggest that access to healthy food in a socially inclusive way and engagement in food growing is a way of empowerment. In addition, building strong community is a way of increasing their socio-political capabilities of the community supported agriculture (CSA) initiatives, also considered “a major selling point” in attracting more members (Schnell 2007, p. 559). There is a positive correlation between community capital and the retention of members (Flora and Bregendahl 2012).</p> <p>Social capital, cooperation of people and communities, and collective management of resources as well as re-orienting policies to support communities and protect livelihoods is regarded as essential for the way forward (Pretty 2020; Graddy-Lovelace 2020). It seems that community supported agriculture has an important role to play in the future as it embodies all the features considered for more sustainable food systems: it is solidarity-based, equitable, ecologically sound, and healthy. But most importantly, the CSA has demonstrated for now that it is resilient in times of crisis and not only provides food but nurtures communities and cares for the vulnerable people.</p>
	<p>(image)</p> <p>Agricultural Marketing (tarimsalpazarlama.com) is an example of a cross-cutting social innovation including the environmental field. It represents the first online platform in Turkey for farmers to sell their products without “middlemen” involvement, to track new information about, e.g. stock market prices etc. and farming as well as to search for new technologies. The initiative aims to mitigate losses from farming that typically cause the farmers to migrate to cities and eventually end up unemployed. The project has been supported by sponsorships from the private sector but progress was not smooth. The initiators think that rules and regulations sometimes become barriers to growth.</p> <p>(image)</p> <p>LastMinuteSottoCasa is a website which allows shopkeepers with food near to its expiry date to send out a ‘food alert’ to local people, advertising last-minute bargains. The aim of this website is to avoid food waste, help people find low-priced, good-quality fresh food and enable shopkeepers to make a little money on products that would otherwise be thrown away. Undoubtedly such contributions to ‘quality of life’ are often referred to as social innovation.</p> <p>Bont Market Garden (Bont MG) – example of community supported agriculture (CSA)</p> <p>Situated on a 5-acre’ land in Southeast Wales about 10 miles away from a big urban centre, Bont MG is a social enterprise registered as industrial provident society for community benefit and has about 100 shareholders— members of the enterprise. The actual growing on the site started in 2010. The garden operates as a box scheme with weekly deliveries to subscribers. Member-shareholders are not necessarily subscribers and for those who are, there is a small discount. Bont MG also sells its produce at a farmers’ market in the nearby urban centre and delivers to local restaurants. The land is rented from a neighbouring community running a forest garden project and hosting events. Part of the initial financial capital of the garden comes from selling one-off shares of £50 each, which can be withdrawn if the shareholder does not wish to continue the membership. There is no monthly or annual subscription fee. Reportedly, more than 100 investors</p>

	<p>contributed with almost £10.000 in total. This enabled the purchase of a second-hand tractor and building two polytunnels. The enterprise received funding from the Welsh Government via the Rural Development Plan (RDP) under the EU Common Agriculture Policy (CAP), which was used for ‘knowledge transfer’ and another grant from an independent foundation to rent the land, employ a grower- horticulturalist and purchase some basic infrastructure. The project’s revenue comes from sales at the farmers’ market and the weekly box deliveries/restaurant deliveries.</p>
<p>2.4. Food and agriculture: partnership opportunities for civil society organizations</p>	<p>Food Systems Initiative by World Economic Forum Goal: To deliver inclusive, sustainable, efficient and nutritious & healthy food systems.</p> <p>The World Economic Forum’s Food Systems Initiative is working to establish the conditions for collective leadership action through systems thinking, institutional leadership alignment, and catalyzing and supporting an international consensus and collective action agenda and a series of leadership milestones that can accelerate those actions.</p> <p>The FSI fosters cross-sector collaborations and involves working across Americas, Asia, Africa, and Europe to implement these commitments. The FSI aims to:</p> <ul style="list-style-type: none"> • Facilitate multistakeholder dialogues such as the Food Systems Dialogues, related to food systems transformation around the world. • Mobilize leadership and expertise to achieve agriculture-sector transformation through the Transformation Leaders Network which engages over 150 action leaders and experts to exchange knowledge and systems leadership thinking, best practices, and experience across regions and sectors. • Strengthen the positive impact of agricultural value chains leading to food that is produced efficiently and sustainably in a way that is accessible to all, supporting a transition to healthier diets and improved environmental outcomes. The Food Action Alliance is comprised of a coalition of organizations and initiatives, who support these systemic changes and enhance productivity. • Leverage the role of emerging technology innovations and create a robust innovation ecosystem at the country and regional level through the Food Innovation Hubs, which promotes collaboration that is multistakeholder, precompetitive and market-based. • Drive multiple pathways for enhancing sustainable nutrition through alternative proteins and diversified high-protein crop varieties, improving sustainability of existing animal-based production, and complementing all efforts through consumer behavior and demand-based shifts. • Support UN Food Systems Summit action tracks through game-changer initiatives as well as through key leadership milestones. The action tracks are complemented by levers for change to offer cross-cutting and transformative impact from enabling agendas such as youth and gender empowerment, finance, human rights, and innovation.

	<p>Four Core Aspirations for the World's Food Systems</p> <p>(image)</p> <p>Through ongoing dialogues hosted by the World Economic Forum and in collaboration with Deloitte, leaders from all sectors and regions have aligned around four core aspirations for the world's food systems to be:</p> <ol style="list-style-type: none"> 1. Inclusive, ensuring economic and social inclusion for all food system actors, especially smallholders, women and youth. 2. Sustainable, minimizing negative environmental impacts, conserving scarce natural resources and strengthening resiliency against future shocks. 3. Efficient, producing adequate quantities of food for global needs while minimizing post-harvest loss and consumer waste; and 4. Nutritious and healthy, enabling consumption of a diverse range of healthy, nutritious, and safe foods. <p>The aspiration for inclusive, sustainable, efficient, and healthy food systems will not be easy to achieve. A number of major global trends will pose both challenges and opportunities in the future. From technology to government, the implications reach across a range of sectors and will require a holistic approach in order to address systemic and interconnected challenges.</p>
	<p>FAO strategy for partnerships with Civil Society Organizations</p> <p>(image)</p> <p>https://www.fao.org/3/i3443e/i3443e.pdf</p> <p>By expanding its collaboration with CSOs, FAO aims to capitalize on the capacities, knowledge and skills of CSOs. FAO ensures that any assistance it provides to vulnerable people is delivered in a coordinated and accountable way. These mutual benefits provide the basis for FAO to engage in partnership with CSOs.¹⁴</p> <p>FAO acknowledges the following comparative advantages of CSOs: their outreach capacity to the poor and vulnerable; their mobilization and advocacy capacity; the representation of their broader networks; their key role in community-based management of natural resources; and their knowledge of local contexts.</p> <p>Some of these mutual benefits are:</p> <p>Benefits for FAO</p>

	<ul style="list-style-type: none"> • Inclusion in discussions of isolated and vulnerable groups. • Better representation in debates and discussions. • Increased advocacy and mobilization capacity. • Complementary outreach and capacity for field. • activities, including improved emergency response. • Enhanced ownership of endorsed policies/strategies. • Access to resources (human, physical, knowledge). <p>Benefits for CSOs</p> <ul style="list-style-type: none"> • FAO provides access to a neutral forum for discussions vis-à-vis private sector, Member States and other stakeholders. • Access to information, capacity building, technical knowledge and expertise on key food security areas. <p>Possibility of suggesting items for discussion in the agendas of FAO meetings.</p> <ul style="list-style-type: none"> • FAO can facilitate discussion and the exchange of views between CSOs and Member States at all levels. <p>https://www.fao.org/3/i3443e/i3443e.pdf</p>
	(image)
	<p>South-South Cooperation</p> <p>Diverse and flexible SSC modalities for exchange at policy, institutional and grassroots levels</p> <p>(image)</p> <p>https://www.fao.org/3/I5163E/I5163e.pdf</p> <p>Countries in the South offer a myriad of development solutions – knowledge, experiences, good practices, innovative policies, technologies, and resources – that have proven cost-effective and have huge potential to be up-scaled for the benefit of others. This Guide starts from the premise that South-South Cooperation (SSC) is playing a greater role than ever before in the international development landscape. Innovation in the South is generating new tools and partnerships for tackling issues of food insecurity, poverty and sustainable agriculture. In addition, Triangular Cooperation is a growing phenomenon, whereby a third party, usually an Organisation for Economic Co-operation and Development (OECD) country or multilateral organization, provides resources to facilitate SSC.</p>
	(image)
	Joint SDG Fund

	<p>The Joint SDG Fund is an inter-agency, pooled mechanism for integrated policy support and strategic financing. An action-oriented United Nations platform to reorient public and private capital towards the Sustainable Development Goals (SDGs) in developing countries. A joint collaborative hosted by the Joint SDG Fund, and provide investors a safe space to innovate, collaborate, and co-invest.</p> <p>Visit the fund's website to learn more about the fund and its activities around the world: https://www.jointsdgfund.org/where-we-work</p>
	<p>Joint SDG Fund food and agriculture portfolio case: Suriname</p> <p>The Accelerator for Agriculture and Agroindustry Development and Innovation Plus (3ADI+): Sustainable Pineapple Value Chain Development</p> <p>Why</p> <p>Suriname's interior regions are underdeveloped and under-served, with the population suffering disproportionately from poverty and unemployment. Sustainable agriculture is considered a growth opportunity. Modest collaboration across stakeholders, lack of investments, absence of extension services, and limited business skills and knowledge of markets have prevented the emergence of sustainable value chains thus far.</p> <p>What</p> <p>At least 335 hectares will be cultivated for 1000 MT of organic pineapple production, leading to an increase of farmers' income. This shift towards permanent organic farming systems with a decreased portion of land use will significantly reduce environmental pressure on primary and secondary forests. By supporting 110 small businesses and farmers, at least 100 full time equivalent jobs will be created. At least 30% of small farmers and businesses supported will be women led. At least 215 hectares of forest will be preserved.</p> <p>How</p> <p>A mix of financing solutions is proposed to address the financing constraints that have prevented Suriname to seize the great potential of the pineapple value chain. These are: a collateral support facility that will de-risk commercial bank loans and allow private sector banks to lend to smallholder farmers, a Pineapple Cooperative Development Company that will centralize production planning and ultimately act as marketer of the pineapples and a Pineapple Innovation Hub, a local foundation that will provide tailored agronomic and business support and management services to farmers. This holistic</p>

	<p>approach offers a context-specific blended finance solution for placing Suriname on a course to be a sustainable pineapple producer for the local and international markets.</p> <p>Financial instruments</p> <p>The collateral support facility will provide security cash collateral covering 20-50% of the value of loans provided by commercial banks to pineapple farmers. The 3 year loans will cover farmers' input and services costs to improve their agronomic practices under an out grower scheme managed by the Pineapple Innovation Hub.</p> <p>https://www.jointsdgfund.org/where-we-work/suriname</p>
<p>2.5. Business Opportunity Models towards food and agriculture SDGs</p>	<p>(image) https://www3.weforum.org/docs/WEF_CO_NVA_Overview.pdf</p> <p>Stages of the agrifood system</p> <p>Guidance on core indicators for agrifood systems</p> <p>Measuring the private sector's contribution to the Sustainable Development Goals</p> <p>(image)</p>
	<p>(image) https://www.fao.org/3/cb6526en/cb6526en.pdf</p> <p>The primary audience for the indicators for the private sector is the private sector – both large and small companies – that can use the indicators in their corporate reporting to illustrate alignment with the SDGs. Along these lines, national governments can also use the indicators in formulating regulatory requirements and guidance for the private sector on corporate sustainability reporting, in order to better integrate corporate sustainability data into national-level accountability and reporting framework, including national SDG progress reports. Similarly, existing standard-setting organizations, investors, voluntary frameworks and benchmarks can integrate the indicators into their own systems to facilitate greater harmonization of the data requested from the private sector.</p>
	<p>(image) https://knowledge4food.net/wp-content/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf</p>

	<p>Society Works conducted the mapping project on social entrepreneurship for food security that was granted and supported by the Food & Business Knowledge Platform (F&BKP) in the Netherlands. The findings of this mapping project have been synthesized in the report.</p>
	<p>Enabling actions between profit-making and CSOs</p> <ul style="list-style-type: none"> • Partnerships between social entrepreneurs with corporations (e.g. CSR activities), governments (e.g. food security policy initiatives), and civil society (e.g. lobby and advocacy) will only occur if social enterprises can show their added value, their special role in the market, and the social impact they create. • Social entrepreneurs still have limited awareness about the importance of social impact measurement, and thus needs support on impact indicators, measurements, and reporting so they can prove to actors in support organizations and the wider ecosystem that they have untapped added value in the fight against food insecurity and malnutrition. • Social entrepreneurs are treated too much like a separate group with their own institutions and networks yet without influential linkages to important actors in the wider ecosystem. Therefore, all actors (corporations, governments, and civil society) should be sensitized by awareness campaigns, exchanges of best practices, and dialogues and look for ways to create partnerships with social entrepreneurs and their support organizations by looking at their unique role and contributions in the domains of food security, private sector development, employment creation, and inclusive business models. Partnerships between social entrepreneurs with corporations (e.g. CSR activities), governments (e.g. food security policy initiatives), and civil society (e.g. lobby and advocacy) will only occur if social enterprises can show more adequately their added value, their special role in the market, and the social impact they create. The support organizations could offer tools to make their impact more visible. • Support to social enterprises in the food value chain is diverse. There is a distinction between financial support and non-financial support. There is support that focuses on entrepreneurial skills, networking, agricultural advice, and technical development. In the sample, most support that social entrepreneurs received came from NGOs and foundations. Non-financial support is more national and less international oriented, while financial support is more international oriented. <p>https://knowledge4food.net/wp-content/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf</p>
	<p>(image)</p>
	<p>(image)</p> <p>https://cgspace.cgiar.org/bitstream/handle/10568/110864/Bundles_agrifood_transformation-1.4.21.pdf</p>

	<p>Co-creation of socio-technical innovation bundles necessarily requires multi-party cooperation among public and private sector organizations</p> <p>Develop socio-technical innovation bundles: Despite the abundance of rapidly progressing innovations across all stages of AVCs today—in digital, genetic, and other spaces—no magic scientific or engineering bullets exist. Few, if any, innovations can adapt and scale effectively without essential supporting policies and institutions.</p>
2.6. Impact Investments in Food and Agriculture	Global impact investing network (GIIN)
	(image)
	(image)
	(image)
	<p>Roadmap for the Future of Impact Investing</p> <p>(image)</p> <p>https://www.findevcanada.ca/en/blog/recap-giin-forum-2018-reshaping-financial-markets-more-inclusive-and-sustainable-future</p> <p>The GIIN envisions a fast-approaching future when social and environmental factors are integrated into investment decisions simply by default, as the ‘normal’ way of doing things. The value proposition of impact investing (and other forms of investing that integrate impact), will enjoy wide acceptance, with plentiful evidence in their favor. Businesses and investors will hold themselves accountable to multiple sets of stakeholders, including shareholders, employees, customers, suppliers, affected communities, and local and global environments. The concept of ‘externalities’ will be relegated to history, with finance theory accounting for risk, return, and impact equally well. Ultimately, financial markets will be central in supporting solutions to critical threats facing the world.</p>
References	<p>Business opportunities for NGOs in Food and Agriculture Quadruple Helix Model Lecture as video format https://www.fao.org/sustainable-development-goals/indicators/en/</p> <p>https://www.fao.org/3/i6583e/i6583e.pdf</p> <p>Carayannis, E. G., & Campbell, D. F. (2009). 'Mode 3 and Quadruple Helix': toward a 21st century fractal innovation ecosystem. <i>International Journal of Technology Management</i>, 46(3-4), 201-234.</p> <p>Chen, D. H., & Dahlman, C. J. (2005). The knowledge economy, the KAM methodology and World Bank operations. <i>World Bank Institute Working Paper</i>, (37256).</p>

<p>https://people.utm.my/nurazaliah/2020/05/10/quadruple-and-quintuple-innovation-helix-framework/</p> <p>https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf</p> <p>https://www.weforum.org/communities/100-million-farmers</p> <p>https://www.aimforclimate.org</p> <p>Ferreiro, Maria & Salavisa, Isabel & Sousa, Cristina & Bizarro, Sofia. (2021). <i>Social innovation in food systems: towards food security and sustainability</i>. 10.34190/EIE.21.056.</p> <p>Mert-Cakal, T., & Miele, M. (2020). 'Workable utopias' for social change through inclusion and empowerment? <i>Community supported agriculture (CSA) in Wales as social innovation. Agriculture and Human Values</i>, 37(4), 1241-1260.</p> <p>http://www.socialinnovationacademy.eu/8-pioneer-social-innovations-food/</p> <p>https://www.weforum.org/projects/strengthening-global-food-systems</p> <p>https://www3.weforum.org/docs/IP/2016/NVA/WEF_FSA_FutureofGlobalFoodSystems.pdf</p> <p>https://www.fao.org/3/i3443e/i3443e.pdf</p> <p>https://www.jointsdgfund.org</p> <p>https://www.fao.org/3/cb6526en/cb6526en.pdf</p> <p>https://knowledge4food.net/wp-content/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf</p> <p>https://cgspace.cgiar.org/bitstream/handle/10568/110864/Bundles_agrifood_transformation-1.4.21.pdf</p> <p>https://theqiin.org/impact-investing/</p>	
--	--

	https://thegiin.org/assets/Financing%20the%20SDGs_Impact%20Investing%20in%20Action_Final%20Webfile.pdf
--	---

3. Motivation



Page	Content
	<p>Description</p> <p>In this section of the module, we are focusing on the many challenges and also opportunities to take action for a sustainable future so that we become more aware of sustainable trends. In this way, we can understand the earth’s environmental situation now, the planetary boundaries and how food and agriculture business is affecting these.</p> <p>Learning objectives</p> <ul style="list-style-type: none"> • Comprehend the link between sustainability and food and agriculture • Develop a sustainability strategy for a food establishment (especially for small and medium-sized enterprises) • Learn about the descriptive (qualitative) life-cycle analysis (LCA) as a method to analyze environmental impacts of products, production systems and services
3.1. Sustainability Planning for Food and Agriculture Businesses	<p>Sustainability in food and agriculture</p> <p>Sustainability is an urgent and universal concern. We can no longer delay our efforts to fight the climate crisis. The time to act is now. For businesses, the challenge of sustainable transformation is balancing the need to keep business in motion</p>

	<p>while making changes to reach your sustainability ambitions. It's complex. There can be tough realities of your sector. The study of Fidlerová et al. (2022) reveal that organizations have differences in the approach to sustainability issues, the scope of knowledge, interest, competencies in sustainable development, and the content of implementation of sustainability in different sectors and regions.</p> <p>Agriculture production systems are facing unprecedented obstacles from an increasing demand for food for a growing population, competition over natural resources, loss of biodiversity, pests and diseases, along with the negative effects of climate change.</p> <p>In the next 30 years, agriculture will face unprecedented pressures, including a 30% increase in the world population, competition for scarce land, water and energy resources, and the threat of climate change. To provide for a population projected to reach 9.3 billion in 2050 and estimates are that food production will need to increase from the current 8.4 billion tonnes to 13.5 billion tonnes a year. Achieving that level of production from an almost depleted natural resource base will be impossible without profound changes in our food and agriculture systems. We need to expand and accelerate the transition to sustainable food and agriculture which ensures world food security, provides economic and social opportunities, and protects the ecosystem services on which agriculture depends (Sustainability in Food and Agriculture, 2022).</p> <p>Five principles of sustainable food and agriculture</p> <p>Improving efficiency in the use of resources is crucial to sustainable agriculture Sustainability requires direct action to conserve, protect and enhance natural resources Agriculture that fails to protect and improve rural livelihoods, equity and social wellbeing is unsustainable Enhanced resilience of people, communities and ecosystems is the key to sustainable agriculture Sustainable food and agriculture requires responsible and effective governance mechanisms</p> <p>(FAO-Food and Agriculture Organization, 2017)</p>
	<p>Food and Agriculture Organization (FAO) of the United Nations and Sustainable Development Goals FAO supports governments and partners to design the right policies and programs to end hunger, promote food security and promote sustainable agriculture for millions of people around the world.</p> <p>Sustainable Development Goals (in relation to food and agriculture)</p> <ul style="list-style-type: none"> • End hunger, achieve food security and improved nutrition and promote sustainable agriculture • Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

	<ul style="list-style-type: none"> • Conserve and sustainably use the oceans, seas and marine resources • Achieve gender equality and empower all women and girls. Evidence shows that when rural women have the same access as men to productive resources, services and economic opportunities there is a significant increase in agricultural output and immediate and long-term social and economic gains. • Ensure availability and sustainable management of water and sanitation for all • End poverty in all its forms everywhere. Inclusive agriculture, food production and off-farm economies can create jobs and eliminate hunger in rural areas, giving people a chance to feed their families and live a decent life. • Ensure inclusive and quality education for all and promote lifelong learning. FAO assists countries in establishing school gardens and school food programmes. • Ensure access to affordable, reliable, sustainable and clean energy for all. To deliver more food with less and cleaner energy, food and agriculture systems will gradually need to decouple from fossil fuel dependence and embrace renewable energy sources that reduce impacts on climate change while ensuring food security. Achieving the transformation to energy-smart food systems will require coordination in policymaking, appropriate legal frameworks and a multi-stakeholder dialogue to support action. • Ensure healthy lives and promote well-being for all. FAO works to strengthen the capacities of governments and the private sector to ensure food quality and safety. For FAO, health goes beyond human health to also include animal, plant and environmental health, a One Health approach. Healthy animals contribute to healthy people and to sustainable food production. • Promote inclusive and sustainable economic growth, employment and decent work for all • Reduce inequality within and among countries. Poor and vulnerable people, especially rural women, continue to have limited access to land, natural resources, credit and services. Secure tenure rights for those who farm, keep livestock, fish, and manage forests are crucial for addressing inequalities. • Build resilient infrastructure, promote sustainable industrialization and foster innovation. • Make cities inclusive, safe, resilient and sustainable. Rapid urban growth in the developing world is placing enormous demands on food systems. Cities expand into fertile land increasing the food needs of urban families competing for natural resources such as land and water. • Ensure sustainable consumption and production patterns • Take urgent action to combat climate change and its impacts • Promote just, peaceful and inclusive societies. Food security and a healthy agricultural sector can play a critical role in preventing conflict and distress migration, and in building peace. In many countries, disasters or political instability have resulted in protracted crises and food shortages. <p>Revitalize the global partnership for sustainable development (FAO, 2022)</p>
--	---

	<p>The world is undergoing changes that will shape the livelihood of millions of people in the coming years. Understanding the root causes of various trends (below) and the relationship between them will aid manage the demand in solutions for future food security and sustainable livelihoods for everyone, in the changing world.</p>
	<p>Trends relating to future agriculture and food systems</p> <ol style="list-style-type: none"> 1. A rapidly increasing world population marked by growth "hot spots," urbanization, and aging. 2. Diverse trends in economic growth, family incomes, agricultural investment, and economic inequality. 3. Increased competition for natural resources. 4. Climate change impacts from extreme weather effects, droughts, floods, crop diseases etc. 5. Plateauing of agricultural productivity for many crops and animals. 6. Pests and diseases. 7. Increased conflicts, crises and natural disasters. 8. Poverty, inequality and food insecurity. 9. Dietary transitions affecting nutrition and health. 10. Structural changes in economic systems and employment implications. 11. Increased migration. 12. Advanced food production systems and resulting impacts on farmers' livelihoods. 13. Food losses and waste. 14. New international governance mechanisms for responding to food and nutrition security issues. 15. Changes in international financing for sustainable development. (FAO, 2017) <p>Trends in detail</p> <p>The competition for natural resource inputs for food, energy use (Harvey & Pilgrim, 2011), and national bio-economy strategies (Bracco et al., 2018) will likely increase, especially when countries seek renewable energy and material alternatives to fossil-based economy. Apart from the stress on land resources, over 40% of the rural population worldwide currently experiences water scarcity, due to agricultural, industrial and urban demands on water (FAO, 2018).</p>

	<p>Poverty, inequality, and food insecurity are among the key challenges of our time (FAO, 2018); yet, improving food availability is not enough to eliminate poverty and hunger. Actions to permanently reduce poverty and hunger go beyond agriculture and include social protection policies and safety nets to eliminate food insecurity.</p> <p>Not only the population growth but also dietary transitions to higher nutritional levels will drive up agricultural demand as a result of country food system transformations (Gomez et al., 2013). Although there are adequate resources on the world to provide sufficient food for even the growing population, the triple burden of malnutrition (undernutrition, micronutrient deficiencies, and obesity) still has an impact over a large population worldwide, as availability of food does not imply a balanced intake of nutritional elements (Gomez et al., 2013). On the other hand, balanced diets not only would provide significant positive impacts on the health and wellbeing of the public but also on the environment by entailing lower greenhouse gas emissions and lower resource intensity associated with the prevention of the overconsumption of animal-derived protein sources (Gomez et al., 2013; Rayfuse & Weisfelt, 2012).</p> <p>To meet the growing demand, the agricultural sector productivity should increase, as one of the premises of sustainable intensification (Garnett et al., 2013). In 2050, the productivity will need to be almost 50% more than that of 2012 (World Bank Group, 2016). Even more agricultural output would be needed under a scenario of increasing food waste, inequalities in income and food distribution and climate change (FAO, 2018).</p> <p>Climate change is jeopardizing food security; yet, agriculture is one of its major causes. Agriculture, forestry and other land use sectors contribute to an estimated 21% of annual greenhouse gas emissions globally, and energy inputs for the agrifood chain contribute an additional 10% (FAO, 2011; Sims et al., 2015). Climate change deteriorates livelihoods and poses direct risks on food security, and leads to decreased employment opportunities and poverty, and causes an increase in migration (FAO, 2016).</p> <p>Urbanization causes a shift of labor out of the food and agricultural systems, and may entail a decline in agricultural productivity in land-restricted communities (Qin & Liao, 2016). In most low- and middle-income countries, these trends are coupled with population growth that increases the demand for agricultural products. The trend towards coordinated, capital-intensive agrifood chains can create barriers to small-scale producers and agro-processors in local, national and global markets.</p> <p>The increase in agricultural demand will, in turn, promote further investments in food and agricultural systems. However, it is estimated that business-as-usual investment structures and social protection expenditures would leave hundreds of millions of people under-nourished by 2030. Investments will need to be accompanied by sustainable social policies (FAO, 2015).</p>
	<p>Developing a Sustainability Strategy (especially for small and medium sized businesses)</p>

	<p>Business sustainability is becoming increasingly important for managers in the modern economy. It can be described as a holistic continuous improvement process that includes the sound management of people and the environment. Business sustainability makes good business sense because the benefits feed directly back into the bottom. Where do we start as small-medium sized businesses?</p> <p>Business sustainability is a concept that involves doing everything better and more efficiently. True sustainability must be integrated into all operations of business – from policy and management through to on-ground activities such as purchasing, production and distribution.</p> <p>While sustainability needs to be driven from the top, it is not just the job of a single personnel or department. Sustainability involves everyone in the organization.</p> <p>Development of a sustainable strategy should be strongly aligned to a business plan.</p> <p>Developing a sustainability strategy</p> <p>Business Drivers Vision Objectives Current position Gap analysis (PEST Analysis, SWOT) Strategies Action plan Implementation Monitor and Review Improve</p> <p style="text-align: right;">The Business Plan</p> <p>Step 1: Determine Business Drivers</p> <p>Identify the pressures that are driving your business to become more sustainable. They may include:</p> <p>Potential to improve the bottom line through increased efficiencies Demonstrating leadership, improving your image and reputation Compliance and risk management</p>
--	---

	<p>Personal passion and commitment to make a difference</p> <p>Example: Company X producing cheese – Business Drivers</p> <p>Company X believes that sustainable growth and maximizing shareholder value into the future is achieved by:</p> <p>Considering customer needs and providing high quality and value: (driver – product quality)</p> <p>Establishing clean and efficient production processes that minimizes resource use and negative effects to the local environment. (driver – cost and environmental stewardship)</p> <p>Establishing strong links with locals. (driver – reputation management)</p> <p>Step 2: Set a vision</p> <p>A vision statement announces your future goals – it is your compass to show the world where your organization is heading. The best vision statements are short, clear, concise, realistic, and have measurable outcomes.</p> <p>You may choose to draft a sustainability policy that formalizes your company’s commitment to the vision, and display it in your workplace.</p> <p>Example: The big cheese company – vision</p> <p>The first company that, by its actions, demonstrates what sustainability is in all its dimensions: people, process, product, place, and profits.</p> <p>The Sustainability Goals</p> <p>We will produce sustainable cheese products by 2022, by:</p> <ul style="list-style-type: none"> -Reducing greenhouse emissions from energy consumption to zero -Reducing our impact on local water supplies via responsible use and disposal -Being a waste wise manufacturer -Working closely with our local community in all of our operations <p>Step 3 – Set objectives</p>
--	---

	<p>Your objectives relate to your sustainability goals. They are more specific than your goals as they contain numbers and dates.</p> <p>The cheese company – objectives</p> <p>To achieve your goals by 2022, the company has established these objectives:</p> <ol style="list-style-type: none">1- Reduce our consumption of mains water by 70%2- Source 100% of our energy from renewable sources3- Use 100% of raw materials from local environmentally accredited sources4- Generate zero waste to land fill5- Employ 95% of our staff from the local area <p>Step 4 – Establish current position</p> <p>To reach your goals you will need to develop a good understanding of the current position of your business – which includes an understanding of its key impacts.</p> <p>Example: Establishing the current position of Cheese company</p> <p>By using the Sustainability Self Evaluation Tool, we have been able to establish some benchmarking figures across a range of sustainability indicators including water and energy consumption. It helped us understand the extent of some of our key impacts and identify other sustainability issues we had not thought of.</p> <p>We recognize that we are large user of water so we engaged the auditing services of our local retailer to help us develop a detailed understanding of our consumption levels and patterns.</p> <p>Step 5 - Analyze gaps</p> <p>Identify the areas of business that have greatest impacts</p> <p>Ex: Cheese company - gap analysis</p>
--	---

	<p>The water audit provided us a detailed understanding of our consumption levels in the production patterns. We have identified the problematic areas and realized where we need to concentrate our effort for the greatest gain.</p> <p>Gap analysis - Using PEST analysis</p> <p>PEST analysis shows how external factors influence the position of your business. There are four sections: political factors; economic factors; social factors, and technological factors.</p> <p>Political factors: Rules and regulations</p> <p>Political factors are enforced by governing laws. Which laws you follow depend on the product you sell or the industry you're in. For example, food products within the USA must follow strict guidelines from the FDA.</p> <p>You need to make a list of every political factor that can affect your business. A few things to consider:</p> <ul style="list-style-type: none"> • Data protection law • Regulation • Health and safety law • Environmental law • Tax policies (tax rates and incentives) • Competition regulation <p>Economic factors: Taxes and buying patterns</p> <p>Taxes affect profit, revenue, and pricing.</p> <p>The employment or unemployment percent in a location affects buying patterns. If people are unemployed, they're buying what they need to survive. Expensive brands may be on their mind but not in their homes. This affects the profits of brands. A few things to consider:</p> <ul style="list-style-type: none"> • Interest rates • Exchange rates • Inflation • Taxes • Demand/supply
--	---

	<p>Social factors: Attitude and locations</p> <p>Social factors are your consumers. You need to look at buying habits, emotional needs, and consumer behavior. Because these are the people who directly influence your sales.</p> <p>Their social class, economic background, saving habits, and methods of communication are all factors to include and examine. A few things to consider:</p> <ul style="list-style-type: none"> • Population growth rate • Religion and beliefs • Average disposable income level • Family size and structure • Investing habits • Immigration <p>Technological factors</p> <p>Technology can be directly involved with your products, like manufacturing technologies. It can also be your product itself if you're in the tech space. Other things to include are what technology is available to your consumers. Are your customers tech savvy? Is it an advantage if they are? Examine these technological factors in your PEST analysis:</p> <ul style="list-style-type: none"> • Internet connectivity • Wireless charging • Automation/sustainable production <p>Gap Analysis: SWOT Analysis</p> <ul style="list-style-type: none"> • Strengths and weaknesses of the organization • Outside opportunities and threats for the organization <p>Strengths</p> <ul style="list-style-type: none"> • Produce high-quality products • Have dedicated employees
--	--

	<ul style="list-style-type: none"> • Technical capabilities <p>Weaknesses</p> <ul style="list-style-type: none"> • High cost of production • High electricity cost • Lack of water strategy • Long production process <p>Opportunities</p> <ul style="list-style-type: none"> • High demand for sustainable development from the community • High market demand • Possible partnerships <p>Threats</p> <ul style="list-style-type: none"> • Emerging startups providing different tastes • Competitors in the market • Advanced technological developments lessening production process • Low funding of government to carry out research <p>Step 6 – Develop strategies</p> <p>The Cheese Company water strategy</p> <p>Water efficiency strategy: will explore opportunities for more efficient water infrastructure. It will target the production process on the factory floor and water consumption in the office. Water catchment strategy: will explore options for the best way to capture, store and treat water for on-site use. Water education strategy: will focus on staff education to encourage all employees to play a positive role working towards the company’s water conservation objectives. Incentives and awards to employees.</p>
--	---

	<p>Water partnerships strategy: will aim to develop stronger links with our suppliers (suppliers of manufacturing equipment, water retailer, and other stakeholders) to explore opportunities to minimize consumption through innovation and technology.</p> <p>Step 7 – Develop action plan</p> <p>What actions will you undertake to accomplish your objectives?</p> <p>Cost and benefit calculations and payback periods Targets, milestones, target dates Budget Other resources including personnel, technical expertise, external agencies Monitoring, evaluation, and reporting processes</p> <p>Step 8- Implementation</p> <p>After the planning, it is time for the doing. Integrate actions into core business processes and regular reporting cycles. If necessary, develop or adjust policies and procedures for the aspects of your business and make sure the staff understand their role in the business.</p> <p>Step 9 – Monitoring and Review</p> <p>Monitoring progress towards the overall objectives. You can't manage what you can't measure.</p> <p>Step 10 – Improve</p> <p>Incorporate this process into the company's overall continuous improvement process.</p> <p>Tips</p> <ul style="list-style-type: none"> • Gain senior management support at every step • Be realistic about the time and effort required for the implementation • Involve other people • Display simple reports in employee meetings • Acknowledge and reward outcomes
--	--

	<ul style="list-style-type: none"> • Share your successes with others
	Sustainability Planning Lecture in PPT format with voice over
	3.2. Life-cycle Thinking in Food & Agriculture Businesses (video)
3.3. Example of LCA: Lifecycle assessment of rye bread	<p>Life-cycle assessment of original Finnish rye bread</p> <p>Whole grain rye bread in 240g packet: 4 pieces of two-sided bread (8 one-sided pieces of bread 30g each).</p> <p>Produced in Finland, baked in Lahti.</p> <p>Ingredients: whole grain rye flour (85%), water, yeast, salt (iodized).</p> <p>Whole grain rye flour is 100% origin of Finland. (image)</p> <p>Nutritional value of Oululainen rye bread (image)</p> <p>* Benchmarking for adult midfielder access (8400kJ/ 2000kcal)</p> <p>Nutritional value in the table is based on the information given by producer Fazer/Oululainen and the same information is also presented in the package.</p> <p>Why is rye bread important?</p> <ul style="list-style-type: none"> • Whole grain rye bread is part of a stable diet in Finland and in the Nordic countries where rye is a traditional and weather resistant crop. • Whole grain rye bread contains fibers which have many health benefits – according to studies fibers lower risk for heart disease, diabetes, obesity and gastrointestinal diseases. They also lower blood pressure and serum cholesterol levels and enhances weight loss. • Whole grain rye bread is typical product in Finland. It is easily accessible and fresh in any store and often very reasonable priced. This makes rye bread and its health benefits accessible to almost anyone. Rye bread is both filling and a healthy choice in comparison to white bread.

	<ul style="list-style-type: none"> Rye bread and all of its ingredients are available locally, thus the emissions for this product are lower than those of many other products requiring imported ingredients. Baking rye bread is both a traditional skill and a source of jobs in Finland.
	<p>Food life cycle emissions (image) Greenhouse emissions caused by food in Finland:</p> <ul style="list-style-type: none"> Emissions by stores 5% Transportation 5% Primary production on farms 60% Food processing, packing and storage 30% <p>Rye bread is low emitter (image) Source: ilmasto-opas.fi (Climate guide) Estimates on climate impacts of different foods show that rye bread has more than 10 times less emissions than beef or cheese.</p>
	(image)
	(image)
	Life cycle stages of RYE BREAD /circular economy field (image)
References	<p>Bracco, S., Calicioglu, O., Gomez San Juan, M., & Flammini, A. (2018). Assessing the contribution of bioeconomy to the total economy: A review of national frameworks. <i>Sustainability</i>, 10(6), 1698.</p> <p>FAO (2022). <i>Food and Agriculture and Sustainable Development Goals</i>. https://www.fao.org/home/en</p> <p>FAO (2018). <i>The State of the World's Land and Water Resources for Food and Agriculture: Managing Systems at Risk</i>; FAO: Rome, Italy.</p> <p>FAO (2017). The future of food and agriculture – Trends and challenges. <i>Annual Report</i>, 296.</p>

FAO (2016). *Migration and Protracted Crises*; FAO: Rome, Italy, 2016.

FAO (2015). *Achieving Zero Hunger: The Critical Role of Investments in Social Protection and Agriculture*; FAO: Rome, Italy.

FAO (2011). *Energy-Smart Food for People and Climate: Issue Paper*; FAO: Rome, Italy.

Fidlerová, H., Stareček, A., Vraňaková, N., Bulut, Ç., & Keaney, M. (2022). Sustainable Entrepreneurship for Business Opportunity Recognition: Analysis of an Awareness Questionnaire among Organisations. *Energies*, 15(3), 849.

Garnett, T., Appleby, M. C., Balmford, A., Bateman, I. J., Benton, T. G., Bloomer, P., & Godfray, H. C. J. (2013). Sustainable intensification in agriculture: premises and policies. *Science*, 341(6141), 33-34.

Gómez, M. I., Barrett, C. B., Raney, T., Pinstrup-Andersen, P., Meerman, J., Croppenstedt, A., & Thompson, B. (2013). Post-green revolution food systems and the triple burden of malnutrition. *Food Policy*, 42, 129-138.

Harvey, M., & Pilgrim, S. (2011). The new competition for land: Food, energy, and climate change. *Food Policy*, 36, S40-S51.

Qin, H., & Liao, T. F. (2016). Labor out-migration and agricultural change in rural China: A systematic review and meta-analysis. *Journal of Rural Studies*, 47, 533-541.

Rayfuse, R. G., & Weisfelt, N. (Eds.). (2012). *The challenge of food security: international policy and regulatory frameworks*. Edward Elgar Publishing.

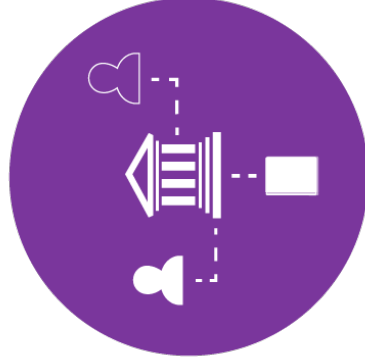
Rayfuse, R. G., & Weisfelt, N. (Eds.). (2012). The challenge of food security: international policy and regulatory frameworks. Edward Elgar Publishing.

Sims, R.; Flammini, A.; Puri, M.; Bracco, S. (2015). *Opportunities for Agri-Food Chains to Become Energy-Smart*; FAO: Rome, Italy; USAID: Washington, DC, USA.

Sustainability in Food and Agriculture-SFNA (2022). *Sustainability in Food and Agriculture*. <https://sfna.org.my/introduction/>

	<p>World Bank Group (2016). <i>Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change</i>. World Bank: Washington, DC, USA.</p>
--	--

4. Resources and networks



Page	Content
	<p>Here you will find links to short video presentations and documents relating to sustainable peatland management. In addition, a fuller bibliography of documents is supplied to enable deeper study if required.</p> <p>In this section one of the tasks is to reflect and document your learning into the Learning Diary.</p> <p>Open a Blog where the Learning Diary will be created from here. It will be opened into a new browser tab so you can keep it open as you go further.</p> <p>For sustainable peatland management, the learning objectives are as follows:</p> <ol style="list-style-type: none"> 1. To understand the significance of peatland as an instrument of carbon capture and storage 2. To understand the reasons why many current uses of peatland are not sustainable 3. To recognise the business opportunities arising from sustainable peatland management
	Sustainable peatland management.mp4 (video lecture)

<p>4.1 An innovative financing model for conservation</p>	<p>An example of financing conservation in Sabah, Malaysia This short presentation explains the innovative financing behind the preservation of rain forest in Malaysia, uniting the interests of investors with those of conservationists and the local population: (video)</p>
<p>4.2 Greenhouse gas emissions generated by peatland in Europe as of 2019</p>	<p>Greenhouse gas emissions from peatland across Europe, 2019 (image)</p>
<p>4.3 Reducing greenhouse gas emissions in the European Union</p>	<p>https://www.arc2020.eu/for-peats-sake-paludiculture-a-wetter-better-cap/ Legislation and policy commitments</p> <p>Carbon emissions reduction commitments in EU</p> <p>Passage of European Climate Law in 2021 55% reduction in GHGs by 2030 from 1990 levels Target for 2040 to be set Net zero by 2050 (2035 in Finland!) https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en</p> <p>Transition to cleaner energy sources</p> <p>Phasing out use of coal, oil for domestic heating Reduction of peat use in energy production (50% by 2030 in Finland)</p>
	<p>Legislation and policy commitments</p> <p><u>Carbon emissions reduction commitments in EU</u> <i>Passage of European Climate Law in 2021</i> <i>55% reduction in GHGs by 2030 from 1990 levels</i> <i>Target for 2040 to be set</i> <i>Net zero by 2050 (2035 in Finland!)</i> https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en</p>

	<p><u>Transition to cleaner energy sources</u> <i>Phasing out use of coal, oil for domestic heating</i> <i>Reduction of peat use in energy production (50% by 2030 in Finland)</i></p>
	<p>Reducing greenhouse gas emissions in the European Union - a Finnish perspective (PSF link)</p>
<p>4.4 Why peat matters</p>	<p>Why peat matters This short presentation gives an Indonesian perspective on peat's importance as a natural resource and ecosystem service provider: (video)</p>
<p>4.5 The significance of peatland</p>	<p>Peatland and agriculture; peatland and climate change <u>Peat as an energy source</u> <i>Used in Estonia, Finland, Ireland, Latvia, Lithuania, and Sweden</i></p> <p><i>Kapetaki et al (2021)</i></p> <p><u>Peatland as the basis of agriculture</u> <i>Over 95% of peatland in Germany drained for agriculture and forestry, in addition to peat extraction</i></p> <p><i>Federal Ministry for the Environment (2015)</i></p> <p><u>Peatland in danger</u> <i>25% of peatland in Europe is "degraded"</i> <i>50% of peatland in the European Union is "degraded"</i></p> <p><i>Tanneberger et al (2021)</i></p> <p>Peatland accounts for 3% of global land area. According to Tanneberger et al (2020: 2309-2310): "these lands store more carbon than all forest biomass in the world" Drainage of peatland releases enormous quantities of GHGs "Emissions from drained peatlands and peat fires account for ... c.5% of the total anthropogenic emissions" Drainage also causes "substantial nitrate leaching to surrounding waters, reduced groundwater storage and landscape cooling, increased flood risk, and loss of wetland biodiversity"</p>

	Reading Materials (links)
4.6 Peatland's contribution to "ecosystem services"	Peatland conditions: from Tan, Lupascu & Wijedasa (2021: 3) Peatland is an important source of biodiversity: Vegetation and animal species Landscape and ecosystem services It generates positive externalities or social benefits Retention of pollutants Local climate regulation Local water supply and flood control Reduced soil erosion Alderson et al. (2019: 786)
	Reading Materials (links)
4.7 Paludiculture	Survey of paludiculture crops This short video provides a comprehensive overview of the various types of crops that can be harvested via paludiculture, depending on the local climate conditions: (video)

	<p>Rewetting peatland and use of paludiculture This short video explains how an area of peatland in north-east Germany has been transformed through rewetting and the introduction of paludiculture: (video)</p>
	<p>Cattail cultivation and harvesting This short video explains the cultivation, harvesting and uses of cattail: (video)</p>
	<p>Reed canary grass cultivation and harvesting This short video explains the cultivation, harvesting and uses of reed canary grass: (video)</p>
<p>Further reading</p>	<p>Bibliography Below is a list of references that have been used in the preparation of this learning resource. Some are open access and freely available online. All can be accessed with the assistance of a library professional: Alderson, Danielle M., Martin G. Evans, Emma L. Shuttleworth, Michael Pilkington, Tom Spencer, Jonathan Walker, and Timothy E. H. Allott. 2019. Trajectories of ecosystem change in restored blanket peatlands. <i>Science of the Total Environment</i> 665: 785–796. DOI: 10.1016/j.scitotenv.2019.02.095 De Jong, Marle, Ollie van Hal, Jeroen Pijlman, Nick van Eekeren, and Martin Junginger. 2021. Paludiculture as paludifuture on Dutch peatlands: An environmental and economic analysis of Typha cultivation and insulation production. <i>Science of the Total Environment</i> 792: 148161. DOI: 10.1016/j.scitotenv.2021.148161 Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. 2015. Strategic framework for restoring degraded ecosystems in Germany. 9 February. Bonn: Federal Ministry for the Environment.</p>

	<p>Geurts, Jeroen J.M., Gert-Jan A. van Duinen, Jasper van Belle, Sabine Wichmann, Wendelin Wichtmann, and Christian Fritz. 2019. Recognize the high potential of paludiculture on rewetted peat soils to mitigate climate change. <i>Landbauforsch: Journal of Sustainable and Organic Agricultural Systems</i> 69 (1): 5-8. DOI:10.3220/LBF1576769203000</p> <p>Joosten, Hans. 2007. Peatlands, biofuels, energy: an introduction. <i>International Mire Conservation Group Newsletter</i>, issue 3 (August): 7–8.</p> <p>Kapetaki, Z., P. Alves Dias, A. Conte, K. Kanellopoulos, G. Mandras, H. Medarac, W. Nijs, P. Ruiz, J. Somers, and D. Tarvydas. 2021. Recent trends in EU coal, peat and oil shale regions, EUR 30618 EN, Luxembourg: Publications Office of the European Union</p> <p>Kimmel, Kai, and Ülo Mander. 2010. Ecosystem services of peatlands: implications for restoration. <i>Progress in Physical Geography</i> 34 (4): 491–514.</p> <p>Lahtinen, Laura, Tuomas Mattila, Tanja Myllyviita, Jyri Seppälä, and Harri Vasander. 2022. Effects of paludiculture products on reducing greenhouse gas emissions from agriculture peatlands. <i>Ecological Engineering</i> 175, 106502. DOI: 10.1016/j.ecoleng.2021.106502</p>
--	---

5. Business modelling



Page	Content
	<p>The role of marketing in the emerging food and agriculture industry is vital. In the last section of the module, we will focus on how to design marketing strategy in food and agriculture companies and explore feasibility analysis.</p> <p>Important notice: The lectures in PPT and video format can take a while for loading, we appreciate you patience in following each section of the chapter.</p> <p>LEARNING OBJECTIVES</p> <ul style="list-style-type: none">• Develop a customer-driven marketing strategy• Analyze the types of marketing for sustainable food and agriculture• Apply feasibility evaluation methods for their business

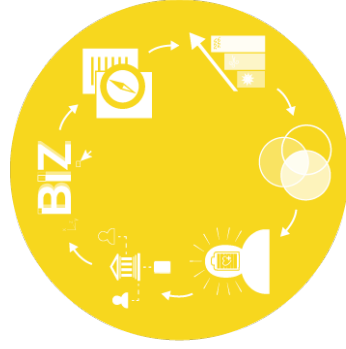
SDG4BIZ-Business Models orientation section 1.mp4 (video)	Video
SDG4BIZ-Business Models orientation section 2.mp4 (video)	video
5.1 Part 1 - Planning Marketing Strategy for Food and Agriculture Businesses.pptx	Power point
5.1 Part 2 - Planning Marketing Strategy for Food and Agriculture Businesses.pptx	Power point
5.1 Part 3 - Planning Marketing Strategy for Food and Agriculture Businesses.pptx	Power point
5.1 Part 4 - Planning Marketing Strategy for Food and Agriculture Businesses.pptx	Power point
5.2 Feasibility Analysis and Budgeting for Opportunities in the Food and Agriculture Business	video
5.3 SDG4BIZ-Perspectives from business stakeholders 1	video
5.4 SDG4BIZ-Perspectives from business stakeholders 2	
5.5 Sustainable peatland management: business model identification checklist	Description Food and agriculture typically require the use of large tracts of land and water (both inland and sea). The nature of the activity means that it has significant social and ecological impact, which requires legislation and regulatory oversight.

Opportunities exist to harness support offered by EU-wide, state and municipal agencies within the framework of the Common Agricultural Policy (CAP), in addition to other financing sources. If you are seriously considering the development of an existing business or a completely new start-up, this assignment is designed to help you focus attention on those aspects that require careful investigation.

Read the attached document that discusses the various changes to the CAP with respect to paludiculture, and apply your knowledge of business model development and analysis to a specific location of your choice in order to answer the following questions:

- What product type(s) are you intending to cultivate and harvest?
- How much land is required to produce these?
- What market opportunity are you seeking to exploit?
- How large is this market, and what are the projected growth forecasts, if any?
- How much investment capital will be required to finance your proposal?
- What sources of finance have you been able to identify, and how much would these provide?
- What cost projections are there?
- When can you reasonably expect to break even?
- What sort of risks threaten the success of your business model? How likely are they to materialise?
- How do you intend to manage relations with local stakeholders?

Open the Blog where the Learning Diary is created from [HERE](#). It will be opened into a new browser tab so you can keep it open as you go further.




	<p>Upon completion of the assignment, mark the 'Task' as completed by ticking 'yes' in the left upper corner.</p>
References	<p>Files (PDF)</p> <p>World Bank. 2019. Enabling the Business of Agriculture 2019. Washington, DC: World Bank. doi: 978-1-4648-1387-0</p> <p>Taşkın D. (2021) Financing Strategies for New Product Development and Innovation. In: Ince-Yenilmez M., Darici B. (eds) Engines of Economic Prosperity. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-76088-5_5</p> <p>Ross, Westerfield, Jordan. Fundamentals of Finance, McGraw Hill.</p> <p>WJ Obst, R Graham, G Christie. Financial Management for Agribusiness. 2007. LandLinks Press.</p> <p>BSR (2019), «Four Ways Companies Can Transform the Health of Communities», https://www.bsr.org/en/our-insights/blog-view/four-ways-companies-can-transform-the-health-of-communities</p> <p>Ecologic (2018), «European food and agriculture in a new paradigm», https://www.ecologic.eu/sites/default/files/publication/2021/frelih-larsen-21-European-food-and-agriculture-in-a-new-paradigm-WEB.pdf</p> <p>Farm Europe (2022), «Food Security: Back at the top of the European Political Agenda», https://www.farm-europe.eu/news/food-security-back-at-the-top-of-the-european-political-agenda/</p> <p>McKinsey & Company (2020), «Agriculture sector: Preparing for disruption in the food value chain», https://www.mckinsey.com/industries/agriculture/our-insights/agriculture-sector-preparing-for-disruption-in-the-food-value-chain</p> <p>The European Union (2016), «Enhancing the position of farmers in the supply chain», https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/amtf-report-improving-markets-outcomes_en.pdf</p> <p>The Organisation for Economic Co-operation and Development (OECD) (2020), «COVID-19 and the food and agriculture sector: Issues and policy responses», https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/</p>

	<p>The U.S. Cybersecurity and Infrastructure Security Agency, «Food and Agriculture Sector», https://www.cisa.gov/food-and-agriculture-sector</p> <p>The U.S. Department of Agriculture Economic Research Service (2019), «Ag and Food Sectors and the Economy», https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/</p> <p>The U. S. Food and Drug Administration (2007), «Agriculture and Food», https://www.fda.gov/files/food/published/Agriculture-and-Food--Critical-Infrastructure-and-Key-Resources-Sector-Specific-Plan-pdf.pdf</p> <p>The World Bank (2021), «Agriculture and Food», https://www.worldbank.org/en/topic/agriculture/overview#1</p> <p>The World Health Organization (2020), «COVID-19 and Food Safety: Guidance for competent authorities responsible for national food safety control systems», https://apps.who.int/iris/bitstream/handle/10665/331842/WHO-2019-nCoV-Food_Safety_authorities-2020.1-eng.pdf</p> <p>WeForum (2022), «EU organizations join forces with farmers to fight climate change», https://www.weforum.org/agenda/2022/01/european-organizations-join-forces-with-farmers-to-fight-climate-change-and-restore-nature/</p>
--	---

Next steps and test



	<p>DESCRIPTION</p> <p>You are about to complete your studies in SDG4BIZ. Before you proceed to print out the certificate, please complete the short quiz. You may take it as many times as needed.</p> <p>In addition, we also ask that you give us feedback before you log out.</p>
<p>You have completed the module</p>	<p>What to do next</p> <p>Congratulations, you completed Module 2 of the SDG4BIZ training course!</p> <p>Go to the next item: “Actions to finalize the course”.</p> <div data-bbox="1102 1003 1227 1910" style="background-color: #e0e0e0; padding: 10px; text-align: center;">  <p>Actions to finalize the course</p> </div> <p>There is a path that will take a few minutes to complete. The steps in this path are following:</p> <ol style="list-style-type: none"> 1. The link for the course evaluation questions; After opening the link, you will be asked some background information. At this point, we collect your feedback about Module 2. Your answers will help us to evaluate and to improve the SDG4BIZ training course. 2. After giving us the feedback, you will be guided to the Final Quiz of the module 2 that verifies your learning outcome. 3. After completing the quiz, you may print out the certificate of Module 2

	<p>4. Enrol to the sector-specific module. The enrolment link is next to the certification printing. Enrolment allows you to enter the SDG4BIZ modules that are open for the learners at the moment.</p>														
<p>Actions to finalize the course Step 1</p>	<p>We appreciate if you spend a minute with the following questions. (link)</p> <p>After given us the feedback, please click Yes in the above Yes/No option and you will be guided to the Final Quiz of the module 2 that verifies your learning outcome.</p>														
<p>Actions to finalize the course Step 2: Quiz of Businesses Recognition in Food & Agriculture</p>	<table border="1"> <thead> <tr> <th data-bbox="555 1771 632 1921">Question Number</th> <th data-bbox="555 1420 632 1771">Question</th> <th data-bbox="555 987 632 1420">Options</th> <th data-bbox="555 658 632 987">Correct Answer</th> </tr> </thead> <tbody> <tr> <td data-bbox="632 1771 1062 1921">1</td> <td data-bbox="632 1420 1062 1771">What is an ecosystem service provider?</td> <td data-bbox="632 987 1062 1420"> A. A company that specialises in gardening B. A weather forecasting organisation C. A part of the natural world that contributes to healthy ecosystems which also benefit humans D. Indoor climate simulation E. Forestry plantation </td> <td data-bbox="632 658 1062 987">C</td> </tr> <tr> <td data-bbox="1062 1771 1382 1921">2</td> <td data-bbox="1062 1420 1382 1771">Select ALL the SDGs for which Food and Agriculture Organization is a CONTRIBUTING agency</td> <td data-bbox="1062 987 1382 1420"> Goal 3. Ensure healthy lives and promote well-being for all at all ages Goal 5. Achieve gender equality and empower all women and girls Goal 6. Ensure availability and sustainable management of water and sanitation for all </td> <td data-bbox="1062 658 1382 987">Goal 15, Goal 1, Goal 14</td> </tr> </tbody> </table>	Question Number	Question	Options	Correct Answer	1	What is an ecosystem service provider?	A. A company that specialises in gardening B. A weather forecasting organisation C. A part of the natural world that contributes to healthy ecosystems which also benefit humans D. Indoor climate simulation E. Forestry plantation	C	2	Select ALL the SDGs for which Food and Agriculture Organization is a CONTRIBUTING agency	Goal 3. Ensure healthy lives and promote well-being for all at all ages Goal 5. Achieve gender equality and empower all women and girls Goal 6. Ensure availability and sustainable management of water and sanitation for all	Goal 15, Goal 1, Goal 14		
Question Number	Question	Options	Correct Answer												
1	What is an ecosystem service provider?	A. A company that specialises in gardening B. A weather forecasting organisation C. A part of the natural world that contributes to healthy ecosystems which also benefit humans D. Indoor climate simulation E. Forestry plantation	C												
2	Select ALL the SDGs for which Food and Agriculture Organization is a CONTRIBUTING agency	Goal 3. Ensure healthy lives and promote well-being for all at all ages Goal 5. Achieve gender equality and empower all women and girls Goal 6. Ensure availability and sustainable management of water and sanitation for all	Goal 15, Goal 1, Goal 14												

			<p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p> <p>Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development</p> <p>Goal 1. End poverty in all its forms everywhere</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p>		
3	<p>How does the exploitation of peat as an energy source contribute to greenhouse gas emissions?</p>	<p>A. Burning it produces thick smoke</p> <p>B. Digging peat requires heavy equipment</p> <p>C. Storing peat creates strong smells</p> <p>D. Peatland stores carbon, so both digging it and burning it releases a lot of carbon dioxide into the atmosphere</p> <p>E. Peatland is normally wet, so drying it requires energy</p>	D		
4	<p>Market failure may arise due to</p>	<p>A. Asymmetric information</p> <p>B. Perfect competition</p> <p>C. Efficiency</p>	A		

			<p>D. d) Economies of scale</p> <ol style="list-style-type: none"> 1. Formal education 2. Policy dialogues 3. Fielding of experts and technicians 4. International business collaboration 5. Learning exchanges 6. Institutional collaboration 	1,2,5,6
5	Choose all types of modalities recommended by Food and Agriculture Organization (FAO) for South-South Cooperation (SSC)	<ol style="list-style-type: none"> A. Improving life quality B. Increase in national output C. Increase in income per capita D. Change in GDP 	A	
6	Economic development refers:	<ol style="list-style-type: none"> A. Food and agriculture systems will need to get rid of fossil fuel dependence B. Food and agriculture systems will need to embrace renewable energy sources C. All D. Energy-smart food systems with coordination in policymaking and stakeholder dialogue are required 	C	
7	What can be done to deliver more food to communities with less and cleaner energy? Choose the best answer.	<ol style="list-style-type: none"> A. Business drivers B. Vision, purpose, current position, and gap analysis C 	C	
8	Which of the following point is vital for developing a sustainability			

9	strategy for a food company? Which one can help the food manufacturing company to operate sustainably?	<p>C. All of them</p> <p>D. A business plan</p> <p>A. Source the company's energy from non-renewable sources</p> <p>B. Employ 95% of our staff from other cities or regions</p> <p>C. Do not use raw materials from local environmentally accredited sources</p> <p>D. None of the above</p>	D		
10	Lifecycle analysis provides information for: (choose all right answers)	<p>○ choice of materials</p> <p>○ development of transport solutions</p> <p>○ packaging solutions</p> <p>○ evaluation of energy options</p>	All		
11	Which is NOT one of the obstacles that food and agriculture systems in the world have come across lately?	<p>A. Rising demand for food due to population increase</p> <p>B. Competition over natural resources</p> <p>C. Negative effects of climate change</p> <p>D. Increase in biodiversity</p>	D		
12	Choose four actors in the Quadruple helix model of innovation	<p>1. university</p> <p>2. financial institutions</p> <p>3. government</p> <p>4. business/industry</p>	1,3,4,5		

			<ul style="list-style-type: none"> 5. civil society 6. international organisations 7. law agencies 	
13	Market cluster policies refers the following policy implications:		<ul style="list-style-type: none"> A. Price setting, B. Food security C. Female discrimination D. Life on land 	A
14	Which of the following involves dividing a market into smaller segments of buyers with distinct needs, characteristics, or behaviors that might require separate marketing strategies or mixes?		<ul style="list-style-type: none"> A. Mass customization B. Market targeting C. Market segmentation D. Differentiation E. E) Positioning 	C
15	Choose the name of the impact investing network, dedicated to increasing the scale and effectiveness of impact investing around the world		<ul style="list-style-type: none"> A. Global impact investing network (GIIN) B. Impact Fund C. SDG Fund Network D. UNDP E. SDF Impact 	A
16	Which of the following consists of evaluating each market segment's attractiveness and selecting one or more segments to enter?		<ul style="list-style-type: none"> A. Positioning B. Mass customization C. Market targeting D. Market segmentation E. E) Differentiation 	C

			<p>A. Peatland supports various species of animals and vegetation that comprise an ecosystem</p> <p>B. Peatland traps animals unable to escape its wet, swampy conditions</p> <p>C. Peatland provides habitation for endangered species</p> <p>D. Peatland contributes to local area cooling</p> <p>E. Farmers can use peatland for feeding sheep</p>	<p>A</p>	
17	<p>In what ways does peatland contribute to biodiversity?</p>	<p>A. Uncertain crop size</p> <p>B. High transaction cost</p> <p>C. Relatively low income</p> <p>D. Low loan interest rates</p>	<p>D</p>		
18	<p>Which of the following is NOT one of the disadvantages of agricultural markets?</p>	<p>○ material consumption</p> <p>○ emissions to air, water, and soil</p> <p>○ amounts of waste generated</p> <p>○ energy expended</p>	<p>All</p>		
19	<p>Lifecycle analysis analyzes products: (choose all right answers)</p>	<p>A. at new product's design stage</p> <p>B. before launching a new product into the market</p>	<p>A</p>		
20	<p>It is important to do life cycle analysis:</p>				

21	Which of the following is NOT one of the main sources of financing in the rapid growth stage?	<p>A. operations</p> <p>B. Commercial banks</p> <p>C. Funds intermediated by investment banks</p> <p>D. Funds from family and friends</p>	<p>C. at the marketing phase of the new product</p> <p>D</p>		
22	Which of the sustainable development goals are most associated with sustainable peatland management?	<p>A. inequalities</p> <p>B. Clean water and sanitation</p> <p>C. Zero hunger</p> <p>D. Life below water</p> <p>E. Life on land</p>	<p>SDG 10: Reduced inequalities</p> <p>SDG 6: Clean water and sanitation</p> <p>SDG 2: Zero hunger</p> <p>SDG 14: Life below water</p> <p>SDG 15: Life on land</p>	E	
23	<p>I-EBIT</p> <p>II-Depreciation</p> <p>III- Taxes</p> <p>IV-Sales</p> <p>To calculate the Operating cash flows of a company you need from the above items</p>	<p>A. I and II</p> <p>B. Only IV</p> <p>C. I, II and III</p> <p>D. All of above</p>	C		
Key Literature for	Here you can find key literature related to module 2				

<p>Module 2</p>	<p>Dahlquist, J., Adams, A., Bacon, C., Cooper, S., Griffin, M., Higgins, K. and Musolino, L., n.d. <i>Principles of Finance</i>.</p> <p>Fidlerová, H., Starěček, A., Vraňáková, N., Bulut, C. and Keaney, M., 2022. Sustainable Entrepreneurship for Business Opportunity Recognition: Analysis of an Awareness Questionnaire among Organisations. <i>Energies</i>, 15(3), p.849.</p> <p>GOV.UK. 2022. <i>Final Report - The Economics of Biodiversity: The Dasgupta Review</i>. [online] Available at: https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review [Accessed 16 June 2022].</p> <p>Sustainabledevelopment.un.org. 2022. <i>Food security and nutrition and sustainable agriculture : Sustainable Development Knowledge Platform</i>. [online] Available at: https://sustainabledevelopment.un.org/topics/foodagriculture#:~:text=The%20Sustainable%20Development%20Goal%20to,rural%20poverty%2C%20ensuring%20healthy%20lifestyles%2C [Accessed 16 June 2022].</p> <p>Kotler, P., Armstrong, G. and Opresnik, M., n.d. <i>Principles of marketing</i>.</p> <p>Michael Succow Foundation & Wetlands International European Association, n.d. <i>Opportunities for Peatlands and Paludiculture in the EU Common Agricultural Policy (2023-2027) Recommendations for EU Member States for their CAP Strategic Plans</i></p> <p>The Food and Agriculture Organization of the United Nations (FAO), 2022. <i>Transforming Food Systems: Pathways for Country-led Innovation WHITE PAPER</i>. [online] Available at: https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf [Accessed 16 June 2022].</p>
---------------------	---

Annexes



The annexes contain additional links, slides, lecture slides and lecture transcripts, which can be used either as part of classroom teaching or to build a recorded lecture for online teaching. The links have been compiled in 2021 - 2022 and have not been updated since then.



Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

D7 Module 2: Business opportunity recognition: food and ag links

section-block index	Block title	content	link	Own production
0.1.	Welcome to Module 2	Video: A warm welcome to the course!	https://eu1files.itlearning.com/data/901208/400028/Your%20recordings/Prof.Dr.%c3%87a%c4%9fr%c4%b1%20BULUT%2c%20Mo.m4	x
1.	SDG4BIZ-SDGs orientation section	Video: SDG4BIZ-SDGs orientation section	https://filerepository.itlearning.com/a2acdb93-88cf-46a3-8202-8fd25430f5ae?Token=pxsGAFjADQBXd1kAAAAACAk0dhMXjUqJYArg8YI4ioYKKJW7A019x2LZ60HryDoAAA	x
1.	References	Website: The common agricultural policy at a glance	https://agriculture.ec.europa.eu/commo-n-agricultural-policy/cap-overview/cap-glance_en	
1.	References	Website: Performance of the agricultural sector	https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector#Value_of_agricultural_output	
1.	References	Website: Trade and Agricultural Policies to Support Small-scale Farmers and Enhance Food Security	https://unctad.org/fr/node/27525	
1.	References	Website: Agriculture and Food - overview	https://www.worldbank.org/en/topic/agriculture/overview#1	

2.	SDG4BIZ-Context orientation section	Video: SDG4BIZ-Context orientation section	https://filepository.itslearning.com/386e1c74-9458-4bdc-8c04-d263b2036ba5?Token=pxsGAFjADQCyeB1KAAAAACAAX37g-BUL7br8ZBoVcZoosfS5Cs0n33fVRyziWifvBysAAA	x
2.1.	Food and Agriculture Organization (FAO) and SDGs	Website: Sustainable Development Goals indicators	https://www.fao.org/sustainable-development-goals/indicators/en/	
2.1.	Food and Agriculture Organization (FAO) and SDGs	PDF: Global challenges facing food and agriculture	https://www.fao.org/3/i6583e/i6583e.pdf	
2.2.	Quadruple Helix Model Innovation and Social Innovation	Website: Quadruple and quintuple innovation helix framework	https://people.utm.my/nurazaliah/2020/05/10/quadruple-and-quintuple-innovation-helix-framework/	
2.2.	Quadruple Helix Model Innovation and Social Innovation	PDF: Four people-centered innovation areas for food systems transformation	https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf	
2.4.	Food and agriculture: partnership	PDF: Four Core Aspirations for the World's Food System	https://www3.weforum.org/docs/IP/2016/NVA/WEF_FSA_FutureofGlobalFoodSystem.pdf	
2.4.	Food and agriculture: partnership	PDF: FAO strategy for partnerships with Civil Society Organizations	https://www.fao.org/3/i3443e/i3443e.pdf	
2.4.	Food and agriculture: partnership	PDF: South-South Cooperation	https://www.fao.org/3/i5163e/i5163e.pdf	
2.4.	Food and agriculture: partnership	Website: Joint SDG Fund	https://www.jointsdgfund.org/where-we-work	
2.4.	Food and agriculture: partnership	Website: Joint SDG Fund food and agriculture portfolio case: Suriname	https://www.jointsdgfund.org/where-we-work/suriname	
2.5.	Business Opportunity Models towards food and agriculture SDGs	PDF: Stages of the agrifood system	https://www3.weforum.org/docs/WEF_CO_NVA_Overview.pdf	
2.5.	Business Opportunity Models towards food and agriculture SDGs	PDF: Guidance on core indicators for agriculture systems	https://www.fao.org/3/cb6526en/cb6526en.pdf	
2.5.	Business Opportunity Models towards food and agriculture SDGs	PDF: Guidance on core indicators for agriculture systems	https://knowledge4food.net/wp-content/uploads/2017/04/170216_report_social-entrepreneurship_printDEF.pdf	

2.5.	Business Opportunity Models towards food and agriculture SDGs	PDF: Guidance on core indicators for agriculture systems	https://cgspace.cgiar.org/bitstream/handle/10568/110864/Bundles_agrifood_transformation-1.4.21.pdf	
2.6.	Impact Investments in Food and Agriculture	Website: Impact investing	https://thegin.org/impact-investing/	
2.6.	Impact Investments in Food and Agriculture	PDF: Understanding Impact Performance	https://thegin.org/assets/Understanding%20Impact%20Performance_Agriculture%20Investments_webfile.pdf	
2.6.	Impact Investments in Food and Agriculture	PDF: Impact investing	https://thegin.org/assets/Financing%20the%20SDGs_Impact%20Investing%20in%20Action_Final%20Webfile.pdf	
2.6.	Impact Investments in Food and Agriculture	Website: Roadmap for the Future of Impact Investing	https://www.findevcanada.ca/en/blog/re-cap-giin-forum-2018-reshaping-financial-markets-more-inclusive-and-sustainable-future	
2.	Business opportunities for NGOs in Food and Agriculture Quadruple Helix Model Lecture as video format	Video: Business opportunities for NGOs in Food and Agriculture Quadruple Helix Model Lecture as video format	https://filerepository.itslearning.com/075d7729-43c2-4507-97db-70256257611a?Token=pxsGAFiADQANFR1kAAAAACAAAvdWn1hSW_qsrRSNi8bGRpiZ2ez_vzHWHHTXcRNzaiVV4AAA	x
2.	References	Website: 100 Million Farmers	https://www.weforum.org/communities/100-million-farmers	
2.	References	Website: Agriculture Innovation Mission for Climate	https://www.aimforclimate.org/	
2.	References	Website: 8 pioneer Social Innovations in Food	https://www.socialinnovationacademy.eu/8-pioneer-social-innovations-food/	
2.	References			
3.	SDG4BIZ-Motivation orientation section	Video: SDG4BIZ-Motivation orientation section	https://filerepository.itslearning.com/5b5043fc-697d-42b7-8e7c-34f6ec130ebf?Token=pxsGAFiADQC-fr1kAAAAACAAz182RT8b-Mmr5Ownl6_gJYV5mMubsAkai0nVtG&cb18AAA	x

3.2.	Life-cycle Thinking in Food & Agriculture Bussinesses	Video: Life-cycle Thinking in Food & Agriculture Bussinesses	https://filerepository.itslearning.com/e36b0562-9c12-47ee-b630-1a3e518df94?Token=pxsGAFjADQAVfh1kAAAAACAavZQsSIgZfVh1MqTjYQCEIPAtvmj9Mivfy0yDt\$ax6SoAAA	x
3.	References	Website: Food and Agriculture Organization of the United Nations (FAO)	https://www.fao.org/home/en	
3.	References	Website: Sustainability in Food and Agriculture (SFNA) - introduction	https://sfna.org.my/introduction/	
4.	Sustainable peatland management	Video: Sustainable peatland management	https://filerepository.itslearning.com/f1bc829d-67c5-4ede-b9de-12e52b1524be?Token=pxsGAFjADQBjgh1kAAAAACAaiMk7Jivbl_Qp5PAmgUNmdDr2FhEDVnTzgx0yNsueLkAAA	x
4.1.	An innovative financing model for conservation	Video: An example of financing conservation in Sabah, Malaysia	https://youtu.be/4EylufMIR5k	
4.2.	Greenhouse gas emissions generated by peatland in Europe as of 2019	Website: Greenhouse gas emissions from peatland across Europe, 2019	https://www.arc2020.eu/for-peats-sake-paludiculture-a-wetter-better-cap/	
4.3.	Reducing greenhouse gas emissions in the European Union	Website: Carbon emissions reduction commitments in EU	https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en	

4.3.	Reducing greenhouse gas emissions in the European Union	PDF: Reducing greenhouse gas emissions in the European Union - a Finnish perspective	https://filecache.itslearning.com/prod.eu-central-1-filerpo/e738/055c-81aa-439f-8e83-c7ba8dcaff58c?response-cache-control=max-age%3D899&response-content-type=application%2Fpdf&response-content-disposition=inline%3B%20filename%3D%22MTK%25202019.pdf%22%3Bfilename%2A%3Dutf-8%27%27MTK%25202019.pdf%3B&version=1&isDownloadRequest=0&expires=2023-03-24T08%3A46%3A25Z&sign=sz5sRmqoLpQV97WYl0c%2FGvsP6E3BvmvJWbB%2BGTghxx8%3D
4.4.	Why peat matters	Video: Why peat matters	https://youtu.be/1C7ecAoXav0
4.5.	The significance of peatland	PDF: Strategic framework for setting priorities for restoring degraded ecosystems in Germany	https://filecache.itslearning.com/prod.eu-central-1-filerpo/3238/349b-b1ef-481c-92a3-0e95cbbac3ee?response-cache-control=max-age%3D900&response-content-type=application%2Fpdf&response-content-disposition=inline%3B%20filename%3D%22Strategic%20framework%20for%20setting%20priorities%20for%20restoring%20degraded%20ecosystems%20in%20Germany.pdf%22%3Bfilename%2A%3Dutf-8%27%27Strategic%20framework%20for%20setting%20priorities%20for%20restoring%20degraded%20ecosystems%20in%20Germany.pdf%3B&version=1&isDownloadRequest=0&expires=2023-03-24T08%3A46%3A25Z&sign=sz5sRmqoLpQV97WYl0c%2FGvsP6E3BvmvJWbB%2BGTghxx8%3D
4.5.	The significance of peatland	PDF: Recent trends in EU coal, peat and oil shale regions	https://filecache.itslearning.com/prod.eu-central-1-filerpo/2256/47e4-4963-4f8c-8c46-4095c60c89c8?response-cache-control=max-age%3D899&response-content-type=application%2Fpdf&response-content-disposition=inline%3B%20filename%3D%22Recent%20trends%20in%20EU%20coal%2C%20peat%20and%20oil%20shale%20regions.pdf%22%3Bfilename%2A%3Dutf-8%27%27Recent%20trends%20in%20EU%20coal%2C%20peat%20and%20oil%20shale%20regions.pdf%3B&version=1&isDownloadRequest=0&expires=2023-03-24T08%3A46%3A25Z&sign=sz5sRmqoLpQV97WYl0c%2FGvsP6E3BvmvJWbB%2BGTghxx8%3D
4.5.	The significance of peatland	PDF: Climate Change Mitigation through Land Use on Rewetted Peatlands - Cross-Sectoral Spatial Planning for Paludiculture in Northeast Germany	https://filecache.itslearning.com/prod.eu-central-1-filerpo/9674/b73e-7682-4e1d-b196-c5c85d57a01b?response-cache-control=max-age%3D899&response-content-type=application%2Fpdf&response-content-disposition=inline%3B%20filename%3D%22Climate%20Change%20Mitigation%20through%20Land%20Use%20on%20Riwetted%20Peatlands%20-%20Cross-Sectoral%20Spatial%20Planning%20for%20Paludiculture%20in%20Northeast%20Germany.pdf%22%3Bfilename%2A%3Dutf-8%27%27Climate%20Change%20Mitigation%20through%20Land%20Use%20on%20Riwetted%20Peatlands%20-%20Cross-Sectoral%20Spatial%20Planning%20for%20Paludiculture%20in%20Northeast%20Germany.pdf%3B&version=1&isDownloadRequest=0&expires=2023-03-24T08%3A46%3A25Z&sign=sz5sRmqoLpQV97WYl0c%2FGvsP6E3BvmvJWbB%2BGTghxx8%3D
4.5.	The significance of peatland	PDF: Mires in Europe - Regional Diversity, Condition and Protection	https://filecache.itslearning.com/prod.eu-central-1-filerpo/0f0d/1525-19a5-4cbe-aaaf-a5972633215b?response-cache-control=max-age%3D899&response-content-type=application%2Fpdf&response-content-disposition=inline%3B%20filename%3D%22Mires%20in%20Europe%20-%20Regional%20Diversity%2C%20Condition%20and%20Protection.pdf%22%3Bfilename%2A%3Dutf-8%27%27Mires%20in%20Europe%20-%20Regional%20Diversity%2C%20Condition%20and%20Protection.pdf%3B&version=1&isDownloadRequest=0&expires=2023-03-24T08%3A46%3A25Z&sign=sz5sRmqoLpQV97WYl0c%2FGvsP6E3BvmvJWbB%2BGTghxx8%3D

4.6.	Peatland's contribution to "ecosystem services"	PDF: Trajectories of ecosystem change in restored blanket peatlands	https://filecache.itslearning.com/prod.eu-central-1-filerrepo/30e6/1621-5a11-4731-8f64-e4d86dea5652?response-cache-	
4.6.	Peatland's contribution to "ecosystem services"	PDF: Paludiculture as a sustainable land use alternative for tropical peatlands: A review	https://filecache.itslearning.com/prod.eu-central-1-filerrepo/7fc9/43bd-2fdf-4e6b-a2af-5aab8086bbdb?response-cache-control=max-age%3D900&response-	
4.7.	Paludiculture	Video: Survey of paludiculture crops	https://youtu.be/1VTzT7yi1o4	
4.7.	Paludiculture	Video: Rewetting peatland and use of paludiculture	https://youtu.be/AwVjPqbNhhK0	
4.7.	Paludiculture	Video: Cattail cultivation and harvesting	https://youtu.be/KU22CufmQJ4	
4.7.	Paludiculture	Video: Reed canary grass cultivation and harvesting	https://youtu.be/mpxM05HisOU	
4.	Further reading	PDF: Paludiculture as paludiculture on Dutch peatlands: An environmental and economic analysis of Typha cultivation and insulation production	https://www.sciencedirect.com/science/article/pii/S0048969721032320?via%3Dihub	
4.	Further reading	PDF: Effects of paludiculture products on reducing greenhouse gas emissions from agricultural peatlands	https://www.sciencedirect.com/science/article/pii/S0925857421003578?via%3Dihub	
5.	SDG4BIZ-Business Models orientation section 1	Video: SDG4BIZ-Business Models orientation section 1	https://filerepository.itslearning.com/32e5114c-cb9c-4d3d-99e4-ef4a1a485acb?Token=pxsGAFIADQD8jB1kAAAAACAAGzAWTV6vZkutjUoMmFrhd6cKfVeH9j5OVNldWXS-1rQAAA	x
5.	SDG4BIZ-Business Models orientation section 2	Video: SDG4BIZ-Business Models orientation section 2	https://filerepository.itslearning.com/ebc8b3f7-60a5-4a82-954d-461e5fb5b383?Token=pxsGAFIADQAoIR1kAAAAACAAGFUoi39a1tkfbInp8Yj8jmy51TU47nyGIUlfEBjcnkAAA	x
5.2.	Feasibility Analysis and Budgeting for Opportunities in the Food and Agriculture Business	Video: Feasibility Analysis and Budgeting for Opportunities in the Food and Agriculture Business	https://filerepository.itslearning.com/a1b0e7ff-d473-4efd-8a9b-2b58df8d4a44?Token=pxsGAFIADQCViR1kAAAAACAAGsVAJkr5TVwRBEk0y1enh5Uj7XspLmzuChClGnlvQSEAAA	x

5.3.	SDG4BIZ-Perspectives from business stakeholders 1	Video: SDG4BIZ-Perspectives from business stakeholders 1	https://filerepository.itslearning.com/9d8582ed-813f-4892-ad7c-9e300f5670a4?Token=pxsGAFJADQDKIR1kAAAAACAAR1A-ChxGwNICFTzCDqkx1qbTL3p0wXGVEaiiNu9loAAA	x
5.3.	SDG4BIZ-Perspectives from business stakeholders 2	Video: SDG4BIZ-Perspectives from business stakeholders 2	https://eu1files.itslearning.com/data/901208/400028/Your%20recordings/SDG4BIZ-Perspectives%20fr.mp4	x
5.5.	Sustainable peatland management: business model identification checklist	PDF: Opportunities for Peatlands and Paludiculture in the EU Common Agricultural Policy (2023-2027)	https://sdg4biz.itslearning.com/CustomActivity/MediaPreview.aspx?CustomActivityId=2131&ChildId=0&fileRepoId=HfA8%2FMdpkkKgPwwhSYTZvRW10W3Asp7DwQ	
5.	References	Website: Four Ways Companies Can Transform the Health of Communities	https://www.bsr.org/en/blog/four-ways-companies-can-transform-the-health-of-communities	
5.	References	PDF: European food and agriculture in a new paradigm	https://www.ecologic.eu/sites/default/files/publication/2021/frelih-larsen-21-European-food-and-agriculture-in-a-new-paradigm-WEB.pdf	
5.	References	Website: Food Security: Back at the top of the European political agenda	https://www.farm-europe.eu/news/food-security-back-at-the-top-of-the-european-political-agenda/	
5.	References	Website: Agriculture sector: Preparing for disruption in the food value chain	https://www.mckinsey.com/industries/agriculture/our-insights/agriculture-sector-preparing-for-disruption-in-the-food-value-chain	
5.	References	PDF: Enhancing the position of farmers in the supply chain	https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/amtf-report-improving-markets-outcomes_en.pdf	

5.	References	Website: COVID-19 and the food and agriculture sector: Issues and policy responses	https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/
5.	References	Website: Food and Agriculture Sector	https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/critical-infrastructure-sectors/food-and-agriculture-sector
5.	References	Website: Ag and Food Sectors and the Economy	https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/
5.	References	PDF: Agriculture and Food - Critical Infrastructure and Key Resources Sector-Specific Plan as input to the National Infrastructure Protection Plan	https://www.fda.gov/files/food/published/Agriculture-and-Food--Critical-Infrastructure-and-Key-Resources-Sector-Specific-Plan-pdf.pdf
5.	References	PDF: COVID-19 and Food Safety: Guidance for competent authorities responsible for national food safety control systems	https://apps.who.int/iris/bitstream/handle/10665/331842/WHO-2019-nCoV-Food_Safety_authorities-2020.1-eng.pdf
5.	References	Website: EU organizations join forces with farmers to fight climate change	https://www.weforum.org/agenda/2022/01/european-organizations-join-forces-with-farmers-to-fight-climate-change-and-restore-nature/
6.	Key Literature for Module 2	Website: Final Report - The Economics of Biodiversity: The Dasgupta Review	https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review
6.	Key Literature for Module 2	Website: Food security and nutrition and sustainable agriculture : Sustainable Development Knowledge Platform	https://sustainabledevelopment.un.org/topics/foodagriculture#:~:text=The%20Sustainable%20Development%20Goal%20to,rural%20poverty%2C%20ensuring%20healthy%20lifestyles%2C
6.	Key Literature for Module 2	PDF: Transforming Food Systems: Pathways for Country-led Innovation	https://www3.weforum.org/docs/WEF_Transforming_Food_System_2022.pdf



SDG4BIZ M2 Section 0: What's in it for me?

Welcome to the Module 2 orientation video script

Welcome to the Module 2. SDG4BIZ project, as you know, designs and pilots a multidisciplinary, cross-border curriculum and training material for business opportunity recognition in sustainable development goals. The project enhances the awareness of business growth potential in SDGs, and serves the innovation capabilities of EU companies and competence need of European Higher Education Institutions. As Yaşar University, we are coordinating food and agriculture module management process and content co-creation by informing, contributing staff members from Yaşar University and Metropolia University of Applied Sciences on the reporting and deadline while coordinating the content development for the module. This module 2 is on food and agriculture. Which means that we are going to have the classes on Business opportunity recognition related to food and agriculture Sustainable Development Goals. The module brings together the expertise of professors from Yaşar University and Metropolia University in order to deliver innovative training to the university staff and companies operating in this sector. Moreover, there are decision-makers and investors who have contributed to the module with interviews. So, what I should tell about is the module learning outcomes: We have 3 main learning outcomes. Which are: First, the learners, as you are will be able to recognize opportunities in food and agriculture goals of SDGs. Secondly, you will be able to evaluate and control the feasibility of business opportunities in food and agriculture which are also related to SDGs. Also, you will be able to generate new ideas in food and agriculture related sectors towards food & agriculture related SDGs. In this module, we have 7 professors and experts from Yaşar University, Turkey and Metropolia University of Finland. So, the academic expertise of the module contributors ranges from international trade on finance, business, economics, tourism, political economy, and smart and clean solutions. This multidisciplinary collaboration enabled us to produce a diverse exploration of the perspectives on sustainability in connection to green marketing, behavioral finance, economic development, innovation, tourism management, social innovation and circular economy, to name a few. Module 2 team: Burcu Kiper from Yaşar University, was the leader of this module. I am the national coordinator of the model in Turkey. And also, Michael Keane and Riitta Lehtinen from Metropolia University, Dilvin Taşkın, Serpil Kahraman, Emel Yarimoğlu, Murat Nazlı and Assel Kurmantayeva from Yaşar University. The model has structured according to the expertise of the contributors to the module. In general, you will see the information, learning outcomes and information of each section as it is in parallel with the other modules. Agricultural policies and economic development with the focus on sustainable development goals related to Food and Agriculture is going to be the first one. And afterwards, Opportunities for NGO's in Food and Agriculture, which means that the quadruple Helix model with the focus on partnership opportunities in different sectors for Food and Agriculture projects, it means that. In addition to collaboration, normally what we say that the universities, business enterprises, and state and governments we have added here, the NGO's which is important to include the civic engagement in the sustainable development goals in the field of Food and Agriculture. Sustainability Planning for Food and Agriculture business with the focus on sustainable strategy for business, especially for small and medium sized businesses, is the upcoming submodule of this module. Life cycle thinking in Food and Agriculture business with the focus on new and more sustainable ways to fulfill the people's need of food is another topic that we are going to have during this module 2. Carbon capture and the sustainable use of the peat land and its role in sustainable agriculture and business ecosystem, which is going to be. You'll see from Michael it's going to be great for having this specific case as well, and afterwards, of course having the general view of the economic perspective, sustainable perspective of that we are going to see the planning of marketing strategy for Food and Agriculture business and budgeting for opportunities in the Food and Agriculture is important because we have to know what we are investing and how we are going to make over its income. I wish you a great and enjoyable time.

SDG4BIZ M2 Section 1: Sustainable Development Goals (SDGs)



AGRICULTURAL POLICIES IN ECONOMIC DEVELOPMENT

2.8.2022

Assoc.Prof.Dr.Serpil Kahraman
Yasar University, Turkey.



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

2.8.2022



LEARNING OBJECTIVES

- Familiarity of how economic development contributes to SDGs
- Understanding the role of agriculture in economic development
- Understanding the agriculture-based economic growth
- Analyze the agricultural economic policies, indicators and instruments
- Ability to use analytical framework relevant to food and agriculture

2.8.2022



INTRODUCTION

- The UN declared that the 2030 Agenda for Sustainable Development including the 17 Sustainable Development Goals (SDGs). These goals focus on the water, energy, climate, oceans, urbanization, transport, science and technology to improve human well-being and to protect the environment. These goals are important tools for nutrition, food security and sustainable agriculture as well.

2.8.2022



The UN-SDGs and the Agriculture

- As the world population continues to grow, COVID pandemic, and the other global changes more effective policy implications are needed to sustainable and productive agricultural production. It is clear that this goal is strongly linked to supply change, food looses and food waste, and also nutrition. Moreover, empowering small farmers, promoting gender equality in an Economy, ending rural poverty and ensuring human well-being are other tools to achieve these goals.

2.8.2022



The UN-SDGs and the Agriculture

- As a conclusion, 17 SDGs are a call for action to all countries to improve the planet and the lives. On this agenda, SDGs stand for:
- Small farmers/food producers empower,
- Hunger and malnutrition ended,
- Sustainable agriculture, food security and nutrition,
- More productive and less wasteful food systems organized,
- International trade policies reshaped.

All these goals are also in the agenda of 2020 World Food Security Committee.

2.8.2022



RELEVANCE TO THE UNSDGs

These goals aim to strengthen national capacities to redesign and implement agricultural policies.

- End poverty in all its forms (1),
- End hunger achieve food security and improved nutrition and promote sustainable agriculture (2),
- Achieve gender equality and empower all women (5),
- Reduced inequality within and among countries (10),
- Sustainable manage forests, combat desertification, halt and reverse land degradation, haşt biodiversity loss (15),
- Revitalize the global partnership to achieve the goals (17)

2. 8. 2022



THE ROLE OF AGRICULTURE IN THE WORLD ECONOMY

```
<iframe width="800" height="600"
src="https://cdn.howmuch.net/articles/role-agriculturein-economy_world
3174.jpg"></iframe>
```

Source: "HowMuch.net, a financial literacy website"

- As of 2018, agriculture only represents 3% of the world's GDP, down from 4% in 2010.
- Even though agriculture represents a small share of the world's economic output, this industry employs almost 30% of all workers.

2. 8. 2022

Assoc.Prof.Dr.Serpil Kahraman
Yasar University, Turkey .



INTRODUCTION

Governments intervene the agricultural markets through price stabilization (price floor/price ceiling), tax, subsidies, import and export tariffs and quotas, product restrictions etc. The structure of the Economy determines which agricultural policies are more likely to be appropriate in different countries (Stiglitz, 1987). Thus, agricultural policies are key to achieve sustainable development and growth in every development level of a country.

2.8.2022

ECONOMIC GROWTH VS ECONOMIC DEVELOPMENT

The Economic growth and Economic development are two different terms in Economics. Economic growth refers increase in/percentage change in real output/national income mostly focusing on GDP (Gross Domestic Product) while

Economic development refers improving in quality of life/living standards; life expectancy, literacy rate, internet usage ratio, healthcare etc.

2.8.2022

CONTRIBUTIONS OF AGRICULTURE IN AN ECONOMY

According to Johnston and Mellor (2020) agriculture's contributions in an Economy can be summarized in five ways:

- Providing increased food supply,
- Enlarged agricultural exports,
- Transfer of labor force from agricultural sector to non -agricultural sector,
- Agriculture's contribution to capital formation,
- Increased rural net cash income as a stimulus to industrialization.

2.8.2022

THE ROLE OF AGRICULTURE IN ECONOMIC DEVELOPMENT

Agriculture plays a crucial role in an Economy by providing food, income and labor force to rural areas. Moreover, improvements in agriculture are fundamental to achieving food security, income redistribution, poverty reduction and overall sustainable Economic development.

Agriculture is also crucial to economic growth: in 2018, it accounted for 4% of global gross domestic product (GDP) and in some developing countries, accounted more than %25 of the GDP (WB, 2022).

2.8.2022

ASPECTS OF AGRICULTURAL POLICIES

According to Stiglitz (1987) five theoretical aspects of agricultural policies are relevant:

- 1) Incomplete markets in insurance and credit.
- 2) Public goods and increasing returns.
- 3) Imperfect information.
- 4) Externalities.
- 5) Income distribution.

2.8.2022

POLICY IMPLICATIONS IN BRIEF

Policy implications are based on 3 clusters: assets, markets, labour and contain the following emphases:

- Asset accumulation: land, water, livestock, equipment, savings and the insurance services to protect them. Support for social protection targeted to the poorest, Infrastructure and output markets to reduce risk and protect accumulation;
- Improving the functioning of labour markets for farm workers;
- Enhancing gender equality: the contribution of agricultural policies and programmes;
- A stronger emphasis on environmentally sustainable farming (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - ASSET CLUSTER

Lack of assets is frequently identified as a crucial factor of poverty. These assets are usually grouped into five types of capital:

- physical (productive assets, housing);
- natural (land);
- human (knowledge, skills, health);
- financial (cash, bank deposits, livestock, other stores of wealth);
- social (the networks and informal institutions that facilitate coordination and cooperation) (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - ASSET CLUSTER

Physical Asset: The impacts of asset ownership on household welfare, income and expenditure. The focus is on accumulating productive farm assets and maximum returns from them.

- Small animals, cattle and plough livestock
- Affordable intermediate farm mechanisation has scope to increase crop yields, crop diversification and incomes,
- Local infrastructure development, such as of storage and processing facilities, allows poor farmers to maximise returns from those assets they do hold (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - ASSET CLUSTER

Natural capital (land and water): There is a direct link between asset accumulation and income distribution.

- Providing enhanced access to land,
- A worked-through commitment to poverty reduction needs to accompany any land redistribution,
- Land is not productive without water, so equitable water access rights (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - ASSET CLUSTER

Human capital (education, labour, health and nutrition):

- Education gives people the knowledge to improve their livelihoods and provides access to formal (salaried or wage) employment.
- The purpose of agricultural development is not only to maximise outputs and economic returns, but also, fundamentally, to produce safe and nutritious food for the development of healthy people.
- Education has also high returns for smallholders contracting with intermediaries and gives farmers an opportunity to barter equitably with traders (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - ASSET CLUSTER

Social capital is also often the primary means of information transfer in rural areas, with farmers sharing price information and techniques in informal gatherings or through formal producers' groups.

- Public interventions can ease the stress members of informal risk - sharing groups experience.
- Policy implementers can harness social networks to identify vulnerable 'unseen' individuals, or use them as a policy outreach tool, as in the case of farmer extension (Lenhardt et al., 2012).

2.8.2022

POLICY IMPLICATIONS - MARKET CLUSTER

Well-functioning markets lead to decrease market failure including imperfect market conditions, and market failure. Adequate public expenditure and supply of infrastructure are the critical factors underpinning for well-functioning markets. Finance markets have often been dysfunctional, such as financial services including lack of credit and insurance.

Governments can set floor prices, price ceiling or revenue -sharing agreements and provide help (e.g. financial incentives), encourage more responsible corporate governance and support efforts to increase representation of farmer organisations (Lenhardt et al., 2012).



2.8.2022

ASSET POLICY GUIDANCE MAP

(image)

2.8.2022

POLICY IMPLICATIONS - LABOUR CLUSTER

Agricultural education could be a part of this, since most discriminated households are agricultural. A number of factors, such as low education levels, poor health and discrimination, affect the ability of rural workers to obtain favourable job opportunities, whether in the farm or the non -farm sectors. Education and skills training can serve as one of the most effective ways of increasing employability.

Social security programmes, tax policies, anti -discrimination policies may be necessary to help to increase labor force participation rate as well.

2.8.2022

LABOUR POLICY GUIDANCE MAP

(image)

2.8.2022

AGRICULTURAL MARKETS IN PRACTICE

Agricultural markets have several key disadvantages:

- Farmers' income is around 40% lower compared to non -agricultural income;
- Agriculture depends more on the weather and the climate than many other sectors which leads uncertain crop size,
- There is an inevitable time gap between consumer demand and farmers being able to supply,
- Higher transaction costs, (EU, 2022; Stiglitz, 1987).

2.8.2022

OUTPUT OF THE AGRICULTURAL INDUSTRY IN EU

The value of everything that the EU's agricultural industry produced in 2020 was an estimated EUR 414.1 billion; this includes the value of crops, of animals, of agricultural services, as well as some goods and services that were not strictly agricultural but which could not be separately measured.

About one half (53.0 %) of the value of the total output of the EU's agricultural industry in 2020 came from crops (EUR 219.5 billion), within which vegetables and horticultural plants and cereals were the most valuable crops (Eurostat, 2022).

2.8.2022

OUTPUT OF THE AGRICULTURAL INDUSTRY IN EU

More than one half (58.7%) of the total output value of the EU's agricultural industry came from the 'big four' of

- France (EUR 76.3 billion),
- Germany (EUR 57.6 billion),
- Italy (EUR 56.9 billion) and
- Spain (EUR 52.3 billion).

The next grouping of Member States was the Netherlands (EUR 28.2 billion), Poland (EUR 26.4 billion) and Romania (EUR 16.8 billion). Three quarters (76.0%) of the total value of EU's agricultural industry in 2020 came from these seven Member States (Eurostat, 2022).

2.8.2022

Output of the agricultural industry

(image)

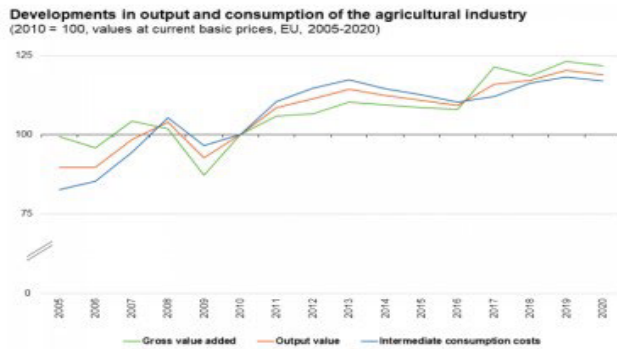
2.8.2022

DEVELOPMENTS IN OUTPUT AND CONSUMPTION OF THE AGRICULTURAL INDUSTRY

Farmers had to make purchases of goods and services to be used as inputs in the production process; they bought items like seeds, fertilisers, animal feedingstuffs and fuel for their tractors as well as veterinary services, among other things. These input costs are termed 'intermediate consumption' for the agricultural industry came to a total of EUR 235.8 billion for the EU as a whole in 2020. Some costs are associated with the farming of animals; they required feed, which accounted for approaching two-fifths (38.3 %) of total intermediate consumption costs.

2.8.2022

DEVELOPMENTS IN OUTPUT AND CONSUMPTION OF THE AGRICULTURAL INDUSTRY



Source: Eurostat (online data code: aact_eaa05) eurostat

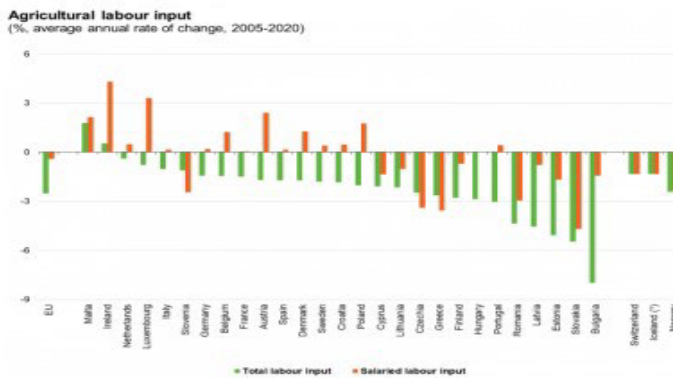
Developments in output and consumption of the agricultural industry (2010 = 100, values at current basic prices, EU, 2005-2020)

The gross value added generated by the EU's agricultural industry in 2020 also fell back from its peak in 2019.

Intermediate consumption costs for the EU's agricultural industry were an estimated EUR 235.8 billion in 2020.

2.8.2022

AGRICULTURAL LABOR PRODUCTIVITY



(*) 2010-2019
Source: Eurostat (online data code: aact_al02) eurostat

Agricultural labour input (% average annual rate of change, 2005-2020)

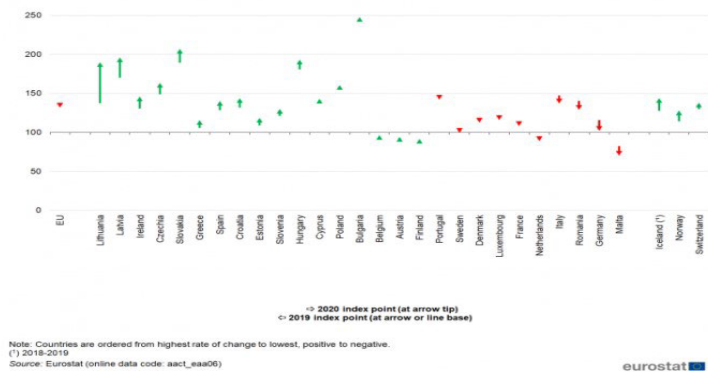
Over the long-term, the amount of agricultural labour used has been in steep and steady decline

Total agricultural labour input declined sharply in almost all Member States during the period between 2005 and 2020; the sharpest declines were in Bulgaria (an average -8.0 % per year), Slovakia (-5.5 % per year), Estonia (-5.1 % per year), Latvia (-4.5 % per year) and Romania (-4.4 % per year).

2.8.2022

AGRICULTURAL INCOME PER ANNUAL WORK UNIT

Agricultural income per annual work unit (Indicator A)
(2010 = 100, 2019-2020)



Agricultural income as defined by real factor income per AWU for the EU fell slightly in 2020 (-0.8 %)

Agricultural income, as defined by deflated (real) factor income per AWU and expressed as an index (called Indicator A), for the EU as a whole in 2020 was an estimated 0.8 % less than in 2019. This reflected a lower (-3.6 %) level of factor income compared with 2019 that was notionally shared amongst a reduced agricultural labour input (down -2.9 %)

Index of agricultural income per annual work unit (Indicator

A), 2019-2020

(2010 = 100)

2.8.2022

EU COMMON AGRICULTURAL POLICY (CAP)

There are about 10 million farms and 22 million labor force work in the agriculture sector in the EU.

The EU Common Agricultural Policy (CAP) was first launched in 1962. The new CAP (2023-2027) was agreed on 2 December 2021 for a fairer, greener and more performance-based CAP which provides more targeted support to relatively smaller firms.

€387 billion in funding has been allocated to the CAP for the 2021 -27 period (Eurostat, 2022).

2.8.2022

REFERENCES

EU (2022). The Common Agricultural Policy at Glance. https://ec.europa.eu/info/foodfarming-fisheries/key-policies/common-agricultural-policy/cap-glance_en (access date 5 March 2022).

Eurostat (2022). Performance of the Agricultural Sector. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector#Value_of_agricultural_output (access date 5 March 2022).

Johnston, F.B. and Mellor, J.W. (2020). The Role of Agriculture in Economic Development. *The Role of Economic Review*. 51(4): 566 -593.

Lenhardt, A. et al. (2012). Agriculture Policy Guide. Chronic Poverty Advisory Network.

Meijerink, G. and Roza, P. (2007). The Role of Agriculture in Economic Development. *Markets, Chains, and Sustainable Development Strategy & Policy Papers*. Wageningen.

Stiglitz, J.E. (1987). Theoretical Aspects of Agricultural Policies. *The Worldbank Researcher Observer*. 2(1): 43-60.

UNCTAD (2022). Trade and Agricultural Policies to Support Dmall Scale Farmers and Enhance Food Security. <https://unctad.org/fr/node/27525> (access date 5 March 2022).

WB (2022). Agriculture and Food. <https://www.worldbank.org/en/topic/agriculture/overview#1> (access date 5 March 2022).

2.8.2022

2.8.2022

SDGs orientation section video script

Hi everyone firstly thank you, for your kind interest to this course. Agricultural economics in development so as you know agricultural economics is one of the key title, one of the key topics in economics and moreover agriculture as a sector is one of the key drivers in economies so I would like to give you some information about agriculture. As of 2018 agriculture only represents three percentage of the world's GDP. I mean gross domestic products, unfortunately this ratio fell down from four percentage in 2010. Moreover also agricultural sector is one of the most important one in employment levels so even though agriculture represents a small share of the world's economic outlook, this industry employs almost third percentage of all workers however the income level is in agricultural sector is quite and relatively lower if we compare other sectors as well so income distribution is also very important for the sector so governments in surround agricultural markets throw price stabilization, price floor price ceiling tax, subsidized import and exports and quotas as well product restrictions so these are some of the most important policies imposed by macroeconomic policy makers so this gives us also the importance of the sectors moreover as you know not only the governmental level not only the country levels also International organizations such as United Nations, European Union, IMF and some of other key institutions also impose the key policies programs and goals that they introduce to increase the role of agricultural sector in all over the world.

The aim of this course and the main topics of this course are related to agricultural economics not only about policies but also some of the key terms in economics which are related to agricultural economics such as development and craft and also income distributions moreover the goals of this course are to understand the key Concepts in agricultural economics, analytical Frameworks of agricultural economics, agricultural policies so after this course the students will be able to understand, will be able to analyze the agricultural sectors agricultural economics and also markets in more details and thank you again.

SDGs powerpoint presentation version of the whole section script

It's well known agriculture is one of the key driver in economics, so this chapter gives an information about agricultural policies in economic development. This model is a part of SDG for business Project which is funded by Erasmus program. In this course we are going to examine firstly how economic development contributes to SDGS sustainable development goals and later than on we are going to examine the role of agriculture in economic development. Additionally, we are going to give also some of the key terms. In science, economics as well as agricultural economics and moreover agriculture based economic growth. Agriculture, economic policies, indicators, instruments and also analytical framework relevant to Food and Agriculture are some of the main. Topics of this course. The 4th agriculture is one of the main drivers in all over the world. As of 2018, agriculture only represents 3 percentage of the world's gross domestic product GDP, which was down from 4 percentage in 2010. Even though agriculture represents a small share of the world's economic outlook GDP. This industry employs almost 30 percentage of all workers in global. As I mentioned to you before, agriculture is one of the main drivers in world economies as of 2000. 18 agriculture only represents 3 percentage of the world's GDP gross domestic product. By the way, this ratio down from 4 percentage. In 2010, even though the agricultural looks like and represents a small share of the. World's GDP. I mean the economic outlook. This industry employs almost 30 percentage of all workers. Almost in several agricultural markets, agricultural economies and this sector through different economic policy tools: which are price stabilization, price floor price ceiling, tax, subsidies, import and export tariffs, quotas, product restrictions, et cetera. So the structure of the economy determines which agricultural policies are more likely to be appropriate in different countries. Agricultural policies are key to achieve sustainable development goals and also sustainable growth in every development level of a country.

The 17 Sustainable Development Goals this course focus on the water, energy, climate, oceans, urbanization, transport, science and technology. So all of these goals trying to achieve the human well-being and to protect the environment as well. These goals are also important tools for nutrition, food security and sustainable agriculture. Mentioned before, agriculture and agricultural issues are also the part of UN sustainable development goals. There are seventeen goals as we have mentioned as the world population continues to grow. Because of pandemics, other global challenges like the wars, more effective policy implications are needed to sustainable and productive agricultural production. And moreover, empowerment of farmers from poverty and ensure improved well-being are other tools to achieve these goals. Sustainable development goals stands for producers empowerment, sustainable agriculture, food security and nutrition productive and less wasteful food systems organized. So international trade policies reshapes all of these. Goals are also in the agenda of 2020 Third Security Committee meeting.

In this sustainable development goals. As I mentioned before, there are seventeen goals and almost all of the goals are related to food and agriculture.

Agricultural economics, as you know, as you know, I indicate a few times is one of the main drivers in global economies so international Institutions, economic or financial institutions also confiser agricultural economics as a part of policy goals. United Nation is one of them. So as you know, United Nations sustainable development. Some of their goals are related to agriculture directly. Actually six of the UN SDGS United Nations Sustainable Development Goals are directly related to Agriculture and agricultural sectors like these are No Poverty (goal 1), Zero Hunger (goal 2), Gender Equality (goal 5), Reduced Inequalities (goal 10), Life on land (goal 15), partnership for the goals (goal 17) These goals are directly related to agricultural agricultural sector. Let's examine the course content in more details. Firstly, we need to know some of the concepts, some of the terms in science, economics to get to know more understanding and analysis the topics of this course in more detail and to make all of the topics more clear. Like growth and development, so people are usually confused about these terms growth and development. By the way, these two terms are totally different than each other. Economic growth first refers that the increase in gross domestic product. And usually calculated yearly and also on the other hand, the percentage change in gross domestic product refers as the economic growth. By the way economic development refers to improving in quality of life living standards such as life expectancy, literacy rates, Internet usage ratio, healthcare mortality, maternal mortality rate, this kind of indicators gives us the level of economic development. So in conclusion or shortly,

economic growth is the percentage value which shows that the increase in gross domestic product yearly, on the other hand, economic development refers some of the indicators about valuing of a country. Actually, agricultural economics is one of the subtitles in economics, and the literature about the agriculture in an economy usually contributes to the economy in five different ways. These are providing increased food supply and large agricultural exports. Transfer of Labor force from agricultural sector to non agricultural sector. In addition to this, because of we also calculate the unemployment rate of a country by considering agricultural sector and also non agricultural sectors because the labor force in agricultural sector mainly work temporarily. Moreover, in cultures contribution to capital formation is another contribution of agriculture in an economy. Increased rural net cash income as a stimulus to industrialization is also another contribution of agriculture in an economy.

Role of agriculture in economic development. As I mentioned before, agriculture plays a critical role in an economy by providing food, income and labor force to rural areas as well. Moreover, improvements in agriculture are fundamental to achieving food security, income redistribution, poverty reduction, and overall sustainable economic development. Thus, agriculture to a country is also crucial for economic growth as well in 2000. In 2018, for instance, it accounted for four percentage of global gross domestic product in GDP and in some developing countries accounted more than 25 percentage of the gross domestic product according to World Bank Data, 2022.

Aspects Of agricultural policies. According to Stiglitz 1987, there are five theoretical aspects of agricultural policies are relevant. Of course, there are also other relevant theoretical aspects, but these are the key aspects which are relevant. These are incomplete markets in insurance and credits, public goods and increasing returns, imperfect information, externalities, and income distribution.

Policy Implications in Brief

Policy implications are based on 3 clusters. Assets, markets, labour and contain the following emphasizes as well. So now we are going to examine these three clusters. I mean, assets, markets and labor in more details. Assets accumulation: Land, water, livestock, equipments, savings and insurance services to protect them which support for social protection targeted to the poorest. Infrastructure and output markets, which reduce to risk and also to protect the accumulation. Improving the functioning of Labor markets for farm workers. Enhancing gender equality. The contribution of agricultural policies and programs. Moreover, a stronger emphasis on environmental sustainable farming. So now we are going to examine these policy implications one by one in more details. Firstly, we are going to examine asset cluster. Asset clusters or the lack of assets is frequently identified as a critical factor of poverty. So this assets are usually grouped into five types of capital, and these capitals are physical capital such as productive assets and housing, for instance. Natural assets like land is a natural assets. Human, which is also assets which differs knowledge, skills and health and financial assets. These are cash bank deposits. Livestock and other stores of belts and the fifth one, I mean 5th assets, is social assets. Social assets indicates the networks and informal institutions that facilitate coordination and cooperation as well. Now we are also, going to examine these five types of assets which are based, which are also the sub topics sub clusters in asset cluster. Firstly physical assets so the impacts of asset ownership on household welfare, income and expenditure. These are related to physical assets. The focus is on accumulating productive farm assets and maximum returns from them. Because we assume that in science economics, the aim of all the economic agents are profit maximization, which means that on the other hand maximum return. This is also one of the main goals. So physical assets we can give another examples about physical assets like small animals, cattle. These are also physical assets. And Physical assets in this cluster. Affordable Intermediate farm mechanization has scope to increase crop yields, crop diversification and incomes as well, which are also related to the main goal profit maximization goal. Local infrastructure developments such as storage processing facilities. Allows poor farmers to maximize their returns as well to receive from the assets they have already hold. In asset cluster like land and water as I mentioned before, these are the two key examples of natural capital. In early time periods of economics, classical economics, actually they assume that labor is the only capital and also land is non production factor but natural capital mainly first land and water in this analysis. So there is a direct link between asset accumulation and income distribution. Or income distribution providing engaged access to lands, which is one of the most important tools or effect factor in natural capital. A worked through commitment to proper poverty reduction needs to accompany and land redistribution. Land is not productive without water, so

equitable water access rights also is a main factor in natural capital cluster. Now we are going to examine human capital as a part of as a subtitle of asset cluster or one of the asset clusters. Human capital actually refers to education, labor, health and nutrition. This indicators are apart of human capital. Education gives people the knowledge to improve their skills, their goals and provides access to formal employment. I mean salaries, wage and also Social Security. You know, registered employment. So the purpose of agricultural development, one of the purposes of agricultural development actually is not only to maximize outputs and economic returns or profit maximization but also, fundamentally, to produce safe and you know, healthy food for the development of health people. So this is also related to economic development. Education is also high returns for smallholders, contracting with intermediaries and gives farmers an opportunity to barter equitably with traders. Social capital. Another asset in asset clusters. Social capital is also often the primary means of information transfer in rural areas with farmers sharing price information, and techniques in informal gatherings or through formal producers' groups. And also policy implementers can harness social networks to identify vulnerable unseen individuals or use them as a policy outreach. Now, we are going to examine the second cluster in policy implications, which is market clusters, market clusters, and I can say that this is about market mechanism in science economics because you know in science economics, we usually consider deep markets or divided markets into two groups, competitive and non competitive. But we say that's perfect competitive market structure or this is a theoretical one actually, others are imperfect competitive market structure which we divide into two groups in science economics but mainly wellfunctioning markets is our goal in economics by the way, in final in agricultural economics, agricultural markets so. Uh, sometimes. You know it lead to lead to increase market failure. Because of imperfect market conditions because of market failure. And adequate public expenditure and supply of infrastructure are the critical factors underpinning for malfunction markets. Finance marks have been, you know, dysfunctional such as financial services, including lack of credits and insurance. So as I mentioned before, price setting might be one of the tools like.

This map gives us some information about asset policy. Actually, we can say that this is asset policy guidance map, so in this guidance map there are three tools. Which are policy area, intervening variables and policy emphasizes. We can say that this is a kind of transmission mechanism. So which the policy area to which variables You know match the policy emphasises. For instance, you know some of the policy areas are grants, social protection, savings and credit, marketing intervention, Connecting to remote regions, local infrastructure, Small town development, Local infrastructure investment, and sustainable energy. These are the you know, in this maps we assume that there are eight policy areas. And also we assume that there are also 8 intervening variables which you know, transmit or transfer the policy area to the police emphases so in time, intervening variables are for instance high discrimination and social exclusion, Limited public funds, severe local inequality, uncompetitive pricing, limited public funds, single factor economy, remote areas and limited private lending or insurance institutions. These are intervening variables so how to connect to the policy emphases? There are More than 10 uh policy emphases because sometimes some move to variables may match more than one policy emphasis, and also some of the policy areas also are related to more than one variable. So I mean this mechanism is multiple variables or multiple transmission mechanism. I can say that like in causality. So for instance. If you give an example about policy areas, intervening variables, and policy emphasizes. So for instance, if we consider the market intervention so intervening variables might be might be pricing, or pricing mechanism or pricing tools. So policy emphasizes related to this policy area and intervening variables might be price floors and price ceiling. Uh, these are just two examples, of policy emphases. The rest of them. The rest of the policy areas, intervening variables and policy emphasizes match through this mechanism like let me give one another Examples about policy area, variables and policy emphases. Like if you consider the social protection which directly relate to the health, education, income and farm supports could behind another example as well. Policy implications labor clusters: labor is one of the actually the most important production factor in agriculture, so agriculture education could be a part of this since most discriminated households are in agricultural sectors. And also we can say that there are some unregistered labor force work in agriculture. A number of factors such as low education levels, poor health conditions, gender discrimination affects the ability of rural workers to obtain favorable job opportunities. Better in the farm or non farm sectors. Not only farm but also non farm sectors or non agricultural sectors. We can say this kind of factors are important. Educational and skills training can serve as one of the most

effective way to increase employability to increase labor force participation rates. Social Security programs, Tax policies and discrimination policies or programs. So these are maybe Necessary to increase the labor force participation rate in agriculture sector or or agriculture economics as a whole.

Labor policy guidance map. Like I said it, this little map gives us some information about transmission mechanism: policy, area, intervening variables, policy emphases. For these areas might be. You know, in this cluster, labour clusters labor security, employment guarantee, Legislating codes, educational skills, public work programs, minimum wage rates, and awareness might be policy areas. Intervening variables: Divided into several groups which transfer the policy area out to the policy emphases. High gender equality, low private uptake, high discrimination, Farm labor surplus or labor shortage and of course, elasticity of Labor markets. These are the intervening variables. Policy emphases: is about labor policies. It might be like there are many others, but these are the key points to emphasize that we consider in this lecture like. Sustainable climate-smart and market related skills training, so it's mainly based on training and education in labour policies. Moreover, gender is another factor which is about gender inequality or discrimination, so public awareness, gender analysis or quotas for discriminated groups might be another policy emphases in labour policy guidance map.

Agricultural markets have several key disadvantages. Actually, we have already examined the clusters asset cluster, market cluster and labor clusters we have until now and we have also examined the Policy guidance maps of those clusters. Now we are going to examine the The markets, the real issues, current issues and real issues in agricultural economics and agricultural markets as a whole. So firstly, agricultural markets in practice, If you compare like agricultural marks with other markets like financial markets like goods and other goods and services markets and agricultural markets have several disadvantages. Firstly the wage rate income levels are Quite low. And relatively low if you compare the other markets like farms, income is around 40 percentage lower compared to non agricultural income and there Are some unknown Unpredictable factors which affect agricultural markets directly, like weather And climate changes Which leads to uncertain crop size. There is also the gap between you know between consumer demand and farmers being able to supply, so it's because it's hard to guess what will be the crop size, what will be the consumer demands and farmers supplying agricultural markets so there might be excess or shortage in agricultural markets and also high transaction cost is another. This advantage in agriculture markets because you know agricultural goods are hard to keep fresh. Sometimes you know producers and face high transportation costs. This is kind of transaction cost as well, so transaction cost is not only about production, so it might be about transfer, transportation, or storage cost as well. There is also another organization international organization which focus on agriculture. So as you know European Union provides and declares many programs many plans, reports about agriculture because, it is one of the main driver European Union level as well. So the output of the Agricultural industry in EU. If you look at data about agricultural sectors in European Union. The European Union's agricultural industry Produced in 2020 was an estimated 414 four €114 billion. This includes the value of crops, Animals, agricultural services. Et cetera. About 1/2 Actually, nearly 53 percentage of the value of the total output of the European Union's agricultural industry in 2020 came from crops. Actually, about €219 billion. Vegetable and horticulture, horticultural plants and cereals are the most valuable crops, according to Eurostat data, 2022. We can also need to know some other data about to to to get to know more information about the size of the market, importance of the market because which help us to to determine the policies. To analyze the the the values actually in in European Union levels. So more than 1/2 Of the total output value of the European Union's agricultural industry came from the big Four. I mean about 58 percentage of total output In European Union agricultural industry came from 4 big, I mean big four countries, biggest economies of European Union. These are France, Germany, Italy and Spain. For instance France. The the output level is about €76 billion. Germany has €57 billion, Italy has €56 billion, actually nearly €57 billion Spain has €52 billion and they have in agricultural sector. These countries also are very important to determine the agricultural policies in European Union level. So the next grouping of Member States means the small size land size and Netherlands is another country important country, Poland, Romania. So this countries are important You know, producers in in agricultural sector. Output of the agricultural industries: this figure gives us information about output of the agriculture industry. The data belongs to a year 2020. So this figure gives us which subgroups belong to agricultural industry. As I mentioned to before, there are two main groups which is crops 53 percentage that that contribute to the total output

In European Union, the second highest group belonged to animals. Nearly about 38 percentage and there are other groups, but you know. Think that are two main groups, three main groups, animals, crops and outputs belong to these three groups, like for instance, crops in crops group. There are some vegetables and you know. Some vegetables like fruits like potato, fruits, cereals. Wine, also olive oil. These products these goods contribute to the crop output. On the other hand, like eggs, Milk, pigs, kettles, other animals; These contribute to the animals main group.

As I mentioned before there are several policies, several programs. These programs, the aim of the programs, are to improve output levels and also developments in agricultural sector. And so that's why we have to consider also inputs in agricultural sectors, so the input costs are termed intermediate consumption for the agricultural industry, which is total of nearly €236 billion for the European Union as a whole in 2020. Some costs are associated with the farming of animals because they required feed which accounted for approaching 2/5 of total intermediate consumption, so it's impossible to make the plans or to determine the policies interventions without constricting intermediate consumption, or we can say that this is intermediate goods which are inputs to get the output, but input costs are terms as intermediate consumption.

So in the slides, actually this figure shows us the output levels intermediate consumption and gross value added in agricultural sector in EU from 2005 to 2020. As you can see, all these values they go parallel in time span that we consider. But agriculture industry in 2020 fell back from its peak in 2019. And there are another, you know time periods like 2008 Global financial crisis and also one another important time period which directly affects the values is eurozone sovereign debt crisis and moreover. This values. You know goes parallel mainly. You know it's increased since 2010 and also 2016. Agricultural labor productivity in the slides we can, you know, see the agricultural labor productivity levels, labor inputs and salaried labor inputs. Yeah, the the green bars represents labor input, while the you know orange colors bar graphs shows these salaried labor inputs, percentage level, average percentage, annual rate of change between the years 2005 and 2020. As you can see in this bar graph illustration, there are some countries where the salaried labor input are highest. In comparing to rest of the countries, the rest of the European Union countries, but mostly we can say the total labor input is quite lower and in steady decline. But sharp decline in almost all Member States during the during the time period. And the sharpest decline shows and occurs in Bulgaria, Slovakia, Estonia, Latvia and Romania as well. This figure gives us some information about income per annual work units because it's impossible, and it's not so healthy to actually to compare salaries in labor inputs and non salary it's input without income levels for annual work units, so this actually figures gives us some information about this indicator, where we assume that the year 2010 is, you know. Some, that's one percentage, and it costs income also. As defined by real factor income, real factor income, but slightly is getting decreased. If you consider all the countries all the EU membering countries. 2020, for instance, was an estimated 0.8 percentage less than in 2019, but this reflected lower, I mean 3.6 level of factor income compared with previous year which means that they in total share of the agricultural labor inputs reduced during that time period during.

Common agricultural policy. As I mentioned before, Agriculture is one of the main focus of European Union, of course, and they imply they announce many policies and policy frameworks, Policy structures in EU level common agricultural policy is one of the most important. Among them, in short, this is known as CAP common agricultural policy. If you look at the size of size of agricultural sector in EU, there are about 10 million farms. And 22 million labor force work in the agricultural sector in the EU. This belongs to recent data of Eurostat. The European Union Community agriculture policy CAP was first launched in 1962, so since the beginning of European Union, the establishment of European Union this is the interest of the member countries, but European Union has already announced the new CAP(2023 to 2027) and it was agreed on. 2nd December of 2021. The aim is fairer, greener and more performance based CAP which provides more targeted support to relatively small for smaller firms or smaller farmers so. About, uh 387 billion funding has been allocated to the CAP. This figure shows the objectives of the CAP. These are these objectives are to ensure a fair income for farmers, To increase competitiveness, To improve the position of farmers in The food chain, Climate change action, Environmental care, to preserve landscapes and biodiversity to support generational renewal, Vibrant rural areas, to protect food and health quality and fostering knowledge and innovation. These are the 10 main objectives of the CAP. The objectives are determined in the light of agricultural policy in Europe, so agricultural policies in Europe are divided into 12 groups. As you can see in this figure. Each of the policies

are focused on different targets of different policy targets like social and related to social and ecological targets related to you, know rural areas, related to insects and birds clean water and healthy foods, related to far or less money. I mean company distribution related to, Political erosion erosion, which directly affects the the policies. Animal welfare, climate protection, biodiversity and global justice. These are actually agricultural policies that Build the framework of agricultural policies in Europe.

In conclusion, agricultural policies are one of the most important macroeconomic policies in for in all over the world, in all over the world. And there is some developments in world economies. In global economies they began to focus on agricultural policies much more than before, so the pandemic, financial crisis and instabilities climate change. So these are the factors which directly affect agriculture Policies in all over the world. And, UM. Here finally, at the end of this module, here you can find some of the selected references which are used in this module and thank you for listening.

SDG4BIZ M2 Section 2: Context



Business opportunities for NGOs in Food and Agriculture Quadruple Helix Model video script

Dear students welcome to the lecture: business opportunities for NGOs in food and agriculture quadruple Helix model. My name is Assel Kurmantayeva, researcher at Yasar University and the PHD student at Almaty Management University. We will learn today about the general food and agriculture organization, its connection with SDGs is also some Innovation models. We'll explore partnership opportunities for civil society organizations also learn about some business opportunity models and the impact investment. So, one of the major organizations in food and agriculture is the food and the agriculture organization FAO and it has some SDG indicators for which it has a custodianship and for which it is a contributing agency or conducts some periodical reports and according to this report there are some Trends in 21st century that will be main drivers of the change. It includes population growth, global economic growth, increasing Capital competition for natural resources, climate change, agricultural productivity, transboundary pests and disease, conflicts and crisis and natural disasters, poverty, inequality food insecurity, nutrition and health, structural change and employment, migration and agriculture, changing Food Systems, food losses and waste, governance for food security and nutrition, development Finance.

So according to these Trends there are some Global challenges and facing food and Agriculture and this should be also considered for effective National and the international governance and they indicate some major 10 Global challenges so it mainly includes them there is a necessity for a sustainable in improving agriculture productivity, ensuring sustainable natural resource bases, addressing climate change, eradicating extreme poverty, ending hunger in all forms of malnutrition, making food systems more efficient, improving income earning opportunities in rural areas, building the resilience to protested crisis preventing transboundary and the emerging Agriculture and the Food Systems threats, addressing need for coherent and effective National and international governance. If we learn about what kind of innovation models there exists let me tell about quadruple Helix model. So basically, it started as the triple helix model where States -that is government, universities and the business jointly create Innovation so they create some kind of ecosystem. Also, this kind of model have been Advanced to the quadruple Helix model and the society have been included. So, knowledge-based economy implies the existence of national environment and the introduction of quadruple Helix and the function of the quadruple helix presumes four key actors: University, industry, government and the society and it can create some open circulation for ideas and the knowledge. So, if we look at this diagram so we can see there is a quadruple Helix basic model of the Innovation in the context of society. Also, lately there have been advancement even quintuple Helix and the even end-helices model where different actors can be involved but basically, we can focus on quadruple Helix model where society plays a role to create Innovation so that's why the role of NGOs and the Civil Society being increasing the role for creating innovation. Here we come to some Innovation areas for Food Systems so it includes National under Regional ecosystems to improve how we innovate nationally and regionally, societal and the institutional Innovation to improve how we collaborate, knowledge and the technological innovation to improve knowledge systems and the Technology Solutions, data and the digital Innovation to improve and integrate data and the digital systems. So, this kind of innovation can create people-centered Innovation areas for Food Systems transformation. Some road map for Innovation action for holistic transformation; it includes promoting National and Regional ecosystem, encouraging societal in the institutional Innovations, employing and supporting new and existing knowledge and technology, improving in and integrating that data and the digital systems.

So, we can see there are some enabling Innovation platform examples for example there is a platform which is called 100 million Farmers, this is a multi-stakeholder platform and it is a catalyzing action to transit to Net Zero nature positive Food Systems by 2030. Also there is a "hand in hand" initiative FAO's evidence-based country-led and the country-owned initiative to accelerate agriculture transformation and the sustainable rural development. And it contributes to the sgd-1 and the sgd2. Some examples of social Innovation cases in food and agriculture: so, in general social Innovation contributes to more sustainable Food Systems. So

according to the researcher's sustainable models correspond to the past and the Dynamics of the value of chain so in general if we consider social Innovation this is a Social Capital Corporation of people and the communities Collective management of resources renting policies to support communities and protect life food is regarded as essential way for the way forward. Some examples include agriculture marketing platforms: "Tarımsal Pazarlama" this is an example of social Innovation including the environmental feed and it represents the first online platform in Turkey for Farmers to sell their products without middlemen involvement and they can track new information about stock market prices and Etc. and the farming as well as search for new technologies. Also, another example is "last minute Sota Casa" is the website which allows shopkeepers with food near to its expiry date to send out food alert to local people and the advertising last minute bargains. Also, there are some examples of Community Driven social Innovation for example Bond Market Garden this is a community supported agricultural initiative from a Southeast Wells and this social Enterprise registered as the industrial Providence Society for Community benefit and that has about 100 shareholders members of the Enterprise. So what are the opportunities in general food and agriculture uh for civil society organizations so how a civil society organizations NGOs can cooperate? There are some examples for Food Systems in the initiative by World economic Forum. Its goal is to deliver inclusive sustainable efficient nutrition and healthy food systems. The world economic forums food system initiative is working to establish the conditions for Collective leadership and in General Food Systems initiative Fosters cross-sector collaboration and involves working Across America Asia Africa and Europe to implement basic commitments. And the general it aims to facilitate multi-stakeholder dialogues, mobilize leadership and the expertise to achieve agriculture sector Transformation, strengthen the positive impact of Agriculture value, leverage the role of emerging technology Innovations and create robust Innovation ecosystem, drive multiple Pathways for enhancing sustainable nutrition and support UN food system Summit action tracks through game changer initiatives. So as there are four core aspirations of the world's Food Systems uh so those include the inclusive, ensuring economic and social inclusion for all food system actors, sustainable minimizing negative environmental impacts, efficient producing adequate quantities of food for Global needs and the nutritious and healthy enabling consumption for diverse range of health and nutrition the safe foods. Also, another opportunity of partnership uh if we look at the food and agriculture organization strategy as they have strategy of a partnership with civil society organizations. There are some advantages for CSOs so their Outreach and a capacity to the poor and the vulnerable, their mobilization and the advocacy capacity, the representation of the Border network as the key role in community-based management of natural resources and the knowledge of local contexts. So

what are the benefits for FAO? this is the inclusion in discussion of isolated and vulnerable groups, better representation in debates, increased advocacy and the mobilization capacity, complementary Outreach and the capacity for field activities, enhanced ownership, access to resources. And of course, there are a lot of benefits for CSOs - Civil Society organizations. FAO provides access to neutral forum of discussion, access to information, capacity Building, Technology knowledge, expertise, possibility of suggesting items for discussion in the agendas of the international meetings, FAO can facilitate discussion and the exchange of the views of CSOs and the member states at all levels. so, areas of collaboration include field program, knowledge sharing capacity development, policy dialogue, joint use of resources in emergency situations, normative activities, advocacy and communication. Also, there are a model of South -South Corporation. So, this is a country in South they can offer different development Solutions: knowledge, experience, good practices, Innovative policies, Technologies, resources so in general it includes several mechanisms and the forms which is kind of formal education paths, fielding of experts and the technicians, learning exchanges, institutional collaboration, policy dialogues. Some of the examples can be for example in Nigeria and Uganda as a secretary of the minister of agriculture, they have led study tour delegations to China and participate in studying China's agriculture development experience in legislation, policy, technology and market. So that is the model of cooperation which can bring mutual benefits. Also let me introduce about the cooperation model which is one of the organizations of joint SDG fund. This is an inter-agency pooled mechanism for integrated policy support and strategic financing. It is action-oriented U.N platform and its aim is to reorient public and the private Capital towards the SDGs. And as you can see, one of the areas it is the Food Systems and the agriculture. Some of the examples include the Suriname example so basically it is accelerator for agriculture and agri-industry development and Innovation plus and the sustainable pineapple value chain

development. So basically, uh what they have done is 335 hectares uh will be cultivated uh for organic pineapple production leading to increase of farmers income. Before, Suriname's interior regions are underdeveloped and under-serviced with the population suffering disproportionately from poverty and unemployment and this can kind of solutions can bring economic growth and bring development of rural areas.

Also now we look at the business opportunity models towards food and agriculture SDGs

Food and agriculture organization have developed the guidance on core indicators for agri-food systems. This include measurements for private sectors so in this report you can look at the indicators which can be achieved and for which private sector can contribute. The implementation of SDGs and including these SDGs will bring a contribution towards the implementation of the SDGs so they are divided as the economic, environmental, social, institutional.

SWOT analysis

There is a report uh which is uh which conducted the analysis of social entrepreneurship connected with Food Systems so you can see there have been different strengths, challenges and the weakness, opportunities threads. So, some of the strengths includes social Enterprise operate in a niche market uh combining entrepreneurial values with social values. Or for example social Enterprise create quality sustainable ethical products in a niche Food Market. But also, there are some challenges or weaknesses such as weak business skills among social entrepreneurs, lack of financial means holds back upscaling investment, a higher rate of illiteracy among customers, social Enterprises work with small teams so Etc.

Some of the opportunities; there are lots of opportunities so one of them International Development process focus more and more on linking private sector with the aid agenda, more political interest and increasing investment of agriculture. Also access to markets, knowledge, technology has improved in recent years. Of course, there are threads starting from politically instability, risk of cheap Imports for some products, extreme weather and the climate changes so this report can be very useful for any kind of social entrepreneurs connected with food and agriculture.

So, there are some enabling actions between profit making and the CSOs. In general partnership between social entrepreneurs with corporations, government, civil societies. Social entrepreneurs can show their added value. Social entrepreneurs still have limited awareness about the importance of social impact measurement. Social entrepreneurs are treated too much like separate groups with their own institutions Support to social enterprises to food value chain is diverse. So, in general you can see there are different points of view and there is still room for improvement of social entrepreneurs. So, co-creation and the socio-technical innovation bundles necessarily requires multi-party cooperation among public and the private sector organizations. To create any kind of innovation of course Enterprises should be in the ecosystem and be involved in co-creation processes and they involve different multi different stakeholders.

Let me say about impact investments in food and agriculture. So in general what is impact investment?

These are investments made with the interaction to generate uh positive measurable social and the environmental impact alongside the financial return. There is a major organization which is called Global impact investing Network. It is a global champion of impact investment dedicated to increasing its scale and Effectiveness around the world. Also they have integration with the SDG so SDG Integrations throughout the investment cycle starting from sourcing and the due diligence to the exit process. So they have been preparing the report on performance in agriculture and their investment. They have conducted 402 investment operated in multiple countries the majority is in sub-Saharan Africa. They have strategic impact goals most commonly targeted to increase sustainable farming processes so top of them include increasing production of healthy and sustainable crops, increasing conservation and the restoration of land including agroforestry. They have strategy goals targeted by investment associated with increased farmer productivity

SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ

which is increasing access to agriculture training and information, increasing foreign profitability, increasing access to better stable pricing of agriculture products. So in general roadmap for the future of impact investment includes identity, behavior and expectations, products, tools and the services, education and the training, policy and the regulation. So by considering this kind of opportunity models and impact Investments, you can also see how your organization can have a access to different types of fundings. This is the end of my lecture uh the lecture will be available for you to download uh thank you for your attention.

Food and Agriculture Organization (FAO) and SDGs



Indicators under FAO custodianship

(list of indicators)

Indicators for which FAO is a contributing agency

(list of indicators)

The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. Their goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives. With over 194 member states, FAO works in over 130 countries worldwide.



The Quadruple Helix Model

(image)

Carayannis & Campbell 2009

Configuring the national innovation environment consists of streams and connections between industry, government, university, and economy. It represents an important economic determinant of a modern society in the field of science, technology and innovation development (OECD, 1996). Understanding the significance of knowledge, technology and innovation for the growth, development and maturation of contemporary society, led to the study of a "knowledge based economy" (Chen & Dahlman, 2005). A knowledge based economy implies the existence of a national innovative environment, and the introduction of a Quadruple Helix model. Functioning of the Quadruple Helix model presumes four key actors (university-industry-government-civil society) that act on the principles of open circulation of ideas and knowledge, based on a continuous learning process, communication and mutual cooperation (Carayannis & Campbell, 2009). Such spiral connections result in the capitalization of knowledge, creating new forms (organizations, projects) in the processes of key actors interaction and do not belong exclusively to any of them (Carayannis & Campbell, 2009).

(image)

The quadruple and quintuple innovation helix framework describes **university-industry-government-public-environment** interactions within a knowledge economy. In innovation helical framework theory, first developed by Henry Etzkowitz and Loet Leydesdorff and used in innovation economics and theories of knowledge, such as the knowledge society and the knowledge economy, each sector is represented by a circle (helix), with overlapping showing interactions.

The **Carayannis and Campbell** quadruple helix model incorporates the public via the concept of a 'media-based democracy', which emphasizes that when the political system (government) is developing innovation policy to develop the economy, it must adequately communicate its innovation policy with the public and civil society via the media to obtain public support for new strategies or policies.

Four people-centered innovation areas for food systems transformation

Innovation should be understood in a broad-based, inclusive way on how we collaborate with different stakeholders, including the most vulnerable, and how we use existing and new knowledge and technologies – scientific, indigenous and of other kinds – to inform those evidence-based solutions through an ecosystem approach.

(image)

The Innovation Lever identified four Innovation areas to support national food systems pathways to fast-track transformation by fostering holistic and inclusive innovation:

1. National and Regional Ecosystems, to improve how we innovate nationally and regionally
2. Societal and Institutional Innovation, to improve how we collaborate
3. Knowledge and Technological Innovation, to improve knowledge systems and technology solutions
4. Data and Digital Innovation, to improve and integrate data and digital systems.

https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf



A Roadmap for Innovation: actions for a holistic transformation

As part of the InnovationLever, an array of public,private and non-profit actors collaborated to define technical,organizational,institutional and political intervention that pave the way for country stakeholdersto fast-track food systems transformation by encouraging innovation

To help countries to accelerate their food systems transformation, the InnovationLever will continue to support country stakeholdersto take advantage of innovation opportunities. The InnovationLever will act as a resource that countries can use to share knowledge and engage potential partners to take actions that implement the four innovation areas:

- **Promoting national and regional innovation ecosystems** by creating inclusive national innovation strategies that are adequately supported, committed to and resourced. The Innovation Lever identified the Food Innovation Hubs as a potential delivery mechanism for countries to stimulate innovation at national and regional levels through collaborative multi-stakeholder action using knowledge, technology, data and institutional capacity to develop locally driven innovation ecosystems.
- **Encouraging societal and institutional innovations** that improve existing models of collaboration and partnerships and create new ones, to ensure and protect the right of all stakeholders – be they small-scale producers, women, Indigenous peoples, community-based organizations, entrepreneurs or others – to participate fairly in decision-making in relation to food systems. The Innovation Lever created principles for multi-stakeholder collaboration that the UN Development Programme is taking forward as part of an initiative to realize greater participation in food system decision-making.
- **Employing and supporting new and existing knowledge and technology** to create and implement net-zero nature-positive solutions that work for people. The Innovation Lever identified the 100 Million Farmers platform as a way to incentivize farmers and enable consumers to place climate, nature and resilience at the core of the food economy to boost nature-positive production, advance equitable livelihoods and build resilience to vulnerabilities, shock and stress.
- **Improving and integrating data and digital systems** to ensure they are aligned, agile and interoperable and can support a climate-smart and inclusive food systems transformation. The Innovation Lever identified the Global Coalition for Digital Food Systems Innovation⁴ made up of three delivery platforms (One Map, Data and Digital Marketplace Playbook and Digital Data Cornucopia), as a coalition with the capability to support countries to employ data in inclusive and responsible ways, thus creating new visibility of, and opportunities within, food systems.

https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf



Societal and institutional innovation

To improve how to collaborate to transform food systems

- Develop a shared understanding of the key issues to be addressed taking into account the long-term outcomes. Ask yourself: Have you analysed the problem? Have you checked with other stakeholders?
- Collaboration should be context-specific, locally owned and aligned with country and global goals, with an effort to keep food consumption as a driver. Ask yourself: Does the effort support national priorities? Are you working with local champions?
- Establish multi-stakeholder structures that are accessible and inclusive from the beginning. Ask yourself: Are you involving affected people in decision making? Are you reducing barriers for marginalized communities and supporting them to participate? Who is missing? Are there other groups working on the same issue?
- Design for an inclusive and adaptable journey that addresses emerging trends, power imbalances and challenges from different perspectives. Ask yourself: Are you starting with questions or answers? Have you addressed power imbalances between the group and/or others you work with? Will you review partnership strategies? Are you monitoring the situation to ensure you are helping those you intend to?
- Proactively promote and reinforce the right to effective participation and to think differently about implementation. Ask yourself: Are all actors able to have a say and input into solutions?
- Gauge and manage risk in multi-stakeholder dialogues. Ask yourself: Have you created a safe space? What are the risks? Are risks of misuse of power being addressed?
- Develop common and agreed-upon food-related policies that balance different interests and goals. Ask yourself: Are public and private actors involved? How will this affect other areas of the food system? Are you promoting a common approach across the public sector?

https://www3.weforum.org/docs/WEF_Transformig_Food_System_2022.pdf

Enabling innovation platforms and design sprints

100 Million Farmers

100 Million Farmers is a multi-stakeholder platform catalysing action to transition to net-zero, nature-positive food systems by 2030. It sets out a shared global ambition while supporting local solutions that incentivize farmers and empower consumers to place climate, nature and resilience at the core of the food economy.

Agricultural systems are acknowledged for their unique potential to address global challenges. Food system actors can feed a growing population while supporting the fight against climate change and nature loss.

<https://www.weforum.org/communities/100-million-farmers>

Agriculture Innovation Mission for Climate (image)

WORKING TO ENABLE SOLUTIONS AT THE INTERSECTION OF AGRICULTURE AND CLIMATE

<https://www.ainforclimate.org>

Hand-in-Hand is FAO's evidence-based, country-led and country-owned initiative to accelerate agricultural transformation and sustainable rural development to eradicate poverty (SDG 1) and end hunger and all forms of malnutrition (SDG 2). In doing so, it contributes to attaining all of the Sustainable Development Goals. The initiative prioritizes countries where national capacities and international support are the most limited or where operational challenges, including natural- or man-made crises, are the greatest.

Social Innovation cases in Food and Agriculture

How social innovation contributes to more sustainable food systems

The changes of food system towards more sustainable models correspond to different paths and dynamics of the value chain (Cristovão & Tibério, 2009), that is i) consumption of local produced food; ii) establishment of direct relations between producers and consumers; iii) revitalization of distribution, processing and production structures; iv) networks of producers, local governments, entrepreneurs and other leaders; v) promotion of local economy and rural development

In the agro-food system, social innovation has been developing over the last decades through a large diversity of forms, both in advanced countries (Adam 2006; Larsson, 2012; Jolink & Niesten, 2015) and developing countries (Seelos & Mair, 2005; Bansal et al, 2019). It is characterized by the active involvement of consumers, and not only of producers. On the part of consumers, it ranges from a new attitude regarding fair trade, concerns with healthy and quality products and purchase decisions influenced by the environmental impact of their choices. On the part of producers, a variety of responses has been created under the growing awareness of environmental impacts, animal wellbeing issues and the need for a healthy food supply.

The empowerment dimension of social innovation is about increasing the socio-political capabilities of individuals and communities (Moulaert et al. 2005) by including people in decision-making and service provision and creating common visions for change (González et al. 2010). Empowering people means increasing the recognition, access and voice rights of marginalised groups (Martinelli 2010). Renting et al. (2012) suggest that access to healthy food in a socially inclusive way and engagement in food growing is a way of empowerment. In addition, building strong community is a way of increasing their socio-political capabilities of the community supported agriculture (CSA) initiatives, also considered "a major selling point" in attracting more members (Schnell 2007, p. 559). There is a positive correlation between community capital and the retention of members (Flora and Bregendahl 2012).

Social capital, cooperation of people and communities, and collective management of resources as well as re-orienting policies to support communities and protect livelihoods is regarded as essential for the way forward (Pretty 2020; Graddy-Lovelace 2020). It seems that community supported agriculture has an important role to play in the future as it embodies all the features considered for more sustainable food systems: it is solidarity-based, equitable, ecologically sound, and healthy. But most importantly, the CSA has demonstrated for now that it is resilient in times of crisis and not only provides food but nurtures communities and cares for the vulnerable people.

Food Systems Initiative by World Economic Forum



Goal: To deliver inclusive, sustainable, efficient and nutritious & healthy food systems

The World Economic Forum's Food Systems Initiative is working to establish the conditions for collective leadership action through systems thinking, institutional leadership alignment, and catalyzing and supporting an international consensus and collective action agenda and a series of leadership milestones that can accelerate those actions.

The FSI fosters cross-sector collaborations and involves working across Americas, Asia, Africa, and Europe to implement these commitments. The FSI aims to:

- Facilitate multi-stakeholder dialogues such as the Food Systems Dialogues related to food system transformation around the world
- Mobilize leadership and expertise to achieve agriculture sector transformation through the Transformation Leaders Network which engages over 150 action leaders and experts to exchange knowledge and systems leadership thinking, best practices, and experience across regions and sectors
- Strengthen the positive impact of agricultural value chains leading to food that is produced efficiently and sustainably in a way that is accessible to all, supporting a transition to healthier diets and improved environmental outcomes. The Food Action Alliance is comprised of a coalition of organizations and initiatives, who support these systemic changes and enhance productivity.
- Leverage the role of emerging technology innovations and create a robust innovation ecosystem at the country and regional level through the Food Innovation Hubs, which promote collaboration that is multi-stakeholder, pre-competitive and market-based.
- Drive multiple pathways for enhancing sustainable nutrition through alternative proteins and diversified high-protein crop varieties, improving sustainability of existing animal-based production, and complementing all efforts through consumer behavior and demand-based shifts.
- Support UN Food Systems Summit action tracks through game-changer initiatives as well as through key leadership milestones. The action tracks are complemented by levers for change to offer cross-cutting and transformative impact from enabling agendas such as youth and gender empowerment, finance, human rights, and innovation.

<https://www.weforum.org/projects/strengthening-global-food-systems>



Four Core Aspirations for the World's Food Systems

(image)

Through ongoing dialogues hosted by the World Economic Forum and in collaboration with Deloitte, leaders from all sectors and regions have aligned around four core aspirations for the world's food systems to be:

1. Inclusive, ensuring economic and social inclusion for all food system actors, especially smallholders, women and youth.
2. Sustainable, minimizing negative environmental impacts, conserving scarce natural resources and strengthening resiliency against future shocks.
3. Efficient, producing adequate quantities of food for global needs while minimizing post-harvest loss and consumer waste; and
4. Nutritious and healthy, enabling consumption of a diverse range of healthy, nutritious, and safe foods.

The aspiration for inclusive, sustainable, efficient, and healthy food systems will not be easy to achieve. A number of major global trends will pose both challenges and opportunities in the future. From technology to government, the implications reach across a range of sectors and will require a holistic approach in order to address systemic and interconnected challenges.

https://www3.weforum.org/docs/1P/2016/NVA/WEF_FSA_FutureofGlobalFoodSystems.pdf



(image)

FAO strategy for partnerships with Civil Society Organizations

By expanding its collaboration with CSOs, FAO aims to capitalize on the capacities, knowledge and skills of CSOs. FAO ensures that any assistance it provides to vulnerable people is delivered in a coordinated and accountable way. These mutual benefits provide the basis for FAO to engage in partnership with CSOs.¹⁴

FAO acknowledges the following comparative advantages of CSOs: their outreach capacity to the poor and vulnerable; their mobilization and advocacy capacity; the representation of their broader networks; their key role in community-based management of natural resources; and their knowledge of local contexts.

Some of these mutual benefits are:

Benefits for FAO

- Inclusion in discussions of isolated and vulnerable groups
- Better representation in debates and discussions.
- Increased advocacy and mobilization capacity
- Complementary outreach and capacity for field activities, including improved emergency response.
- Enhanced ownership of endorsed policies/strategies
- Access to resources (human, physical, knowledge)

Benefits for CSOs

- FAO provides access to a neutral forum for discussions vis-à-vis private sector, Member States and other stakeholders
- Access to information, capacity building, technical knowledge and expertise on key food security areas.
- Possibility of suggesting items for discussion in the agendas of FAO meetings
- FAO can facilitate discussion and the exchange of views between CSOs and Member States at all levels

<https://www.fao.org/3/i3443e/i3443e.pdf>

Areas of collaboration

Field programme

To strengthen local capacities and project outreach in a more cost-effective manner, FAO, in coordination with Member States, will promote dialogue and partnerships at field level with civil society to design, implement and monitor quality and sustainable local initiatives, programmes, projects and emergency responses. FAO acknowledges that the chain of accountability to affected populations travels from the funding source to the end recipient, requiring FAO and other agencies to discuss and negotiate with their partners (e.g. the food security cluster and its humanitarian partners; forestry national fire surveillance systems with local NGOs; seed multiplication in Haiti with local NGOs).

Knowledge sharing and capacity development

FAO is in a unique position to promote and facilitate the flow of global knowledge on agriculture and nutrition issues and make it accessible to all sectors of society. However, FAO will also capitalize on the detailed knowledge CSOs have from the grassroots level and regional contexts, which will greatly complement the stock of knowledge and technical expertise that FAO promotes. This exchange will allow FAO to better respond to local contexts and needs (e.g. the Gambia Forestry Department worked with FAO and local civil society institutions, such as the National Consultancy on Forestry Extension Services and Training, to institutionalize a step-by-step participatory enterprise development tool that supports the sustainability of transfer of forest resources to the communities).

Policy dialogue

FAO may establish fora for policy dialogue or, when requested, support Member States in creating policy dialogue fora on issues related to food security and nutrition. These fora could be multistakeholder discussions including CSOs in the dialogue together with Member States and decision-makers, thus increasing ownership, accountability and sustainability of policy adoption and implementation (e.g. providing inputs to FAO Regional Conferences,¹⁵ post Rio+20.)

Joint use of resources in emergency situations

Large international and national NGOs, foundations, and academic institutions have considerable stocks of human and financial capital, supplies, assets and capacity development strengths. Some of these entities are specifically mandated and funded to provide support to UN agencies with a range of services. In turn, grassroots CSOs will have numerous contacts, not only at grassroots level, but also with large formal and informal social networks and platforms. FAO will increase cooperation with some organizations to jointly mobilize and use the wide human, physical and financial resources available, increase the scale and focus of FAO's technical support, improve the coordination capacity of all stakeholders and ensure improved accountability to affected populations¹⁷ (e.g. humanitarian organizations have stand-by partner agreements with FAO through which staff, equipment and supplies can be made available for FAO's deployment missions when responding to crises). The Emergency and Rehabilitation Division (TCE) will collaborate together with OPC in these interventions.

Normative activities

FAO supports the involvement of CSOs along with Member States, research institutions and other interested stakeholders in the implementation of codes of conduct, global conventions and regulatory frameworks in areas related to FAO's mandate (e.g. Code of Conduct for Responsible Fisheries;¹⁸ International Treaty on Plant Genetic Resources for Food and Agriculture; Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the context of food security).¹⁹

Advocacy and communication

FAO and civil society partners will jointly raise public awareness and build strong support and political will in the fight against poverty and food insecurity. They will benefit from each other's extensive experience, networks and outreach. Together they can reach grassroots audiences, raise issues to key decision-makers, and inform public opinion (any joint advocacy initiative will abide by UN principles).

South-South Cooperation

Diverse and flexible SSC modalities for exchange at policy, institutional and grassroots levels

(image)

Countries in the South offer a myriad of development solutions – knowledge, experiences, good practices, innovative policies, technologies, and resources – that have proven cost-effective and have huge potential to be up-scaled for the benefit of others. This Guide starts from the premise that South-South Cooperation (SSC) is playing a greater role than ever before in the international development landscape. Innovation in the South is generating new tools and partnerships for tackling issues of food insecurity, poverty and sustainable agriculture. In addition, Triangular Cooperation is a growing phenomenon, whereby a third party, usually an Organisation for Economic Co-operation and Development (OECD) country or multilateral organization, provides resources to facilitate SSC.

- A Host country contribution
- B Provider country contribution
- C Triangular Cooperation
- D Other sources/seed funding
- E Funds from ongoing FAO programmes and projects

<https://www.fao.org/i5163E/i5163e.pdf>

The **Joint SDG Fund** is an inter-agency, pooled mechanism for integrated policy support and strategic financing

(image)

An action-oriented United Nations platform to reorient public and private capital towards the Sustainable Development Goals (SDGs) in developing countries. A joint collaborative hosted by the Joint SDG Fund, and provide investors a safe space to innovate, collaborate, and co-invest.

<https://www.jointsdgfund.org>

Joint SDG Fund food and agriculture portfolio case: Suriname

The Accelerator for Agriculture and Agroindustry Development and Innovation Plus (ADI+): Sustainable Pineapple Value Chain Development

Why

Suriname's interior regions are underdeveloped and underserved, with the population suffering disproportionately from poverty and unemployment. Sustainable agriculture is considered a growth opportunity. Modest collaboration across stakeholders, lack of investments, absence of extension services, and limited business skills and knowledge of markets have prevented the emergence of sustainable value chains thus far.

What

At least 335 hectares will be cultivated for 1000 MT of organic pineapple production, leading to an increase of farmers' income. This shift towards permanent organic farming systems with a decreased portion of land use will significantly reduce environmental pressure on primary and secondary forests. By supporting 110 small businesses and farmers, at least 100 full-time equivalent jobs will be created. At least 30% of small farmers and businesses supported will be women-led. At least 215 hectares of forest will be preserved.

How

A mix of financing solutions is proposed to address the financing constraints that have prevented Suriname to seize the great potential of the pineapple value chain. These are: a collateral support facility that will de-risk commercial bank loans and allow private sector banks to lend to smallholder farmers, a Pineapple Cooperative Development Company that will centralize production planning and ultimately act as marketer of the pineapple, and a Pineapple Innovation Hub, a local foundation that will provide tailored agronomic and business support and management services to farmers. This holistic approach offers a context-specific blended finance solution for placing Suriname on a course to be a sustainable pineapple producer for the local and international markets.

Financial instruments

The collateral support facility will provide security cash collateral covering 20-50% of the value of loans provided by commercial banks to pineapple farmers. The 3-year loans will cover farmers' input and services costs to improve their agronomic practices under an out-grower scheme managed by the Pineapple Innovation Hub.



Co-funded by the
Erasmus+ Programme
of the European Union

23



Business Opportunity Models towards food and agriculture SDGs

(image: food security environmental sustainability and economic opportunity)



Co-funded by the
Erasmus+ Programme
of the European Union

24



(image)

Society Works conducted the mapping project on social entrepreneurship for food security that was granted and supported by the Food & Business Knowledge Platform (F&BKP) in the Netherlands. The findings of this mapping project have been synthesized in the report.

https://knowledge@food.net/wpcontent/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf



Co-funded by the
Erasmus+ Programme
of the European Union

27



Enabling actions between profitmaking and CSOs

- Partnerships between social entrepreneurs with corporations (e.g. CSR activities), governments (e.g. food security policy initiatives), and civil society (e.g. lobby and advocacy) will only occur if social enterprises can show their added value, their special role in the market, and the social impact they create.
- Social entrepreneurs still have limited awareness about the importance of social impact measurement, and thus needs support on impact indicators, measurements, and reporting so they can prove to actors in support organizations and the wider ecosystem that they have untapped added value in the fight against food insecurity and malnutrition.
- Social entrepreneurs are treated too much like a separate group with their own institutions and networks yet without influential linkages to important actors in the wider ecosystem. Therefore, all actors (corporations, governments, and civil society) should be sensitized by awareness campaigns, exchanges of best practices, and dialogues and look for ways to create partnerships with social entrepreneurs and their support organizations by looking at their unique role and contributions in the domains of food security, private sector development, employment creation, and inclusive business models. Partnerships between social entrepreneurs with corporations (e.g. CSR activities), governments (e.g. food security policy initiatives), and civil society (e.g. lobby and advocacy) will only occur if social enterprises can show more adequately their added value, their special role in the market, and the social impact they create. The support organizations could offer tools to make their impact more visible.
- Support to social enterprises in the food value chain is diverse. There is a distinction between financial support and non-financial support. There is support that focuses on entrepreneurial skills, networking, agricultural advice, and technical development. In the sample, most support that social entrepreneurs received came from NGOs and foundations. Non-financial support is more national and less international oriented, while financial support is more international oriented.

https://knowledge@food.net/wpcontent/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf



Co-funded by the
Erasmus+ Programme
of the European Union

28



What can the social entrepreneurs do themselves?

- If the social entrepreneurs for food security could come together more frequently for meetings, and exchange their ideas and practical solutions for common challenges, they could establish a movement, which opens new opportunities for partnerships, improves access to support, increases social and environmental impact, and creates new social business opportunities. This can only be realized as social entrepreneurs recognize that they must play an active role in finding local solutions for specific challenges. Self-organization is also a way to resolve the problem of mistrust amongst social entrepreneurs.
- By operating in marginal markets, access to grant funding or concessional loans is important. In addition to demonstrating sound management and financial reporting, social enterprises seeking to access these concessional forms of finance must realize that they have to measure their impact against social indicators and need a clear exit-strategy to avoid too much donor dependency.
- Social entrepreneurs do not always implement an inclusive governance structure. Although this can make decision-making processes more complex, it will increase trust and respect among the local communities and ultimately generate impact. Target groups (e.g. smallholder farmers or poor food consumers in certain areas) can be structured around groups that represent them and should not only give feedback on product development, but should be included by implementing innovative ownership models.

Where can support organizations strengthen the social entrepreneurs working on food security?

- Organizations that give support to social entrepreneurs in the food value chain are themselves very diverse. They must be labelled and studied differently based on their organization form, mission, finance, target groups, and support mechanism. For example, support organizations that give financial support are working with very different support criteria in comparison to organizations that offer technical support or entrepreneurial support. Having said that, there is no coordination between support organizations and little has been done to make social entrepreneurs aware of what specific support can be offered. One solution, for example, is to open a central portal or one-stop-shop to equip social entrepreneurs in their search for support.
- The organizations that give support to social entrepreneurs are not always exclusively working with social entrepreneurs, but could work also with other business actors. This is not at all a problem, but social entrepreneurs need specific attention. Support organizations have to understand the differences between a hybrid structured social enterprise and a social business as they both need different support strategies, and expectation levels could be different. The hybrid social enterprise operates in more difficult markets, with lower margins, lower (or non-existent) profit, and needs more intensive and longer term support opportunities with clear exit strategies.
- Many support actors, in particular the ones that focus on entrepreneurial or technical skills, such as hubs, labs, and incubators, operate in metropolitan networks and they have limited or zero extending networks into rural areas or knowledge of the food value chain. Support organizations therefore could support the development of intermediary organizations which have strong linkages within the

food value chain and local roots. Intermediary organizations could also indicate which spaces social enterprises can operate within the local context.

- It is difficult to give tailor-made support to a diverse group of social entrepreneurs who operate in very different parts in the food value chain have very different social missions and business models. They could operate in formal or informal markets and have very specific target groups and consumers. Therefore, support cannot be based on a top-down, one-size-fits all approach. The support organizations themselves recognize this but still struggle with the extra attention that should be given to understand specific demands and challenges of social enterprises. Helping and coaching social entrepreneurs in self-organization is one solution and could make it easier for support organizations to be involved and select the best social enterprises suitable for their specific aims of support.
- Support organizations that are willing to work with social entrepreneurs in the food value chain need support and coaching, as well as to organize themselves to be stronger and avoid doing all the same thing, and with the aim to increase efficiency of the supply of support and impact. For example, frequent meetings, dialogues, or/and information exchange tools should be organized by some leading support actors themselves, which could ideally be stimulated by other actors in the wider ecosystem like governments and aid agencies.
- Support organizations that financially support social enterprises, like impact investors or social funds, must recognize the resource gap between the start-up phase of a social enterprise (relying on seed-funding) and the more established social enterprises (relying on equity and social venture capital). Revolving funding with reasonable interest rates must become a more prominent finance instrument for social entrepreneurs to increase access to finance, particularly after the start-up phase into the initial growth phase of the enterprise.

https://knowledge4food.net/wp-content/uploads/2017/04/170216_report-social-entrepreneurship_printDEF.pdf

(image)

Co-creation of socio-technical innovation bundles necessarily requires multi-party cooperation among public and private sector organizations

Develop socio-technical innovation bundles: Despite the abundance of rapidly progressing innovations across all stages of AVCs today—in digital, genetic, and other spaces—no magic scientific or engineering bullets exist. Few, if any, innovations can adapt and scale effectively without essential supporting policies and institutions.

https://ogspace.cgiar.org/bitstream/handle/10568/110864/Bundles_agrifood_transformation-1.4.21.pdf

Impact Investments in Food and Agriculture

Global impact investing network (GIIN)

(image)

The Global Impact Investing Network (GIIN) is the global champion of impact investing, dedicated to increasing its scale and effectiveness around the world.

What is impact investing?

Impact investments are investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return.

Who is making impact investments?

Impact investment has attracted a wide variety of investors, both individual and institutional.

How do impact investments perform financially?

Impact investors have diverse financial return expectations.

(image)

Countries of investment

(image)

https://thegiin.org/assets/Understanding%20Impact%20Performance_Agriculture%20Investments_webfile.pdf



Co-funded by the
Erasmus+ Programme
of the European Union

33



Strategic goals most commonly targeted to increase sustainable farming practices

(image)

UN SDGs targeted by investments increasing sustainable farming practices

(image)

https://thegiin.org/assets/Understanding%20Impact%20Performance_Agriculture%20Investments_webfile.pdf



Co-funded by the
Erasmus+ Programme
of the European Union

34



IRIS+ Strategic Goals targeted by investments associated with increased farmer productivity

(image)

UN SDGs targeted by investments enabling increased agricultural productivity

(image)

https://theiig.org/assets/Understanding%20Impact%20Performance_Agriculture%20Investments_webfile.pdf

Roadmap for the Future of Impact Investing

The GIIN envisions a fast-approaching future when social and environmental factors are integrated into investment decisions simply by default, as the 'normal' way of doing things. The value proposition of impact investing (and other forms of investing that integrate impact), will enjoy wide acceptance, with plentiful evidence in their favor. Businesses and investors will hold themselves accountable to multiple sets of stakeholders, including shareholders, employees, customers, suppliers, affected communities, and local and global environments. The concept of 'externalities' will be relegated to history, with finance theory accounting for risk, return, and impact equally well. Ultimately, financial markets will be central in supporting solutions to critical threats facing the world.

Image: Six Categories of Action



Context orientation section video script

Dear students welcome to the introduction information about the lecture on business opportunities for NGOs in food and agriculture Quadruple Helix model. The lecture consists of five parts: first part is food and agriculture organization and the sdgs. In this part you will learn about sdgs: which sdgs are under food and agriculture organization custodianship and in which it is as a contributing agency. You'll learn about food and agriculture organization reports on major drivers of change in the 21st century and the global changes facing the food and agriculture. Second it is quadruple Helix model of Innovation and the social innovation. In this part we'll learn about what is the Innovation and how is explained

Through quadruple Helix model and what is the role of Civil Society organizations. Also you'll learn about theory behind social Innovation as well as real cases of social Innovation on food and agriculture. Third part is food and agriculture partnership opportunities for civil society organizations. In this part you'll learn about main International organizations, agencies, initiatives on food and agriculture, their goals how they partner their strategies and the methodologies. This will include such initiatives as Food Systems initiatives by World economic forum, food and the agriculture organization strategy for partnership with civil society organizations, southern south cooperation models, joined SDg fund. Fourth is a business opportunity models towards food and agriculture sdgs. This part include information about measurements of the private sector's contribution to the sdgs implementation, what are their core indicators for agri-food systems. Also we'll have a look at SWOT analysis that is strengths, weakness, opportunities and the threats analysis of social entrepreneurs in food value chain, based on 152 cases in seven countries. Fifth part is the impact investment in food and agriculture. Here we will look at the impact investment through one of the major organizations which is called Global impact investing Network. And that you will learn about the impact investment performance in food and agriculture. So by the end of this lecture you have a general understanding of what is the quadruple Health Innovation model and the social Innovation as well as partnership opportunities in different sectors for food and agriculture projects. Thank you for your attention and see you on the lecture.

SDG4BIZ M2 Section 3: Motivation



Motivation orientation section video script

Hi everyone welcome to this module today's topic is sustainability planning for food and agriculture businesses. The contents are sustainability in food and agriculture, future challenges of food and Agriculture and sustainability issue, sustainable development goals concerning food and agriculture, Trends relating to Future Agriculture and Food Systems, and development of a sustainability strategy for a food establishment. And here are the outcomes: comprehend the link between sustainability and food and agriculture, understand future challenges and opportunities to take action for a sustainable future, be aware of sustainable trends, understand the sustainable development goals of the United Nations linking to food and agriculture, and develop a sustainability strategy for a food establishment especially for small and medium-sized Enterprises. Well sustainability is an urgent and Universal concern. We can no longer delay our efforts to fight the climate crisis. The time to act is now. For businesses the challenge of sustainable transformation is balancing the need to keep business in motion while making changes to reach your sustainability ambitions. It is complex; there can be tough realities of your industry. Organizations can have differences in the approach to sustainability issues, the scope of knowledge, interest, competencies in sustainable development and the content of implementation of sustainability in different Industries and regions.

In the next 30 Years agriculture will face unprecedented pressures including a 30 percent increase in the world population, Competition for scarce land, water and energy resources and the threat of climate change. To provide for a population projected to reach 9.3 billion in 2050 and estimates are that food production will need to increase from the current 8.4 billion tons to 13.5 billion tons a year. Achieving that level of production from an almost depleted natural resource base will be impossible without profound changes in our food and agriculture systems.

Business sustainability is a concept that involves doing everything better and more efficiently. Through sustainability must be integrated into all operations of business from policy and management through to on-ground activities such as purchasing, production and distribution. In addition, development of a sustainable strategy should also be aligned to a business plan.

Now let's take a look at the steps shortly for developing a sustainability strategy which will be discussed in this module in detail. the first step is determining the business drivers: identifying the pressures that are driving your business to become more sustainable. the second step is set a vision: setting a vision for your future goals. Step 3: set the objectives: your objectives relate to your sustainability goals. Step 4: establish your current position in the market. Step 5 analyze the gaps and in the analysis, we use the pest analysis and the SWOT analysis. Number six develop strategies: water efficiency strategy, water education strategy, energy strategy, electricity partnership Etc. Step 7 develop action plan actions you will undertake to accomplish your objectives. Step 8 the implementation part: integrate actions into Core Business processes and regular reporting Cycles. Step 9 monitoring and reviewing part: monitoring progress towards the overall objectives. Step 10 Improvement: incorporate this process into the company's overall continuous improvement process. Finally, this module is a guide for better developing and sustainability strategy for businesses by considering the sustainable development goals of the United Nations. Trends and future challenges concerning food and agriculture hopefully the module increases awareness about sustainability for food and agriculture businesses and lets them use the hints efficiently and effectively. Thank you very much for your listening and patience.

Sustainability Planning for Food and Agriculture Businesses

14.3.2022

Dr. Murat Nazi
Yasar University, Izmir -Turkey



Contents

- Sustainability in food and agriculture
- Future challenges of food and agriculture and sustainability issues
- Sustainable development goals concerning food and agriculture
- Trends relating to future agriculture and food systems
- Development of a sustainability strategy for a food establishment



Outcomes

- Comprehend the link between sustainability and food and agriculture
- Understand future challenges and opportunities to take action for a sustainable future
- Be aware of sustainable trends
- Understand the sustainable development goals of the United Nations linking to food and agriculture
- Develop a sustainability strategy for a food establishment (especially for small and medium-sized enterprises)

- Sustainability is an urgent and universal concern. We can no longer delay our efforts to fight the climate crisis. The time to act is now.
- For businesses, the challenge of sustainable transformation is balancing the need to keep business in motion while making changes to reach your sustainability ambitions. It's complex. There can be tough realities of your sector. The study of Fidlerová et al. (2022) reveal that organizations have differences in the approach to sustainability issues, the scope of knowledge, interest, competencies in sustainable development, and the content of implementation of sustainability in different sectors and regions.

Sustainability in food and agriculture

- Agriculture production systems are facing unprecedented obstacles from an increasing demand for food for a growing population, competition over natural resources, loss of biodiversity, pests and diseases, along with the negative effects of climate change.
- In the next 30 years, agriculture will face unprecedented pressures, including a 30% increase in the world population, competition for scarce land, water and energy resources, and the threat of climate change. To provide for a population projected to reach 9.3 billion in 2050 and estimates are that food production will need to increase from the current 8.4 billion tonnes to 13.5 billion tonnes a year. Achieving that level of production from an almost depleted natural resource base will be impossible without profound changes in our food and agriculture systems. We need to expand and accelerate the transition to sustainable food and agriculture which ensures world food security, provides economic and social opportunities, and protects the ecosystem services on which agriculture depends (Sustainability in Food and Agriculture, 2022).

Five principles of sustainable food and agriculture

1. Improving efficiency in the use of resources is crucial to sustainable agriculture
2. Sustainability requires direct action to conserve, protect and enhance natural resources
3. Agriculture that fails to protect and improve rural livelihoods, equity and social wellbeing is unsustainable
4. Enhanced resilience of people, communities and ecosystems is the key to sustainable agriculture
5. Sustainable food and agriculture requires responsible and effective governance mechanisms

(FAO-Food and Agriculture Organization, 2017)

Food and Agriculture Organization (FAO) of the United Nations and Sustainable Development Goals

- FAO supports governments and partners to design the right policies and programs to end hunger, promote food security and promote sustainable agriculture for millions of people around the world.

Sustainable Development Goals (in relation to food and agriculture)

- End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
- Conserve and sustainably use the oceans, seas and marine resources
- Achieve gender equality and empower all women and girls. Evidence shows that when rural women have the same access as men to productive resources, services and economic opportunities there is a significant increase in agricultural output and immediate and long-term social and economic gains.
- Ensure availability and sustainable management of water and sanitation for all
- End poverty in all its forms everywhere. Inclusive agriculture, food production and off-farm economies can create jobs and eliminate hunger in rural areas, giving people a chance to feed their families and live a decent life.

- Ensure inclusive and quality education for all and promote lifelong learning. FAO assists countries in establishing school gardens and school food programmes.
- Ensure access to affordable, reliable, sustainable and clean energy for all. To deliver more food with less and cleaner energy, food and agriculture systems will gradually need to decouple from fossil fuel dependence and embrace renewable energy sources that reduce impacts on climate change while ensuring food security. Achieving the transformation to energy-smart food systems will require coordination in policymaking, appropriate legal frameworks and a multi-stakeholder dialogue to support action.
- Ensure healthy lives and promote well-being for all. FAO works to strengthen the capacities of governments and the private sector to ensure food quality and safety. For FAO, health goes beyond human health to also include animal, plant and environmental health, a One Health approach. Healthy animals contribute to healthy people and to sustainable food production.
- Promote inclusive and sustainable economic growth, employment and decent work for all
- Reduce inequality within and among countries. Poor and vulnerable people, especially rural women, continue to have limited access to land, natural resources, credit and services. Secure tenure rights for those who farm, keep livestock, fish, and manage forests are crucial for addressing inequalities.

- Build resilient infrastructure, promote sustainable industrialization and foster innovation.
- Make cities inclusive, safe, resilient and sustainable. Rapid urban growth in the developing world is placing enormous demands on food systems. Cities expand into fertile land increasing the food needs of urban families competing for natural resources such as land and water.
- Ensure sustainable consumption and production patterns
- Take urgent action to combat climate change and its impacts
- Promote just, peaceful and inclusive societies. Food security and a healthy agricultural sector can play a critical role in preventing conflict and distress migration, and in building peace. In many countries, disasters or political instability have resulted in protracted crises and food shortages.
- Revitalize the global partnership for sustainable development

The world is undergoing changes that will shape the livelihood of millions of people in the coming years. Understanding the root causes of various trends (below) and the relationship between them will aid manage the demand in solutions for future food security and sustainable livelihoods for everyone, in the changing world.

Trends relating to future agriculture and food systems

1. A rapidly increasing world population marked by growth "hot spots," urbanization, and aging.
2. Diverse trends in economic growth, family incomes, agricultural investment, and economic inequality .
3. Increased competition for natural resources.
4. Climate change impacts from extreme weather effects, droughts, floods, crop diseases etc.
5. Plateauing of agricultural productivity for many crops and animals .
6. Pests and diseases.
7. Increased conflicts, crises and natural disasters.
8. Poverty, inequality and food insecurity .
9. Dietary transitions affecting nutrition and health.
10. Structural changes in economic systems and employment implications .
11. Increased migration .
12. Advanced food production systems and resulting impacts on farmers' livelihoods .
13. Food losses and waste.
14. New international governance mechanisms for responding to food and nutrition security issues.
15. Changes in international financing for sustainable development .

(FAO, 2017)

Trends in detail

- The competition for natural resource inputs for food, energy use (Harvey & Pilgrim, 2011), and national bio-economy strategies (Bracco et al., 2018) will likely increase, especially when countries seek renewable energy and material alternatives to fossil-based economy. Apart from the stress on land resources, over 40% of the rural population worldwide currently experiences water scarcity, due to agricultural, industrial and urban demands on water (FAO, 2018).

- Poverty, inequality, and food insecurity are among the key challenges of our time (FAO, 2018); yet, improving food availability is not enough to eliminate poverty and hunger. Actions to permanently reduce poverty and hunger go beyond agriculture and include social protection policies and safety nets to eliminate food insecurity.

- Not only the population growth but also dietary transitions to higher nutritional levels will drive up agricultural demand as a result of country food system transformations (Gomez et al., 2013). Although there are adequate resources on the world to provide sufficient food for even the growing population, the triple burden of malnutrition (undernutrition, micronutrient deficiencies, and obesity) still has an impact over a large population worldwide, as availability of food does not imply a balanced intake of nutritional elements (Gomez et al., 2013). On the other hand, balanced diets not only would provide significant positive impacts on the health and wellbeing of the public but also on the environment by entailing lower greenhouse gas emissions and lower resource intensity associated with the prevention of the overconsumption of animal-derived protein sources (Gomez et al., 2013; Rayfuse & Weisfelt, 2012).

- To meet the growing demand, the agricultural sector productivity should increase, as one of the premises of sustainable intensification (Garnett et al., 2013). In 2050, the productivity will need to be almost 50% more than that of 2012 (World Bank Group, 2016). Even more agricultural output would be needed under a scenario of increasing food waste, inequalities in income and food distribution and climate change (FAO, 2018).

- Climate change is jeopardizing food security; yet, agriculture is one of its major causes. Agriculture, forestry and other land use sectors contribute to an estimated 21% of annual greenhouse gas emissions globally, and energy inputs for the agrifood chain contribute an additional 10% (FAO, 2011; Sims et al., 2015). Climate change deteriorates livelihoods and poses direct risks on food security, and leads to decreased employment opportunities and poverty, and causes an increase in migration (FAO, 2016).

- Urbanization causes a shift of labor out of the food and agricultural systems, and may entail a decline in agricultural productivity in land-restricted communities (Qin & Liao, 2016). In most low- and middle-income countries, these trends are coupled with population growth that increases the demand for agricultural products. The trend towards coordinated, capital-intensive agrifood chains can create barriers to small-scale producers and agro-processors in local, national and global markets.

- The increase in agricultural demand will, in turn, promote further investments in food and agricultural systems. However, it is estimated that business-as-usual investment structures and social protection expenditures would leave hundreds of millions of people under-nourished by 2030. Investments will need to be accompanied by sustainable social policies (FAO, 2015).

Developing a Sustainability Strategy (especially for small and medium sized businesses)

- Business sustainability is becoming increasingly important for managers in the modern economy. It can be described as a holistic continuous improvement process that includes the sound management of people and the environment. Business sustainability makes good business sense because the benefits feed directly back into the bottom. Where do we start as small-medium sized businesses?
- Business sustainability is a concept that involves doing everything better and more efficiently. True sustainability must be integrated into all operations of business – from policy and management through to on-ground activities such as purchasing, production and distribution.
- While sustainability needs to be driven from the top, it is not just the job of a single personnel or department. Sustainability involves everyone in the organization.
- Development of a sustainable strategy should be strongly aligned to a business plan.

Developing a sustainability strategy

1. Business Drivers
2. Vision
3. Objectives
4. Current position
5. Gap analysis (PEST Analysis, SWOT)
6. Strategies
7. Action plan ~~The Business Plan~~
8. Implementation
9. Monitor and Review
10. Improve

Step 1: Determine Business Drivers

- Identify the pressures that are driving your business to become more sustainable. They may include:

Potential to improve the bottom line through increased efficiencies

Demonstrating leadership, improving your image and reputation

Compliance and risk management

Personal passion and commitment to make a difference

Example: Company X producing cheese– Business Drivers

- Company X believes that sustainable growth and maximizing shareholder value into the future is achieved by:

Considering customer needs and providing high quality and value: (driver – product quality)

Establishing clean and efficient production processes that minimizes resource use and negative effects to the local environment. (driver – cost and environmental stewardship)

Establishing strong links with locals. (driver – reputation management)

Step 2: Set a vision

- A vision statement announces your future goals – it is your compass to show the world where your organization is heading. The best vision statements are short, clear, concise, realistic, and have measurable outcomes.
- You may choose to draft a sustainability policy that formalizes your company's commitment to the vision, and display it in your workplace.

Example: The big cheese company - vision

- The first company that, by its actions, demonstrates what sustainability is in all its dimensions : people, process, product, place, and profits.

The Sustainability Goals

We will produce sustainable cheese products by 2022, by:

- Reducing greenhouse emissions from energy consumption to zero
- Reducing our impact on local water supplies via responsible use and disposal
- Being a waste wise manufacturer
- Working closely with our local community in all of our operations

Step 3 – Set objectives

- Your objectives relate to your sustainability goals. They are more specific than your goals as they contain numbers and dates.

The cheese company – objectives

To achieve your goals by 2022, the company has established these objectives:

- 1- Reduce our consumption of mains water by 70%
- 2- Source 100% of our energy from renewable sources
- 3- Use 100% of raw materials from local environmentally accredited sources
- 4- Generate zero waste to land fill
- 5- Employ 95% of our staff from the local area

Step 4 – Establish current position

- To reach your goals you will need to develop a good understanding of the current position of your business – which includes an understanding of its key impacts.

Example: Establishing the current position of Cheese company

- By using the Sustainability Self Evaluation Tool, we have been able to establish some benchmarking figures across a range of sustainability indicators including water and energy consumption. It helped us understand the extent of some of our key impacts and identify other sustainability issues we had not thought of.
- We recognize that we are large user of water so we engaged the auditing services of our local retailer to help us develop a detailed understanding of our consumption levels and patterns.

Step 5 - Analyze gaps

- Identify the areas of business that have greatest impacts

Ex: Cheese company - gap analysis

The water audit provided us a detailed understanding of our consumption levels in the production patterns. We have identified the problematic areas and realized where we need to concentrate our effort for the greatest gain.

Gap analysis - Using PEST analysis

- PEST analysis shows how external factors influence the position of your business. There are four sections: political factors; economic factors; social factors, and technological factors.

Political factors: Rules and regulations

- Political factors are enforced by governing laws. Which laws you follow depend on the product you sell or the industry you're in. For example, food products within the USA must follow strict guidelines from the FDA.
- You need to make a list of every political factor that can affect your business. A few things to consider:
 - Data protection law
 - Regulation
 - Health and safety law
 - Environmental law
 - Tax policies (tax rates and incentives)
 - Competition regulation

Economic factors - Taxes and buying patterns

- Taxes affect profit, revenue, and pricing.
- The employment or unemployment percent in a location affects buying patterns. If people are unemployed, they're buying what they need to survive. Expensive brands may be on their mind but not in their homes. This affects the profits of brands. A few things to consider:
 - Interest rates
 - Exchange rates
 - Inflation
 - Taxes
 - Demand/supply

Social factors - Attitude and locations

- Social factors are your consumers. You need to look at buying habits, emotional needs, and consumer behavior. Because these are the people who directly influence your sales.
- Their social class, economic background, saving habits, and methods of communication are all factors to include and examine. A few things to consider:
 - Population growth rate
 - Religion and beliefs
 - Average disposable income level
 - Family size and structure
 - Investing habits
 - Immigration

Technological factors

- Technology can be directly involved with your products, like manufacturing technologies. It can also be your product itself if you're in the tech space.
- Other things to include are what technology is available to your consumers. Are your customers tech savvy? Is it an advantage if they are? Examine these technological factors in your PEST analysis:
 - Internet connectivity
 - Wireless charging
 - Automation/sustainable production

Gap Analysis - SWOT Analysis

- Strengths and weaknesses of the organization
- Outside opportunities and threats for the organization

Strengths

- Produce high-quality products
- Have dedicated employees
- Technical capabilities

Weaknesses

- High cost of production
- High electricity cost
- Lack of water strategy
- Long production process

Opportunities

- High demand for sustainable development from the community
- High market demand
- Possible partnerships

Threats

- Emerging startups providing different tastes
- Competitors in the market
- Advanced technological developments lessening production process
- Low funding of government to carry out research

14.3.2022

Step 6 – Develop strategies

The Cheese Company water strategy

- **Water efficiency strategy:** will explore opportunities for more efficient water infrastructure. It will target the production process on the factory floor and water consumption in the office.
- **Water catchment strategy:** will explore options for the best way to capture, store and treat water for on-site use.
- **Water education strategy:** will focus on staff education to encourage all employees to play a positive role working towards the company's water conservation objectives. Incentives and awards to employees.
- **Water partnerships strategy:** will aim to develop stronger links with our suppliers (suppliers of manufacturing equipment, water retailer, and other stakeholders) to explore opportunities to minimize consumption through innovation and technology.

Step 7 – Develop action plan

- What actions will you undertake to accomplish your objectives?

Cost and benefit calculations and payback periods

Targets, milestones, target dates

Budget

Other resources including personnel, technical expertise, external agencies

Monitoring, evaluation, and reporting processes

Step 8 - Implementation

- After the planning, it is time for the doing. Integrate actions into core business processes and regular reporting cycles. If necessary, develop or adjust policies and procedures for the aspects of your business and make sure the staff understand their role in the business.

Step 9 – Monitoring and Review

- Monitoring progress towards the overall objectives. You can't manage what you can't measure.

Step 10 - Improve

- Incorporate this process into the company's overall continuous improvement process.

Tips

- Gain senior management support at every step
- Be realistic about the time and effort require for the implementation
- Involve other people
- Display simple reports in employee meetings
- Acknowledge and reward outcomes
- Share your successes with others

References

- Bracco, S., Calicioglu, O., Gomez San Juan, M., & Flammini, A. (2018). Assessing the contribution of bioeconomy to the total economy: A review of national frameworks. *Sustainability* 10(6), 1698.
- FAO (2022). *Food and Agriculture and Sustainable Development Goals*. <https://www.fao.org/home/en>
- FAO (2018). *The State of the World's Land and Water Resources for Food and Agriculture Managing Systems at Risk*; FAO: Rome, Italy.
- FAO (2017). The future of food and agriculture – Trends and challenges. *Annual Report*, 296.
- FAO (2016). *Migration and Protracted Crises*; FAO: Rome, Italy, 2016.
- FAO (2015). *Achieving Zero Hunger: The Critical Role of Investments in Social Protection and Agriculture*; FAO: Rome, Italy.
- FAO (2011). *Energy-Smart Food for People and Climate*. Issue Paper; FAO: Rome, Italy.
- Fidlerová, H., Stareček, A., Vraňáková, N., Bulut, Ç., & Keaney, M. (2022). Sustainable Entrepreneurship for Business Opportunity Recognition: Analysis of an Awareness Questionnaire among Organisations. *Energies*, 15(3), 849.

- Garnett, T., Appleby, M. C., Balmford, A., Bateman, I. J., Benton, T. G., Bloomer, P., & Godfray, H. C. J. (2013). Sustainable intensification in agriculture: premises and policies *Science*, 341(6141), 33-34.
- Gómez, M. I., Barrett, C. B., Raney, T., Pinstrup-Andersen, P., Meerman, J., Croppenstedt, A., & Thompson, B. (2013). Post-green revolution food systems and the triple burden of malnutrition *Food Policy*, 42, 129-138.
- Harvey, M., & Pilgrim, S. (2011). The new competition for land: Food, energy, and climate change. *Food Policy*, 36, S40-S51.
- Qin, H., & Liao, T. F. (2016). Labor out-migration and agricultural change in rural China: A systematic review and meta-analysis. *Journal of Rural Studies* 47, 533-541.
- Rayfuse, R. G., & Weisfelt, N. (Eds.). (2012). *The challenge of food security: international policy and regulatory frameworks* Edward Elgar Publishing.

- Rayfuse, R. G., & Weisfelt, N. (Eds.). (2012). *The challenge of food security: international policy and regulatory frameworks*. Edward Elgar Publishing.
- Sims, R.; Flammini, A.; Puri, M.; Bracco, S. (2015). *Opportunities for Agri-Food Chains to Become Energy-Smart*, FAO: Rome, Italy; USAID: Washington, DC, USA.
- Sustainability in Food and Agriculture-SFNA (2022). *Sustainability in Food and Agriculture* <https://sfna.org.my/introduction/>
- World Bank Group (2016). *Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change*. World Bank: Washington, DC, USA.

SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



14.3.2022



14.3.2022



Life cycle thinking in food and agriculture businesses video lecture script

Welcome to watch and listen my presentation about life cycle thinking in food and agriculture businesses. I'll start from the big picture how food production relates to the boundaries of the planet. Food production is one of the three most harmful human activities to the nature. The others too are transport and housing. Science has mapped the name nine major systems in the figure here on which the Earth's bearing capacity depends. They are climate change, biospheric Integrity, land systems change, fresh water use, biogeochemical flows, ocean acidification, stratospheric ozone depletion, novel entities and atmospheric aerosol loading which isn't yet quantified as isn't the functional biodiversity. The nutrient load most importantly the amount and circulation of nitrogen and phosphorus in nature, chemical pollution, changes in land cover and climate change currently exceed the safe carrying capacity of the Earth. Of these the high risk is all already posed by declining biodiversity, nutrient load and chemical pollution with increasing risk of land cover changes and climate change. Globally, fresh water levels, marine acidification and stratospheric ozone depletion are still within the safe limits. Locally however consumption of fresh water in different parts of the world has clearly exceeded the safety limit and as it can be understood to from the document "Day Zero".

To be able to recognize business opportunities and to develop new business models based on the SDGs in the field of food and agriculture it's good to take a holistic view to the subject and try to understand the systems it contains and how they relate to and affect each other. Farming dependent on biological systems and climatic conditions, economic systems connecting primary production to Consumers, social systems demand of food for consumers in different social situations and circumstances, political systems regulating this all.

Social systems role in food and agriculture

What kind of environmental impacts our food related needs create?

We eat for living for our body's proper current functions. We need energy and nutrients like proteins, carbohydrates, fats, minerals, vitamins and water.

What we eat depends on food culture, we are grown and used to. Things like National/Global, family, friends, religion, Community, social network and even education. At the end it depends on what is available or what your self can make.

How much we are ready to pay to get all this?

Biological systems role in food and agriculture

What kind of environmental impacts this stage creates?

Traditional farming is dependent on healthy biological system. The basis of it is sunlight and living biodiversity. Prosperous farming and agriculture is dependent on clean and nutritious land, favorable climatic conditions, adequate Water Resources, work and know-how about biological systems, plants and animals, fertilizers and Pest Control agents to increase the crop.

What kind of environmental impacts economic systems in food and agriculture creates?

Economic systems transport and manufacture the products from Farmers to customers

food wholesalers

food companies

farmers markets

grocery stores
restaurants and
households

What this political systems role in minimizing food Productions environmental impacts?

Governments and policy of EU or country can and to do effect to the whole food production system by enacting laws, regulations, taxes and subsidies.

If we then look at what companies can do related to ecological sustainability. They with farmers are big players in food production chain. So their choices are important. It's important for organizations to identify their own negative impacts on climate and biodiversity. Climate issues have been a part of corporate responsibility for a long time and various services are available to measure minimize and compensate for the climate load. Assessing the impacts of biodiversity is not yet as common but environmental responsibility work should explore the link between business and biodiversity and assess its impacts and dependencies in the value chain. In environmental responsibility work organization should identify the negative environmental impacts of their activities and strive to minimize them. The environmental impact should be comprehensively assessed in different categories like waste disposal, use of energy, procurement, use of materials, use of chemicals, noise and logistics and movement

Environmental Management is a holistic way of taking environmental objectives into account in all the companies and the communities activities and decision making. Environmental Management promotes the echo efficiency of operations and reduces the environmental impact of services and products throughout their entire life cycle. Environmental Management applies to all aspects of management: goal setting, operational planning, implementation, monitoring and analysis of results. Environmental Management is based on the principle of continuous improvement.

There are tools for Environmental Management like environmental systems, standards indicators and a different kind of accounting. The best known of the Environmental Management tools system based on ISO 14001 series of standards and the EMAS regulation. The purpose of Environmental Management Systems is to promote Environmental Protection and there are clear benefits for the company in moving from treating emissions to preventing them from occurring. The ISO 14000 series of Standards provide an organization with an Environmental Management toolkit to support Environmental Management.

In the next slides I will concentrate one of these very useful tool- life cycle assessment which is expressed here from British standardization organization. There is a standard BS 8001 from the year 2017 which guides organization in the transition from a linear economy to Circular economy.

What is life cycle thinking?

The basic principle of life cycle thinking is that the environmental impact of a product includes in addition to the manufacturing process all the environmental impacts that occur at different stages of the product's life cycle before and after each manufacture. In this picture it's expressed so that all our products, processes, and services need resources from nature and they are first extracted from the nature then the products are designed and produced packed and distributed and after use and maintenance. In a linear system the products go to disposal and either in different situations either to landfill or incineration. In circular economy we want to use the material or the product itself as many times and as possible and it is expressed in this picture with these green arrows. The aim in life cycle thinking is to find out the overall effect of the manufacture and use of the product. It means the effects from Cradle to grave. In this picture there is expressed the typical life cycle of a food product. It's here in the middle the production chain from Crop Production, farming, processing, packaging, retail and consumers. Here's also expressed all kinds of inputs which are needed in different stages like in Crop Production: fertilizers, seed pesticides, fuel, water, machinery, buildings, equipment and so on. There's also expressed outputs which means what kind of

SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ

waste and Emissions each state of the food production chain produces like direct emissions to air, Soil and Water. And for example, in this form production, there is also animal manure, then there is direct emissions to air, soil and water.

Life cycle analysis is a method of analyzing a production process products and services. It favors examining systems from a Global Perspective. The only way to study the whole production system is to look at them step by step. It means the root that the raw materials take during all processing and transport processes to the final consumption.

Manufacturing phase includes the environmental impact of the sourcing and processing of raw materials, the production of energy during manufacturing, and the disposal and recycling of manufacturing waste;

Operating phase includes environmental impacts and emissions of substances related to the use and the environmental impacts of this space.

Use phase includes product Recycling and Disposal of consumables. In food production this means eating of food, food waste and disposal of packages.

Life cycle analysis has a key role to play in identifying the production processes with the greatest environmental impact and in identifying options for improvement in order to maximize positive and minimize negative environmental impacts.

In this technique all stages of the production process are considered to be interrelated and interdependent allowing cumulative environmental impacts to be assessed.

The goal of a life cycle assessment is to understand the flows of matter and energy involved in the product material manufacturing process, packaging Etc and find out what are the environmentally critical points and prevent or remove them using other materials or systems. Lifecycle analysis study is divided into four phases: the first is the face of goal and scope definition. Phase 2 is inventory analysis. The third is impact assessment and the fourth is interpretation. The first phase goal and scope definition means that we must decide what is the product system to study, the functions of the product system and functional unit. The functional unit can for example be kilos or tons of bread if the process is preproduction or it can be the energy or Fiber a person gets from a loaf of bread or what. System limits must also be decided we cannot calculate or analyze everything so what we live out? do we include package materials and how they are produced or cars which are needed for transport and so on. We have to make assumption which has to be written down. Are there other limitations and what and how much data is needed and available?

After all this it's good to illustrate or throw a flow chart of the process or service. The life cycle analysis of that process or service analyzes the raw materials and energy and its amount required for the implementation. Emissions, waste fractions and their quantities from the whole system are calculated or in qualitative analysis described. The most time consuming phase is the inventory analysis where the relevant data has to be collected and Quantified. After the inventory analysis phase its time for impact assessment where the aim is to assess the magnitude and importance of potential environmental impacts. The final stage is this interpretation where the results of inventory and or impact assessment are summarized and discussed as basis for the conclusions, recommendations and decision making according to the objective and scope defined.

Here the whole life cycle assessment is described in one picture and as the arrows show four phases are interrelated and can effect to each other during the analysis.

Who and when to use life cycle analysis?

product manufacturers can compare alternative materials before starting production

SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ

compare the environmental impact of competing products,
consider the environmental claims made on a product,
provide it provide information to consumers and authorities,
choose the most environmentally friendly production method possible,
inventory the long-term adequacy of the material used

trade can provide information to consumers
develop the product range in an environmentally friendly direction
minimize the environmental impacts of own operations

consumers can check manufacturer's claims
use the information to put pressure on authorities and companies to change production methods or to be more environmentally friendly

consumer organizations can provide information as a basis for Consumer decision making

Public Power can use life cycle assessment to provide information as a basis for legislation or for industrial and trade policy

Collect various environmental data

Look for blind spots in environmental information

Produce information as a basis for the eco-label

Investigate the manufacturer's claims about the environmental impact of production

Investigate the environmental impact of alternative waste treatment methods

Compare the environmental impact of production with other countries.

The ongoing ecological crises call for changes in food production chains and at the same time offer new opportunities for doing business. The starting point for successful change is to be able to assess the current situation as realistically as possible. Life cycle thinking is a tool for this.



Example of LCA: Lifecycle assessment of rye bread

Niina Mäki and Johanna Pänttjä, students in the course "Towards a sustainable consumer society", 2019

10.11.2023

Riitta Lehtinen



Life-cycle assessment of original Finnish rye bread

- Whole grain rye bread in 240g packet: 4 pieces of two-sided bread (8 one-sided pieces of bread 30g each).
- Produced in Finland, baked in Lahti.
- Ingredients: whole grain rye flour (85%), water, yeast, salt (iodized).
- Whole grain rye flour is 100% origin of Finland.

(image: rye bread in its package)

10.11.2023

Riitta Lehtinen



Nutritional value of Oululainen rye bread

Nutritional value (en)	Nutritional value (fi)	per 100 g	30 g of product includes	%* per 30 g portion (of midfielder daily access)
Energy kJ	Energia kJ	1161 kJ	348 kJ	4 %
Energy kcal	Energia kcal	276 kcal	83 kcal	4 %
Fat	Rasva	2,0 g	0,6 g	1 %
•saturated	•josta tyydyttynyttä	0,3 g	0,1 g	0 %
Carbohydrate	Hiilihydraatit	49 g	15 g	6 %
•sugar	•josta sokereita	2,4 g	0,7 g	1 %
Dietary fibre	Ravintokuitu	15 g	4,5 g	18 %
Protein	Proteiini	7,9 g	2,4 g	5 %
Salt	Suola	1,1 g	0,3 g	6 %

* Benchmarking for adult midfielder access (8400kJ/ 2000kcal)

Nutritional value in the table is based on the information given by producer Fazer/ Oululainen and the same information is also presented in the package.

10.11.2023

Riitta Lehtinen



Why is rye bread important?

- Whole grain rye bread is part of a stable diet in Finland and in the Nordic countries where rye is a traditional and weather resistant crop.
- Whole grain rye bread contains fibers which have many health benefits – according to studies fibers lower risk for heart disease, diabetes, obesity and gastrointestinal diseases. They also lower blood pressure and serum cholesterol levels and enhances weight loss.
- Whole grain rye bread is typical product in Finland. It is easily accessible and fresh in any store and often very reasonable priced. This makes rye bread and its health benefits accessible to almost anyone. Rye bread is both filling and a healthy choice in comparison to white bread.
- Rye bread and all of its ingredients are available locally, thus the emissions for this product are lower than those of many other products requiring imported ingredients.
- Baking rye bread is both a traditional skill and a source of jobs in Finland.

10.11.2023

Riitta Lehtinen



Food life cycle emissions

Greenhouse emissions caused by food in Finland:

(image)

- Emissions by stores 5%
- Transportation 5%
- Primary production on farms 60%
- Food processing, packing and storage 30%

Source: Natural Resources Institute Finland, 2012

10.11.2023

Riitta Lehtinen

Co-funded by the
Erasmus+ Programme
of the European Union



Rye bread is low emitter

Estimates on climate impacts of different foods show that rye bread has more than 10 times less emissions than beef or cheese.

(image)

Source: www.ilmasto-opas.fi (Climate guide)

10.11.2023

Riitta Lehtinen

Co-funded by the
Erasmus+ Programme
of the European Union



Life cycle stages OR RYE BREAD circular economyfied 1/4

LIFE CYCLE STAGES	ENVIRONMENTAL IMPACTS	HOW TO LESSEN ENVIRONMENTAL IMPACTS?
Cultivation	Using of machines and equipment, heating of buildings Energy usage, greenhouse emissions, agricultural fertilizer flows and nutrient leaching -> e.g. eutrophication	Cultivating with organic methods: less working of fields, using circular crops, organic fertilizers and pesticides Circulating cultivation left-overs back to as fertilizer Increasing usage of the renewal energy (wood and wood-based fuels, hydropower, wind power, geothermal and solar energy)

10.11.2023

Riitta Lehtinen



Life cycle stages OR RYE BREAD circular economyfied 2/4

LIFE CYCLE STAGES	ENVIRONMENTAL IMPACTS	HOW TO LESSEN ENVIRONMENTAL IMPACTS?
Transport <ul style="list-style-type: none"> • crops to mill, warehouses and bakery • from bakery to central warehouses and stores • from stores to consumer 	Fuel emissions, fine particles, noise	Optimization of transport routes, driving with full loads, using environmentally friendly fuels, also using return transport for other goods Direct delivery from bakery to customers would eliminate transport stages and individual customer trips

10.11.2023

Riitta Lehtinen



Life cycle stages OR RYE BREAD circular economyfied 3/4

LIFE CYCLE STAGES	ENVIRONMENTAL IMPACTS	HOWTO LESSEN ENVIRONMENTAL IMPACTS?
Production and packaging	Energy and material usage Emissions to air, water, land	Optimized production process to use as little resources as possible: energy, water, ingredient waste Potential to use renewable energy (solar, water, biogas) and materials Designing smaller packages using less material and adding efficiency in the transportation Continuous improvement in the process and technology to make it more sustainable: e.g. use of bio-packing materials or paper bags, packing in bigger quantities, selling bread as per request into customer's own bags? Using waste from the production as animal feed or upcycled to other full grain rye products

10.11.2023

Riitta Lehtinen



Life cycle stages OR RYE BREAD circular economyfied 4/4

LIFE CYCLE STAGES	ENVIRONMENTAL IMPACTS	HOWTO LESSEN ENVIRONMENTAL IMPACTS?
Storage and food waste disposal by stores	Energy usage Storing of food in fridges and freezers	Energy optimization of stores, change to bio-energy Prolonging product's shelf-life by freezing the breads before they get old / marking down the prices well in advance to avoid waste Recycling empty packages for energy waste and breads to compost
Consumption and waste disposal by consumers	Waste is produced at each stage of the lifecycle	Using day-old-bread to make other food products Recycling empty packages for energy waste and breads to compost

10.11.2023

Riitta Lehtinen



Sources:

Natural Resources Institute Finland. 2018. Indikaattorit.

<http://stat.luke.fi/indikaattori/maatalouden-energiankulutus-ja-uusiutuvan-energian-osuus>

<http://stat.luke.fi/indikaattori/maatalouden-kasvihuonekaasupaaastot>

Maa- ja elintarviketalouden tutkimuskeskus. 2003. Maa - ja elintarviketalous 33. Elovena-kaurahiutaleiden ympäristövaikutukset.

<https://jukuri.luke.fi/bitstream/handle/10024/455010/met33.pdf?sequence=1>

10.11.2023

Riitta Lehtinen



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

10.11.2023

Riitta Lehtinen



SDG4BIZ M2 Section 4: Resources and networks



Sustainable peatland management video script

SLIDE 1

Welcome to Module 2: Business Opportunity Recognition in Food and Agriculture.

In this particular presentation we'll be talking about sustainable peatland management and its role as a particularly effective form of carbon storage and capture.

SLIDE 2:

We'll be linking particularly with those sustainable development goals that relate to food and agriculture and rural life more generally. These are Sustainable Development Goal 15, referring to life and land, which particularly emphasizes the importance of ecosystems; Sustainable Development Goal 13 more generally talks about the importance of taking action to prevent damaging climate change and the impacts of that change, and as you'll see peatland management has a particularly important role to play in that process. Sustainable Development Goal 11 on the other hand may look rather more counter-intuitive because it talks about sustainable cities and communities, but what I hope will be emphasized in this presentation and this module more generally is that "communities" also includes rural communities; in other words, not cities but places where people live, where social life is conducted, where services are provided, where value is generated through work; and once again this module is an attempt to show what sort of sustainable business opportunities there are relating to food and agriculture that would economically and environmentally sustainably support those communities in the future.

SLIDE 3:

So moving on let's get some context as to why this is such an important topic. The EU has made a number of rather ambitious carbon reduction targets for the year 2030 and then later by 2050, Net Zero! How is that going to be achieved? Well, that's going to be a challenge whatever happens for sure, but one way in which some particularly effective reductions can be made is through sustainable peatland management, and here is why.

SLIDE 4:

For a start, as is probably widely known, peat is an energy source and of course as a fossil fuel it does generate rather a lot of carbon emissions and it's particularly used for energy in the countries listed here, starting especially with Estonia, followed by Finland, Ireland, Latvia, Lithuania, and Sweden. Peatland also has been used as a very significant source of agricultural production because the soil is very fertile but it needs to be drained and once it's drained then the soil is ready for especially industrialized agricultural production. But that's a problem because that involves degrading the quality of the peatland. Sustained use of peat land in this way reduces the overall quality over time and as has been noted in certain studies the European Union overall has a particularly worrying track record in this respect because just over half of all Europe's peatland has been degraded to make way for agricultural production and possibly other types of production too.

SLIDE 5:

Peatland is important, despite the fact that it only accounts for three percent of the global land area. Peatland altogether stores more carbon than all forest biomass in the world, so if we were to stumble upon virgin peatland today then it would be wisest to leave it well alone if we're looking for easy ways to capture and store carbon. However, drying peat land for agricultural use actually puts the whole process into reverse because not only is cutting peat and burning it for energy itself releasing carbon emissions into the atmosphere but the drainage of peatland releases enormous quantities of greenhouse gases because the water which trapped those gases is taken away, and as a result most of what has been stored is released, and as you can see emissions from drained peat lands and peat fires account for approximately five percent of total human caused emissions. In addition to that there are also other aspects of peat land drainage which cause damage to local ecosystems and that can include making previously drinkable water undrinkable and reducing the quality of groundwater storage; and of course there are also local ecosystem effects that relate to local climates such that previously cooler areas that would help to reduce local temperatures are no longer able to perform that function. In addition there would be loss to biodiversity, particularly that which is specific to wetland, so there are various very good reasons why being careful about the use of peat land and not damaging it, not destroying it, is particularly important not only for the environment, not only for the local ecology, not only even for the local community, but as an economic resource we're actually doing significant damage to something which is helping to sustain us if we use it properly.

SLIDE 6:

Here is a map of the relative concentrations of peatland in Europe and the associated greenhouse gas emissions which are being generated by the unsustainable use of peatland, and as you can see, those countries where it is used especially as an energy resource, that were listed in an earlier slide, they are represented here as particularly high generators of greenhouse gas emissions.

SLIDE 7:

So we've talked about various reasons why peatland is such a valuable resource. Biodiversity is certainly one of those reasons, but in addition to that unspoiled peat land can help to reduce the emission of pollutants into the surrounding soil and water supply. It can offer a form of local climate regulation because it is able to provide shelter and shadow in particularly hot conditions and it can help to mitigate flooding which is becoming especially important as we've seen in recent years with the number of especially drastic flooding events that have taken place. And from an agricultural perspective anything that would reduce soil erosion is particularly valuable because we need healthy soil to be able to enjoy good food.

SLIDE 8:

The problem is of course that we have all these conflicting objectives: we need peatland in order to be able to conduct agricultural production, but if we conduct it unwisely then we spoil the peat land which makes agricultural production more difficult in practice. The target of net zero emissions by the year 2050 implies very strongly that all peat lands which have been identified in Europe will be somehow re-wetted: in other words, they will be restored to their original condition. Is that a realistic goal at a time when competition for land is increasing not just in Europe but globally? Peatland of course as an energy source will continue

to be attractive for various reasons, not least because it's relatively easy to get hold of and it's also a potential use for feedstock for farm animals, and once again all these conflicting demands mean that difficult choices have to be made by not only the authorities but also by the communities which may at the moment depend on a certain use of local peatland which nevertheless is unsustainable. So various researchers who have been looking at this problem recognize that it's very likely that there will be in future—there will have to be in future— commercial use of peatland. It's not that we can simply fence it off and restore it to its original condition and then nobody's allowed to use it or even visit it! That's not going to happen. Instead what we need to do is manage it sustainably, both ecologically and economically.

SLIDE 9:

And one way of doing that is to recognize the value that's added the local environment and economy by sustainably managed peatland and this has been conceptualized in the form of “ecosystem service markets”, which are an attempt to address a particularly bad form of market failure, because at the moment we have allowed ourselves to exploit a largely non-renewable resource if taken too far. It can be renewed but it needs to be managed carefully, but we've been not managing it carefully, which means we've effectively been in the process of destroying it, and how do you put a price on that? There's a clear cost, but nobody knows how to pay for it, so the ecosystem service market concept is an attempt to try to put some kind of value on these costs, so that once people recognize they exist and they have to be paid for somehow then they would have a stronger incentive to avoid inflicting those costs on the whole economy and society, and this requires a combination of different approaches including legal and regulatory approaches which belong to the state and local authorities. Market-based approaches would also encourage more careful use of valuable resources because if people understand that there is a long-term sustainable source of profitable business involved then they have an another incentive to use the land carefully. So in typical economists' language the ecosystem here has been conceptualized as a production function requiring investment, and once you can put some monetary figures onto those concepts then it becomes easier to think of ways of first of all quantifying: putting numbers or in just how much money is required to invest in a particular project and of course then calculating just how much you can expect to get back in return, so there have been various forms of certification schemes and carbon offset schemes that have been developed in order to encourage this kind of action.

SLIDE 10:

And one of these we will talk about in the coming slides. But the general point here is that it's an attempt to use if you like economic logic or market logic, which can be imposed by law but can also be encouraged in a more unregulated way such that people would have strong incentives to look after this valuable resource because ultimately it's the source of their profit in future years. So once again using those kinds of incentives to achieve ecologically sustainable goals and there are various examples of this type of activity from all around the world and one of those is the Malua BioBank based in the Sabah state in Malaysia

SLIDE 11:

and this is being done in collaboration with the people who have developed what's known as a voluntary carbon standard, and these types of certification schemes have become much more common. They are an attempt to put economic values onto ecological assets

SLIDE 12:

and the Malua BioBank is illustrated here: it's an attempt to attract investment funds from institutions and from individuals who are interested in long-term investment returns, but the kind of returns that are generated as a result of adding value to the world rather than simply extracting it,

SLIDE 13:

and here's a simpler diagram of the same kind of process. We're not going to be looking at rainforests in Malaysia

SLIDE 14:

or other parts of the tropical world but a similar type of scheme has been developed for application in Europe and this is to do with recognizing the specific benefits of peatland ecosystems, which provide various forms of very valuable resources including fibre, fuel, food and fresh water. They regulate the local climates. They also add cultural value because they allow people space for recreation and education and even spiritual and aesthetic activities. People need access to nature: it's been proven in scientific studies that access to nature is a major contributor to mental health. In addition to that, peatland also supports various other vital aspects of the ecology including biodiversity, the formation of fertile soil, and the support of certain key species, both animal and plant.

SLIDE 15:

Paludiculture is the response to the dilemma of how can we sustainably use peatland in such a way that we are able to derive economic benefit without causing unsustainable ecological cost. Paludiculture involves the shifting from drainage-based agriculture, and it's one of the biggest carbon farming game changers of the decade according to various sources, including this German organization. Paludiculture is not only key for a bio-based circular economy offering future resilient and profitable business models for farmers and landowners but it's also key for climate biodiversity, water security, flood management, and fire protection. When you put it like that how can you resist?

SLIDE 16:

What could possibly be wrong with something like this? Climate-friendly wet peatland utilization which enables the economic use of wetland in a more sustainable way, protecting against damaging climate change, and at the same time making sure that local communities can be sustained economically? As with any project that involves significant areas of land, it is very important that as many stakeholders are involved as possible in the planning process such that all relevant community groups are consulted and are able to contribute to the decision-making process. And this is something that's emphasized in a lot of studies, that this is not something that you can just go into as an individual and simply carve out an area of land and then fence it off and work on it isolated from everybody else. That's not going to work because we're talking here about something that has a very wide social, ecological, environmental impact, so naturally other people—lots of other people—are going to be affected, so stakeholder involvement is

essential in any lasting solution. And we can see from an example that's been developed in the northeast of Germany

SLIDE 17:

in the Federal state of Mecklenburg-Vorpommern which is illustrated here on the map.

SLIDE 18:

it's a relatively, shall we say, less prosperous part of Germany. It's not one that's been traditionally very industrialized. There's a lot of agriculture there, but of course that means also that there is probably also a lot of drained peat land there which needs to be restored in order to achieve the greenhouse gas emission reduction targets that have been established by the European Union and its member States including Germany, and the study of the process that's been taken in this part of Germany has noted very strongly the involvement of a wide variety of stakeholder groups as you can see listed here and all these people all these different forms of expertise and experience have been brought together in order to focus their attention and effort on the achievement of two goals: first and foremost the reduction of greenhouse gas emissions, but secondly and relatedly the continuation and even development of agriculture, but development in a direction that is more sustainable and consistent with the first goal: the reduction of greenhouse gas.

SLIDE 19:

Following an initial review process of how the land is currently used the people involved in this project made some estimates as regards the value of the land and its contribution to the rural economy. In addition they were looking at other ecological aspects, including the land's role in climate protection, water supply, water quality, soil quality, and looking at additional aspects such as any legal or regulatory aspects involving land use restrictions, because that's again something that needs to be investigated quite carefully before any radical changes are made to the use of any area of land, actually. So having some kind of access to legal expertise and people who know where the documents are is very important for the success of a project like this. Having done that—having done a current state analysis—we then look towards the future by identifying development opportunities, and this involves the identification of suitable plants and livestock that would actually help the local ecology to recover, if it's in a bad way or even to develop in a healthier direction if it's already in a relatively good condition. But the point is that it's all about sustainable use, and that means identifying very carefully what sort of crops, what sort of livestock, what sort of activities can be engaged in with this area of land.

SLIDE 20:

The outcome of this has been the development of a certification scheme called Moor Futures and this has come out of the peatland re-wetting project that was developed in Mecklenburg-Vorpommern. Many of the larger scale certification schemes, including the one that we discussed earlier with respect to Malaysia, they can be quite expensive to administer and require a lot of investment funding in order to become viable. Moor Futures is deliberately designed as a scheme that is suitable for smaller scale operations. We're not looking at vast tracts of tropical rainforest here. We're looking at relatively small scale, not

necessarily but for most part relatively small scale, farming activities which support local communities and collaboration between the various stakeholders including especially local government with respect to legal and regulatory points. University personnel were involved because you need scientific experts to be able to make the correct decisions about how particular strategies would work in practice, and of course the community needs to be there too because they're the ones who not only live there but who will be experiencing the consequences of whatever decisions are made as part of the peatland re-wetting and sustainable use project. So the Moor Futures standard was developed as a result of this project, and it's an attempt to apply lessons from this specific project that can be used more generally elsewhere, and there has been adoption of the certification scheme that was developed in this part of Germany in Lithuania and in Britain, and there are links to both of these projects listed here.

SLIDE 21:

The European Union has committed itself to a more sustainable Common Agricultural Policy, and since we're talking here about agriculture we need to be cognizant, we need to understand the significance of the Common Agricultural Policy to the work of developing more sustainable agriculture in Europe, especially if there's going to be funding available. And once again this is about harnessing the incentives of the market—economic incentives to encourage people to engage in more sustainable activities including agriculture, so the general point of the most recent version of the Common Agricultural Policy is that all subsidies should support greater sustainability, which is good news for anybody looking to develop agricultural practices in a more sustainable direction. In addition to that there have been various adjustments made to the Common Agricultural Policy which encourage the cultivation of crops that would be more sustainable and provide the kind of economic support that would sustain the local community. The activities, the support, the financing that might be available also from local government and government policy agencies— that's also worth investigating and understanding exactly, depending on which area you're going to be engaged in. Exactly what sort of benefits there may be, what sort of financial or financing opportunities that might be available—all of this is something that should be investigated wherever you intend to set up any kind of sustainable agriculture or peatland use type of project. It's possible that there will be variation among member states regarding payment scheme eligibility conditions. That's something also worth checking up on, just in case, but the incentive to do this and do it properly is clear and applies to everybody, because we all win here. By re-wetting just three percent of peatland the EU can cut up to 25 of greenhouse gas emissions from agricultural land use. That's a relatively large impact for a relatively small investment.

SLIDE 22:

What kind of crops are we looking at here? If you were going to establish a sustainable agriculture business in some peat land that's been re-wetted and restored, what would you do? What would you grow? Well, the first point to note here is that whatever you decide, the crops that you choose should be appropriate to the conditions that you're going to be working in. so that means knowledge of climate, knowledge of the terrain, the soil types, et cetera? What's the average annual rainfall, hours of sunshine, et cetera? And for that you will need the assistance probably of the relevant soil scientists, meteorologists and other experts who would be available via university or perhaps some non-governmental organizations that are encouraging this type of activity. The crops that you choose should also be appropriate to the area, I guess that should also apply to livestock—that you don't introduce something that ends up becoming a nuisance or a pest because it disrupts the local ecology, so try to avoid the introduction of any invasive species. And

you need to choose the kind of crops that can cope with high water levels—in other words, stuff that's appropriate for wetland. Alder trees, for example—they can cope with high water levels and all the trees are particularly good for supplying wood that would be appropriate for furniture or other decorative purposes, or even just basic firewood which we're likely to continue needing despite our efforts to reduce carbon emissions. Then for other traditional uses which are now being rediscovered as environmentally friendly, common reed can be used as a biofuel but it can also be used for traditional roofing and for craft and decorative woodwork purposes. Cattail is something that you will find as regularly harvested in sustainable peatland projects, and there are various very short videos which you can find in the resources section of this module, and they'll explain in more detail just what kind of work and what kind of crop is involved in this type of agriculture. Then there are peat mosses for use in horticulture and soil development and soil amendment. If you're into the gardening business, this is particularly important. And then there is reed canary grass, which is very often used for feedstock for farm animals, particularly during the winter months.

SLIDE 23:

And of course that's a business opportunity all by itself. Having looked at the context, having examined how we might get out from under this dilemma that we have regarding more demand for land and the stress that's been put on the land that we're already using and at the same time trying to find sustainable ways to support ourselves economically in the future and having concluded that sustainable peat land management is a viable pathway to a more sustainable future with particular relevance for certain countries within the European Union especially, here are some general points to note. If you're going to be looking in more detail at this type of business opportunity then it's worth paying particular attention to the availability of financial incentives that have been deliberately put there to encourage the exploitation of more sustainable business and agricultural practices. So take the time to look carefully at such sources as the European Agricultural Fund for Rural Development and related opportunities attached to the Common Agricultural Policy. It's worth also consulting the local government departments of Agriculture and municipalities which will also have expertise of this kind available, and especially rural communities— given the drift of population towards the cities—rural communities are normally very eager to encourage people back into the countryside, so there are many opportunities to gain funding, some kind of financing to develop business opportunities in rural areas. It's worth remembering of course that these types of conditions, while the frameworks may be very similar or even the same, the details are likely to be very different depending on the kind of country and even the kind of geography that you're going to be active in. What sort of landscape, what sort of terrain, what sort of climate are we talking about here, and that will dictate a lot of the choices that you're able to make. In addition there are also the legal aspects that have to be investigated thoroughly. And of course whatever you decide, if you really are eager to go ahead in this, it's very important that you achieve the widest participation possible of the local community so that there are no significant and potentially obstructive objections to what it is you would like to achieve. If you're interested in reading more about this subject paludiculture, sustainable peatland management, and the opportunities arising from these, then I've supplied an

SLIDE 24:

extensive list of resources which you can find in any Library and some of them are open source and online. You can access them there.

SLIDE 25:

But hopefully this short presentation will have given you a good insight into just what is achievable, given the current economic conditions and especially the policy goals and objectives that have been agreed by European Union member states and the European Commission. They are now official policy: they are embedded within the Common Agricultural Policy especially, and all they are waiting for are entrepreneurial people looking to do some good while making some sustainable profit, and this would appear to offer a good set of opportunities which deserve not only investigation but implementation. So thanks very much for your attention. I hope that the presentation has been informative and interesting, and good luck to you as you consider your future business opportunities.

4.1. An example of financing conservation in Sabah, Malaysia

- ▶ This short presentation explains the innovative financing behind the preservation of rain forest in Malaysia, uniting the interests of investors with those of conservationists and the local population:
- ▶ <https://www.youtube.com/watch?v=4EylufMIR5k>

4.2 Greenhouse gas emissions generated by peatland in Europe as of 2019

- ▶ Greenhouse gas emissions from peatland across Europe, 2019

(image)
- ▶ <https://www.arc2020.eu/for-peats-sake-paludiculture-a-wetter-better-cap/>

4.3 Reducing greenhouse gas emissions in the European Union

Legislation and policy commitments

- ▶ **Carbon emissions reduction commitments in EU**
- ▶ Passage of European Climate Law in 2021
55% reduction in GHGs by 2030 from 1990 levels
Target for 2040 to be set
Net zero by 2050 (2035 in Finland!)
- ▶ https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en
- ▶
- ▶ **Transition to cleaner energy sources**
- ▶ Phasing out use of coal, oil for domestic heating
Reduction of peat use in energy production (50% by 2030 in Finland)

4.4 Why peat matters

- ▶ This short presentation gives an Indonesian perspective on peat's importance as a natural resource and ecosystem service provider:
- ▶ <https://www.youtube.com/watch?v=1C7ecAoXav0>

4.5 The significance of peatland

Peat as an energy source

- ▶ *Used in Estonia, Finland, Ireland, Latvia, Lithuania, and Sweden*

Kapetaki et al (2021)

Peatland as the basis of agriculture

- ▶ *Over 95% of peatland in Germany drained for agriculture and forestry, in addition to peat extraction*

Federal Ministry for the Environment (2015)

Peatland in danger

- ▶ *25% of peatland in Europe is “degraded”*
- ▶ *50% of peatland in the European Union is “degraded”*

Tanneberger et al (2021)

4.5 The significance of peatland

Peatland accounts for 3% of global land area. According to Tanneberger et al (2020: 2309-2310):

- ▶ “these lands store more carbon than all forest biomass in the world”
- ▶ Drainage of peatland releases enormous quantities of GHGs
- ▶ “Emissions from drained peatlands and peat fires account for ... c.5% of the total anthropogenic emissions”
- ▶ Drainage also causes “substantial nitrate leaching to surrounding waters, reduced groundwater storage and landscape cooling, increased flood risk, and loss of wetland biodiversity”

4.6 Peatland's contribution to "ecosystem services"

Peatland is an important source of biodiversity:

- ▶ Vegetation and animal species
- ▶ Landscape and ecosystem services
- ▶

It generates positive externalities or social benefits

- ▶ Retention of pollutants
- ▶ Local climate regulation
- ▶ Local water supply and flood control
- ▶ Reduced soil erosion

Alderson et al. (2019: 786)

4.7 Paludiculture

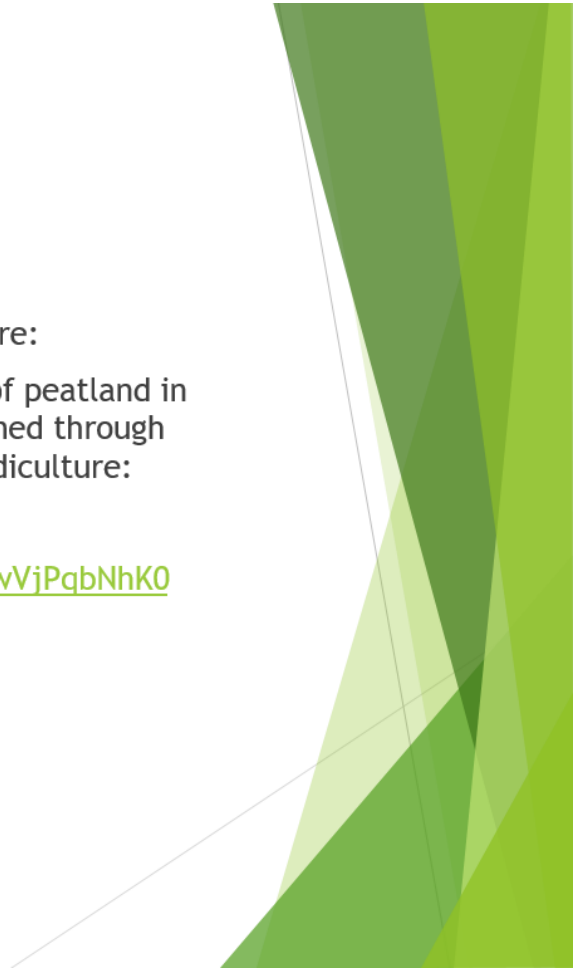
Survey of paludiculture crops:

- ▶ This short video provides a comprehensive overview of the various types of crops that can be harvested via paludiculture, depending on the local climate conditions:
- ▶ <https://www.youtube.com/watch?v=1vTzT7yi1o4>

4.7 Paludiculture

Rewetting peatland and use of paludiculture:

- ▶ This short video explains how an area of peatland in north east Germany has been transformed through rewetting and the introduction of paludiculture:
- ▶ <https://www.youtube.com/watch?v=AwVjPqbNhK0>



4.7 Paludiculture

Cattail cultivation and harvesting:

- ▶ This short video explains the cultivation, harvesting and uses of cattail:
- ▶ <https://www.youtube.com/watch?v=KU22CufmQJ4>



4.7 Paludiculture

Reed canary grass cultivation and harvesting:

- ▶ This short video explains the cultivation, harvesting and uses of reed canary grass:
- ▶ <https://www.youtube.com/watch?v=mpxM05HisOU>



SDG4BIZ M2 Section 5: Business modelling



Business modelling orientation section 1 video script

Hello welcome to this module. The module is about planning marketing strategy for food and agriculture companies. There are four main aims in the module. Let's start with looking these aims closer. The first aim is to understand the role of marketing in the emerging food and agriculture industry. In this part you are going to learn about what is marketing need, want and demand. This part has important definitions which help companies understand marketing and consumer behavior better. You are going to learn how important building good customer relationships is and how food and agriculture companies can create this relationship. The second aim is to identify the elements of marketing mix. In this part you are going to learn about marketing mix elements. Food and agriculture companies need 4ps which are product, price place and promotion. With the help of the 4p food and agriculture companies develop their marketing programs and strategies. Besides 4p food and agriculture companies should use 4C which gives a perspective from consumer sides. Moreover for food and agriculture companies it is highly suggested to follow 7p even though these companies are not in the pure service industry. 7p is called Services marketing mix and generally used by service companies. The third aim is to develop a customer drive on marketing strategy which is also the core part of the course. After clarifying the role and importance of marketing and marketing mix elements for food and agriculture companies, you are going to learn how to develop a customer driven marketing strategy in this part. This marketing strategy consists of three main elements such as segmentation, targeting and positioning. Segmentation means to divide large mixed markets into some small similar subgroups. You can use segmentation for Consumer business and international markets. This part consists of segmenting the consumer markets. We have four segmentation strategies in consumer markets such as Geographic segmentation, demographic segmentation, psychographic segmentation and behavioral segmentation. After segmenting the consumer markets, food and agriculture companies should decide about which segment or segments should be entered. Targeting means emulating the attractiveness of segments and selecting one or more segments to enter. Food and agriculture companies can use four types of targeting strategies such as undifferentiated marketing, differentiated marketing, concentrated marketing and micro marketing. With the help of targeting strategy food and agriculture companies can select their markets. After selecting the market positioning strategy should be developed. Positioning is the process of arranging a clear distinctive and desirable place in the minds of Target customers. The fourth and the last aim of the course is to analyze various marketing types for having a sustainable food and agriculture industry. In this part lastly you are going to learn some marketing types which food and agriculture companies should use when developing sustainable marketing programs and strategies. In order to have a sustainable food and agriculture industry food and agriculture companies should analyze and Implement these marketing types. You can find all details regarding these topics in the presentation of this model. I wish you all good luck have a good day.

Business modelling orientation section 2 video script

Hi everyone, with this module we will be able to cover a very significant topic not only for Food and Agriculture business but also for all types of businesses which is finance. World Bank classifies 8 factors that determine the success of agriculture businesses: supplying seed, Registering fertilizer, Securing water, registering machinery, sustaining livestock, protecting plant health, trading food and accessing finance. Obviously you can't do the remaining without the finance. We also know that there are not many sources of finance for newly established firms. Thus the main difficulty witnessed by many entrepreneurs is to find financing for their projects. During this module we will illustrate the financing means for food and Agri businesses from the conception stage to the maturity stages. Obviously, with the inception of your idea, there will not be many sources available to you as your business expands, you will be able to reach financing from government initiatives like venture capital, angel investors and also banks, these fund providers would like to be convinced that your venture will turn into a success. For that reason, you have to assess whether your project will be turned into a success story. The aim of this module is to provide you information regarding several methodologies to understand whether your business is economically feasible or not. After a short investigation of financing sources available to you, we will continue with the calculation of break even point. This analysis will help you to find the level of sales that you will cover all your costs but remain with no profits. Through calculating break even point, You will be able to differentiate between fixed cost and variable costs of your business. As a next step we will proceed with capital budgeting techniques. These methodologies will be very helpful to you, especially if you are considering to apply to grants or government subsidies. Obviously, when you are seeking sources of finance, the investors of your business would like to see if your business will be successful or not. Thus, with capital budgeting methods you will be able to assess the economic feasibility of your business. The capital budgeting methods we will estimate is the payback period method that shows how long it takes for the cost of your projects to be recovered. Net present value method that explains if your business maximizes firm value. Internal rate of return method that calculates the internal rewards that you will receive by applying that project, an average accounting return that compares the benefits and costs from a project. With these measures, you will be able to show the future prospects of your company. Hope you enjoyed this module and hope you will find ample amount of sources for your business.

Planning Marketing Strategy for Food and Agriculture Businesses

Assoc. Prof. Emel Yarimoglu
Yasar University



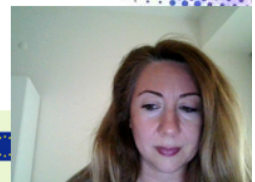
10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



Aim of the Course:

- 1. Understand the role of marketing in the emerging food and agriculture industry.
- 2. Identify the elements of marketing mix.
- 3. Develop a customer-driven marketing strategy.
- 4. Analyze the types of marketing for sustainable food and agriculture



10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses

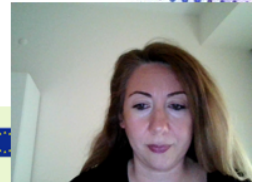


Presentation Plan:

- Understanding marketing, need, want, and demand
- Building good customer relationship
- Marketing mix: 4P
- Marketing mix: 4C
- Marketing mix: 7P
- Segmentation
- Targeting
- Positioning
- Marketing types

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



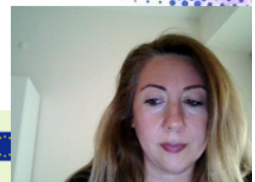
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- What is Marketing?
 - creating, pricing, promoting, and distributing goods and services
 - which satisfy customers' needs and wants
 - for reaching the organizational aims such as gaining profit, surviving, and growing.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



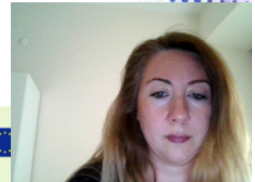
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- Food and agriculture companies should understand how to satisfy customer needs.
- Customer needs are states of felt deprivation.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



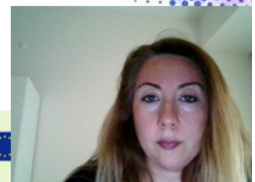
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- Wants are the form human needs take as shaped by culture and individual personality.
- Turkish people may prefer drinking only still water when they are thirsty. On the contrary of this, German people may prefer drinking beer when they are thirsty.
- Wants are shaped by one's society and are described in terms of objects that will satisfy those needs.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



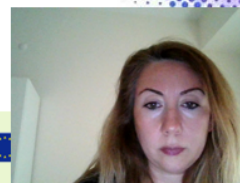
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- In order to reach demands, wants should be backed by buying power.
- Customers demand products and services with benefits that add up to the most value and satisfaction.
- It is important for food and agriculture businesses, to learn about and understand their customers' needs, wants, and demands. In order to learn about needs, wants, and demand in the market, Food and agriculture companies should conduct consumer research and analyze consumer data.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



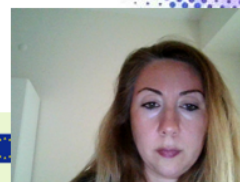
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- Consumers' needs and wants are fulfilled by the market offerings of food and agriculture companies.
- Market offerings are some combination of products, services, information, or experiences offered to a market to satisfy a need or want.
- Marketing offerings for food and agriculture industry may be:
 - physical food and agriculture products,
 - services provided by food and agriculture companies,
 - places promoted by food and agriculture companies,
 - events organized by food and agriculture companies,
 - information and ideas supported by food and agriculture companies.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



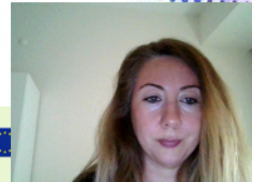
1. Understand the role of marketing in the emerging food and agriculture industry

Understanding marketing, need, want, and demand

- Companies do not always understand customer needs. How can they better identify customer needs?
- Companies should must be careful to set the right level of expectations.
 - If expectations are setted as too low, companies can fail to attract enough customers.
 - If expectations are setted as too high, customers may not be satisfied.
- Customer value and customer satisfaction are key variables for building good customer relationships.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



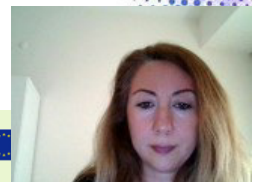
1. Understand the role of marketing in the emerging food and agriculture industry

Building good customer relationship

- Marketing management is the art and science of choosing customer groups to serve and building good and profitable relationships with these groups.
- The marketing department in a food and agriculture company should aim to to find, attract, keep, and grow targeted customers by creating, delivering, and communicating superior customer value.
- The main questions of food and agriculture companies should be:
 - What customers will we serve?
 - How can we best serve these customers?

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



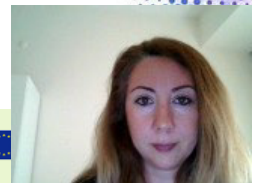
1. Understand the role of marketing in the emerging food and agriculture industry

Building good customer relationship

- What customers will we serve? What is our target market?
 - Food and agriculture company should first decide whom it will serve.
 - In order to do that, the company should divide the market into segments of customers and select which segments it will go after
 - Serving as many customers as possible is not a good strategy. Marketing managers know that they cannot serve all customers in every way.
 - The company wants to select only customers that it can serve well and profitably. Marketing managers must decide which customers they want to target

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



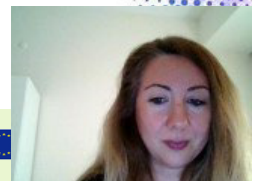
1. Understand the role of marketing in the emerging food and agriculture industry

Building good customer relationship

- How can we best serve these customers? What is our value proposition?:
 - Positioning and choosing a value proposition is important for food and agriculture companies.
 - A food and agriculture company's value proposition should consist of:
 - benefits or values of the company
 - promises to satisfy customer needs
 - Value propositions differentiate food and agriculture companies. They should answer the customer question like "Why should I buy your brand rather than a competitor's?"

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



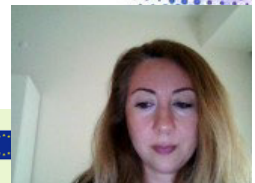
2. Identify the elements of marketing mix

Marketing mix: 4P

- **Product:**
 - The product can be a good or service.
 - Goods are tangible and produced by manufacturers.
 - Services are intangible and produced by service providers and consumers together. It is the result of co-operation between seller and consumer.
 - Food and agriculture company creates product offers for the target market.
 - Brand image and brand identity is important when developing a product strategy. The food and agriculture company creates strong brand identity for their products.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



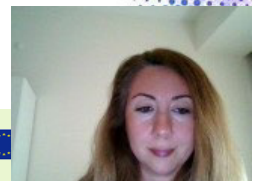
2. Identify the elements of marketing mix

Marketing mix: 4P

- **Price:**
 - The company gives a price to its offers in order to create real customer value.
 - Food and agriculture company can set the price according to cost or value.
 - In cost-based pricing, the food and agriculture company calculates the costs such as production costs, distribution costs, etc.
 - In value-based pricing strategy, the food and agriculture company sets the price according to value of the brand in the market.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



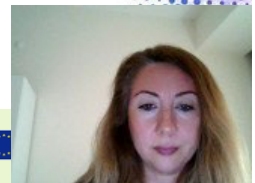
2. Identify the elements of marketing mix

Marketing mix: 4P

- Place:
 - Food and agriculture company distributes the offers to make them available for target customers.
 - Distribution channels may change according to the businesses in the Food and agriculture industry

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



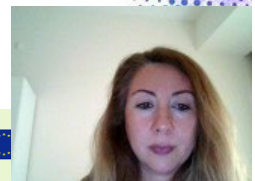
2. Identify the elements of marketing mix

Marketing mix: 4P

- Promotion:
 - Food and agriculture company designs promotion activities in order to communicate with customers and deliver the value proposition to target customers
 - With promotion activities, companies try to persuade customers to act on the marketing offer.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



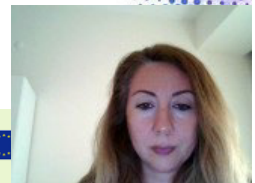
2. Identify the elements of marketing mix

Marketing mix: 4C

- The marketing mix elements analyze the offerings from the view of companies.
- There was a need of a view from the perspectives of consumers in order to understand customer needs and wants better.
- So, in time, 4P turned into a new mix, called 4C.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



2. Identify the elements of marketing mix

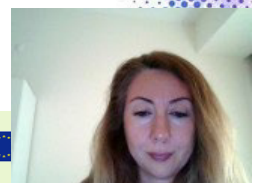
Marketing mix: 4C

- 4P becomes 4C (consumer point of view)

Product	=	Consumer solution
Price	=	Cost to consumer
Place	=	Convenience
Promotion	=	Communication

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



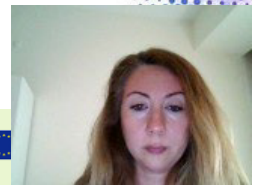
2. Identify the elements of marketing mix

Marketing mix: 7P

- Services are intangible Due to the intangibility there was a need of new marketing mix for services.
- In services marketing, services marketing mix was formed and called 7P.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



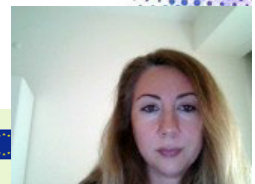
2. Identify the elements of marketing mix

Marketing mix: 7P

- Product
- Price
- Place
- Promotion
- Process
- People
- Physical Evidence

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



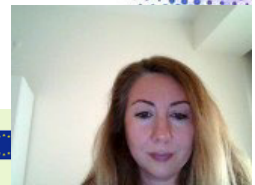
3. Develop a customer-driven marketing strategy

Segmentation

- Segmentation is the process that
 - companies use to divide large heterogeneous markets into small markets
 - that can be reached more efficiently and effectively
 - with products and services that match customers' unique needs.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



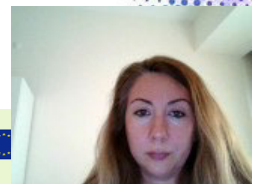
3. Develop a customer-driven marketing strategy

Segmentation

- Segmentation can be used for consumer markets, business markets, and international markets.
- All segmentation strategies will be shown in this course. But the most important one for the food and agriculture companies is segmenting the consumer markets.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



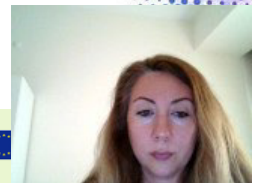
3. Develop a customer-driven marketing strategy

Segmentation

- Segmenting the consumer markets is related to consumer groups.
- Food and agriculture company wants to divide large market into small customer groups.
- When segmenting consumer markets, there are four main strategies that should be followed by food and agriculture companies
 - Geographic segmentation
 - Demographic segmentation
 - Psychographic segmentation
 - Behavioral segmentation

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



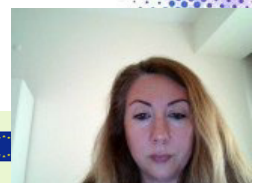
3. Develop a customer-driven marketing strategy

Segmentation

- Geographic Segmentation:
 - divides the market into different geographical units such as nations, regions, states, countries, cities, densities, climates...
- Food and agriculture companies may use this segmentation when entering different countries or regions.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



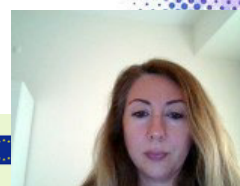
3. Develop a customer-driven marketing strategy

Segmentation

- **Demographic Segmentation:**
 - divides the market into groups based on variables such as age, gender, family size, family life cycle, income, occupation, education, and nationality.
- Food and agriculture companies may use this segmentation when grouping the customers in the market according to their demographics.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



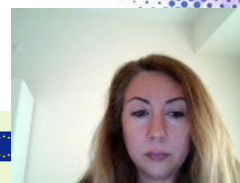
3. Develop a customer-driven marketing strategy

Segmentation

- **Psychographic Segmentation:**
 - divides buyers into different groups based on social class, lifestyle, or personality traits
- Food and agriculture companies may use this segmentation for dividing the market based on the hobbies or sporting activities of consumers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



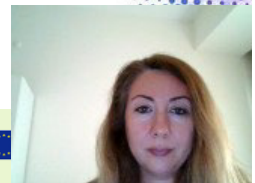
3. Develop a customer-driven marketing strategy

Segmentation

- Behavioral Segmentation:
 - divides the market into groups based on their knowledge, attitudes, uses, and responses to a product.
- Food and agriculture companies may use this segmentation by using occasions, benefits of the products, user status, usage rate, and loyalty status of consumers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



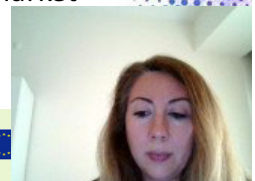
3. Develop a customer-driven marketing strategy

Segmentation

- Segmenting business markets is related to industrial markets and also B2B.
- In addition to the same segmentation variables as consumers, business can also be segmented by:
 - Customer-operating characteristics
 - Purchasing approaches
 - Situational factors
 - Personal characteristics
- Food and agriculture companies can segment the companies in the market according to sectoral-based characteristics.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



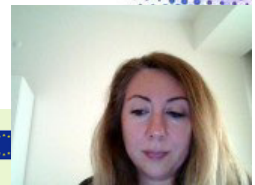
3. Develop a customer-driven marketing strategy

Segmentation

- Segmenting international markets can be also implemented in food and agriculture industry
- Food and agriculture companies may use these criteria for segmenting international markets:
 - Geographic location
 - Economic factors
 - Political and legal factors
 - Cultural factors

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



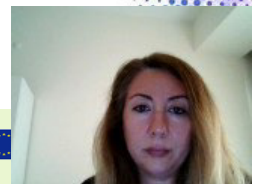
3. Develop a customer-driven marketing strategy

Segmentation

- Requirements for effective segmentation
 - Segments should be measurable in terms of size, purchasing power, etc.
 - Segments should be actionable for attracting and serving
 - Segments should be accessible to be effectively reached and served
 - Segments should be substantial that the markets are large and profitable enough to serve
 - Segments should be differentiable that respond differently to marketing mix elements

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



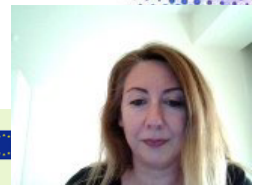
3. Develop a customer-driven marketing strategy

Targeting

- Targeting is the process of
 - evaluating each market segment's attractiveness and
 - selecting one or more segments to enter.
- After segmentation, a food and agriculture company should select the segments in order to enter.
- Before selecting the segments to enter, the company should analyze the segments' attractiveness.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



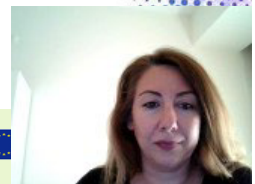
3. Develop a customer-driven marketing strategy

Targeting

- How can a food and agriculture company evaluate the attractiveness of segments?
 - Segment size and growth
 - Smaller versus larger segments
 - Growth potential
 - Segment structural attractiveness
 - Competition level in the segment
 - Substitute products
 - Power of buyers
 - Power of suppliers
 - Competitive advantage
 - Availability of resources

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



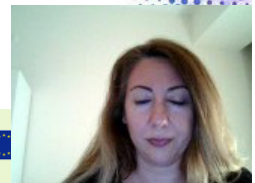
3. Develop a customer-driven marketing strategy

Targeting

- After evaluating the attractiveness of segments, the company should use targeting strategies when entering to these segments.
- There are four main targeting strategies that should be followed by food and agriculture companies:
 - Undifferentiated marketing
 - Differentiated marketing
 - Concentrated marketing
 - Micromarketing

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



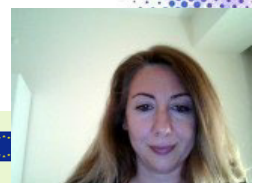
3. Develop a customer-driven marketing strategy

Targeting

- Undifferentiated marketing
 - targets the whole market with one offer
 - typically uses mass marketing,
 - focuses on common needs rather than what's different
- Food and agriculture companies may use this strategy if they produce one general product for all consumers in the market.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



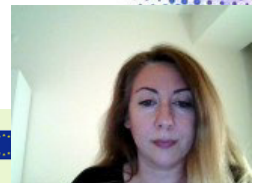
3. Develop a customer-driven marketing strategy

Targeting

- Differentiated marketing
 - targets several different market segments
 - designs separate offers for each
 - aims to achieve higher sales and stronger position
 - is more expensive than undifferentiated marketing
- Food and agriculture companies may prefer producing unique products for different consumer types in the market.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



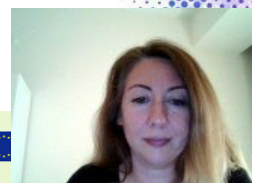
3. Develop a customer-driven marketing strategy

Targeting

- Concentrated marketing
 - targets a small share of a large market
 - has limited company resources
 - has enough knowledge of the market,
 - is more effective and efficient.
- Food and agriculture companies may produce products only for the customers who have in a special needs in the same segment.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



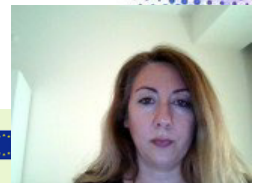
3. Develop a customer-driven marketing strategy

Targeting

- **Micromarketing:**
 - is the practice of tailoring products and marketing programs to suit the tastes of specific individuals and locations
- Micromarketing uses Local Marketing and Individual Marketing.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



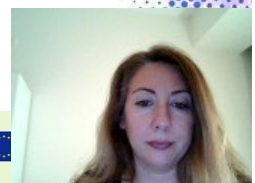
3. Develop a customer-driven marketing strategy

Targeting

- Local marketing involves tailoring brands and promotion to the needs and wants of local customer groups- cities, neighborhoods, stores.
- **Benefits:**
 - Increased marketing effectiveness in competitive markets
 - More customer-specific offerings
- **Challenges:**
 - Increased manufacturing and marketing costs
 - Less economy of scale
 - Logistics

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



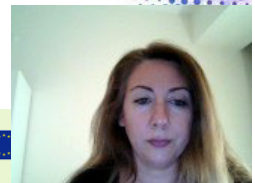
3. Develop a customer-driven marketing strategy

Targeting

- Individual marketing involves tailoring products and marketing programs to the needs and preferences of individual customers
- Individual marketing uses mass customization
 - Mass customization is the process through which firms interact one-to-one with masses of customers to design products and services tailored to meet individual needs.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



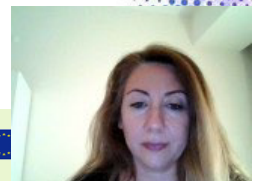
3. Develop a customer-driven marketing strategy

Positioning

- Positioning is the process of:
 - arranging a clear, distinctive, and desirable place relative to competing products in the minds of target consumers
- Food and agriculture companies should use positioning in order to have a distinctive and different place in the minds of their consumers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



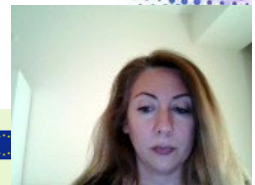
3. Develop a customer-driven marketing strategy

Positioning

- Product positioning is the way that to place the product in consumers' minds relative to competing products based on this product's important attributes.
- Product positioning uses perceptions, impressions, and feelings.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



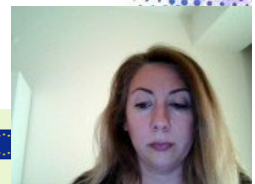
3. Develop a customer-driven marketing strategy

Positioning

- Positioning maps can be used to show consumer perceptions of the brand versus competing products on important buying dimensions
- Food and agriculture companies can use positioning maps with the help of marketing research companies and advertising agencies.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



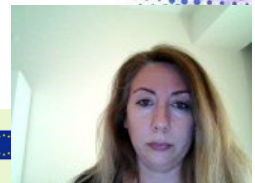
3. Develop a customer-driven marketing strategy

Positioning

- Positioning creates competitive advantage.
 - Competitive advantage is the advantage over competitors gained by offering greater value either through lower prices or by providing more benefits that justify higher prices.
- Food and agriculture companies should use differentiation strategies to create competitive advantage

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



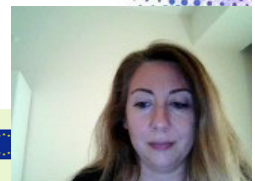
3. Develop a customer-driven marketing strategy

Positioning

- Differentiation strategies:
 - Product differentiation: consistency, durability, reliability
 - Service differentiation: speedy, convenient, delivery
 - Channel differentiation: channel's coverage, expertise, performance
 - People differentiation: hiring and training better people
 - Image differentiation: creating corporate brand image

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



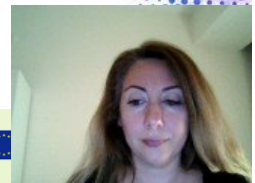
3. Develop a customer-driven marketing strategy

Positioning

- Food and agriculture companies should choose the right competitive advantage.
- The differentiation that created by Food and agriculture companies is worth establishing to the extent that it satisfies the following criteria:
 - Important
 - Distinctive
 - Superior
 - Communicable
 - Preemptive
 - Affordable

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



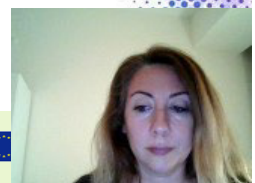
3. Develop a customer-driven marketing strategy

Positioning

- After choosing the differentiation for creating competitive advantage, Food and agriculture companies should select an overall strategy by using Value Proposition.
- Value Proposition is the full mix of benefits upon which a brand is positioned

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



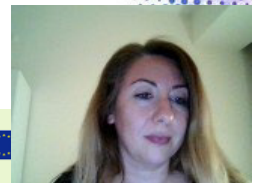
3. Develop a customer-driven marketing strategy

Positioning

- At the end, Food and agriculture companies should develop a positioning statement
- Positioning statement shows the product's membership in a category and its point-of-difference from other members of the category.
- The formula for writing positioning statement
 - To (target segment) our (brand) is (concept) that (point of difference)

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



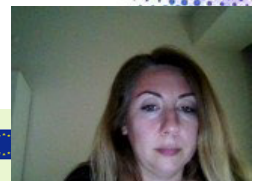
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Social marketing:
 - To design, implement, and control of programs seeking to increase the acceptability of a social idea, cause, or practice among a target group
- Food and agriculture companies use social marketing to support social ideas such as sustainability and green consumption.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



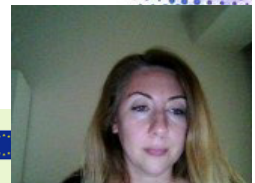
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Turbo marketing:
- Faster production, faster logistics activities in the same time for satisfying customers who have time sensitivity.
- Food and agriculture companies use turbo marketing techniques when producing agricultural products in a limited time period.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Internal marketing:
- Marketing activities to train and motivate company's customer-contact employees for increasing satisfaction.
- Food and agriculture companies use internal marketing to reward their employees.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



Co-funded by the
Erasmus+ Programme
of the European Union



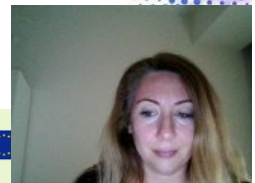
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Database marketing:
- Form of direct marketing using databases of customers or potential customers to generate personalized communication in order to promote a product
- Food and agriculture companies use database marketing to create various promotional activities according to interests of the consumers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



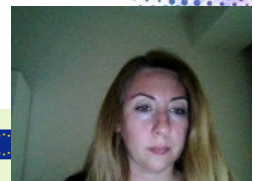
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Permission based marketing:
- Before starting the marketing communications, to ask for permission to customers.
- Food and agriculture companies should take permission from their customers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



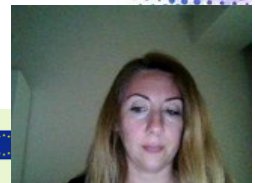
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Guerilla marketing:
- Marketing activities that aim to bring together consumers and brands in different and cheaper ways.
- Food and agriculture companies use guerilla marketing activities in especially outdoor environment

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



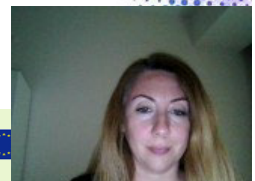
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Relationship marketing:
- Helps companies build longer term relationships with customers rather than individual transactions.
- It involves understanding customer needs and holding existing customers rather than finding new ones.
- Food and agriculture companies should use relationship marketing to create customer satisfaction and loyalty.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



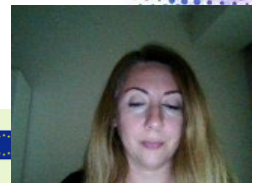
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Sensorial marketing:
- To improve the brand communications thereby considering humans' five sensations (colors, smelling, taste, touch, hearing).
- Food and agriculture companies use smelling and tasting elements of sensorial marketing mostly.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



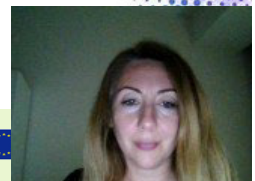
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Experiential marketing:
- Brands connect consumers in personally relevant and memorable ways.
- It has emotional and entertainment contains
- Food and agriculture companies use experiential marketing with organizing events that connects consumers and the company in an entertainment context.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



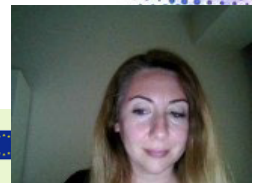
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Retro marketing:
- It is based upon the nostalgia that reperform the events, brands and fashions.
- Food and agriculture companies may produce nostalgic items and packages came from past.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



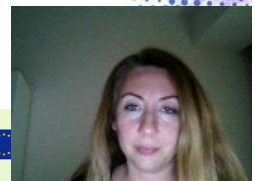
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Frequency marketing:
- Encourages and rewards the ongoing purchase of products and services.
- Generates brand loyalty and cultivate a long-lasting relationship with customers.
- Food and agriculture companies can use frequency marketing with developing loyalty cards which give extra discounts and rewards to existing and loyal customers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



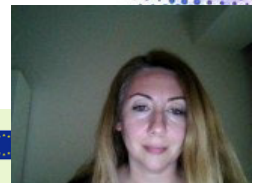
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- SMS marketing:
- Marketing activities that include short message services (SMS) on mobile phone.
- Food and agriculture companies use SMS marketing for informing their customers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



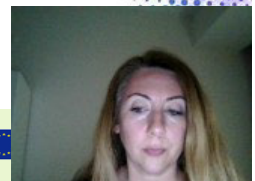
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Location-based SMS marketing:
- Location-based services (LBS) are offered by some cell phone networks as a way to send custom advertising and other information to cell phone subscribers based on their current location.
- Food and agriculture companies use location-based SMS marketing to send direct messages to the customers near their locations.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



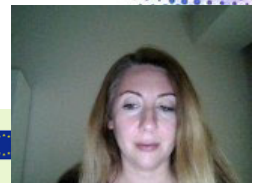
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Social Media marketing:
- Uses social media and social networks to promote businesses, products, and services.
- Food and agriculture companies should use social media marketing, and they should select which social media network will be used based on their consumers' interests.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Word of Mouth marketing:
- Helps customers to share their positive or negative past experiences regarding a company, product, or service.
- Food and agriculture companies should be careful negative word of mouth activities.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



Co-funded by the
Erasmus+ Programme
of the European Union



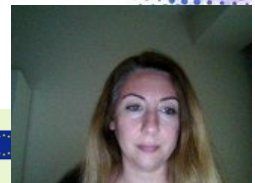
4. Analyze the types of marketing for sustainable food and agriculture

Marketing Types

- Electronic Word of Mouth (eWOM) Marketing:
- Enables consumers to share their information and experiences on the internet, mobile channels, or social media networks.
- Food and agriculture companies should use electronic channels together to provide consistent communication with their customers.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses

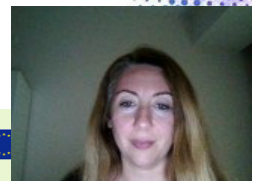


References

- Kotler, P. & Armstrong, G. (2010). *Principles of Marketing*. Pearson: NJ.
- Lovelock, C. & Wirtz, J. (2007). *Services Marketing*. Pearson: NJ.

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



External Resources

- BSR (2019), «Four Ways Companies Can Transform the Health of Communities », <https://www.bsr.org/en/our-insights/blog-view/four-ways-companies-can-transform-the-health-of-communities>
- Ecologic (2018), «European food and agriculture in a new paradigm », <https://www.ecologic.eu/sites/default/files/publication/2021/frelih-larsen-21-European-food-and-agriculture-in-a-new-paradigm-WEB.pdf>
- Farm Europe (2022), « Food Security: Back at the top of the European Political Agenda », <https://www.farm-europe.eu/news/food-security-back-at-the-top-of-the-european-political-agenda/>

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



External Resources

- McKinsey & Company (2020), «Agriculture sector: Preparing for disruption in the food value chain », <https://www.mckinsey.com/industries/agriculture/our-insights/agriculture-sector-preparing-for-disruption-in-the-food-value-chain>
- The European Union (2016), «Enhancing the position of farmers in the supply chain », https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/amtf-report-improving-markets-outcomes_en.pdf

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



External Resources

- The Organisation for Economic Co-operation and Development (OECD) (2020), «COVID-19 and the food and agriculture sector: Issues and policy responses », <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/>
- The U.S. Cybersecurity and Infrastructure Security Agency, «Food and Agriculture Sector», <https://www.cisa.gov/food-and-agriculture-sector>
- The U.S. Department of Agriculture Economic Research Service (2019), «Ag and Food Sectors and the Economy », <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



External Resources

- The U. S. Food and Drug Administration (2007), « Agriculture and Food », https://www.fda.gov/files/food/published/Agriculture_and-Food--Critical-Infrastructure-and-Key-Resources-Sector-Specific-Plan-pdf.pdf
- The World Bank (2021), « Agriculture and Food », <https://www.worldbank.org/en/topic/agriculture/overview#1>
- The World Health Organization (2020), «COVID-19 and Food Safety: Guidance for competent authorities responsible for national food safety control systems», https://apps.who.int/iris/bitstream/handle/10665/331842/WHO-2019-nCoV-Food_Safety_authorities-2020.1-eng.pdf

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



External Resources

- WeForum (2022), «EU organizations join forces with farmers to fight climate change», <https://www.weforum.org/agenda/2022/01/european-organizations-join-forces-with-farmers-to-fight-climate-change-and-restore-nature/>

10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



10.11.2023

Planning Marketing Strategy for
Food and Agriculture Businesses



SDG4BIZ Training Package Content

621458-EPP-1-2020-1-FI-EPPKA2-KA/ KNOWLEDGE ALLIANCE FOR BUSINESS OPPORTUNITY RECOGNITION IN SDGs - SDG4BIZ



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



10.11.2023

Planning Marketing Strategy for Food and Agriculture Businesses



10.11.202372