Training for sustainable food systems development

Manual

Erasmus+

TRAINING FOR SUSTAINABLE FOOD SYSTEMS DEVELOPMENT

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

Training for sustainable food systems development

Manual

POUR LA SOLIDARITÉ European think & do tank
Università della Cucina Mediterranea
FOR.E.T. FORmation Emploi Tremplin
KOAN
eshob escola superior d'hostaleria de barcelona
diesis
Fondazione Triulza

Table of contents

Indice

Índice

General introduction

Food production, trade and consumption are the core of the relationship between humans and **nature**. Food is a key element of human's identity and cultural values. In Europe, there is not only one single food system, but **various systems** linked between each other and also dependent on **different local traditions**. However, the notion of "**sustainable food**" has been defined by the European Commission as follows:

> *"There are many different views as to what constitutes a 'sustainable' food system, and what falls within the scope of the term 'sustainability'. Strictly speaking sustainability implies the use of resources at rates that do not exceed the capacity of the Earth to replace them. For food, a sustainable system might be seen as encompassing a range of issues such as security of the supply of food, health, safety, affordability, quality, a strong food industry in terms of jobs and growth and, at the same time, environmental sustainability, in terms of issues such as climate change, biodiversity, water and soil quality[1]."*

Traditional food production and consumption systems **do not respect the resources limits of the Earth**. According to the Food and Agriculture Organization of the United Nations (FAO), the food system produces 4 billion tons of food of which approximately one third is lost or wasted. The food system has a **significant impact on the environment**. For example, it is one of the most water-demanding and accounts for around 22% of total Greenhouse Gas emissions[2]. Moreover, the price volatility and the interdependence of global markets and climate change make access to safe, sustainable and quality food increasingly uncertain, especially among the most vulnerable populations. The food system is **a worldwide big issue**.

The traditional economic system does not respond anymore to the challenge brought by the **overconsumption of resources**. It became crucial to **undertake a successful transition**, in terms of economic, social, ecologic and cultural transition.

Education and training are **essential vectors** to respond to the socio-economic changes facing the European Union (EU) and the world. Thus, the European Commission has implemented the **Erasmus + program** which aims to make Europe a fertile ground to growth, employment, equity and social inclusion.

To meet these challenges, POUR LA SOLIDARITÉ-PLS (BE), Diesis.Coop (BE), For.e.t (BE), Koan Consulting SL (SP), Fundaciòn Privada Escola de Restoraciò i Hosteleria de Barcelona – ESHOB (SP), Università della Cucina Mediterranea (IT) and Fondazione Triulza (IT) have joined forces to develop the European project Erasmus + **"Training for Sustainable Food Systems Development - T4F" towards a more sustainable and inclusive society**. The most innovative aspect of the project is designing a new training program in order to meet the lack of sustainable competences and training needs for workers of the food sector.

Regarding the necessity of including the environmental and sustainable dimensions in the European issues of growth, training and employment, T4F project partners developed a toolkit for (future) professionals in the food sector.

[1] Commission européenne, Rubrique « Environment », http://ec.europa.eu/environment/eussd/food.htm
[2] FAO (2015), « Food wastage footprint & Climate change », http://www.fao.org/3/a-bb144e.pdf

1. A **European and theoretical benchmarking** of the European legislative corpus and presenting best training practices in sustainable food in Belgium, Spain, Italy, France and Sweden.

2. The **framework** that defines the main areas of the training (nutrition, ecology, economy and social).

3. A **innovative and flexible training** structured in eight units:
   - Healthy and sustainable diets,
   - Biodiversity, seasonality and organic food,
   - Water and land management food footprints,
   - Food loss and food waste,
   - Circular economy and resilience,
   - Local economy and alternative systems,
   - Ethic and inclusive food business models,
   - Food and cultural heritage.

4. A **methodological guide** giving the keys to teach and/or follow the training.

5. An **assessment guide**.

Presented here, the T4F training has been developed in a collaborative and participative way by VET (vocational education and training) centers but also experts on the topics of sustainable development and/or the social economy.

Flexible: this training aims to introduce notions of sustainability and green skills in the food sector from the cooking to the hotel management.

Practical: the training can be given in entirety or unit by unit. Indeed, the training could be used by different kind of VET providers and intended for trainees at different educational levels.

Complete: each learning unit mixes theory and practice to develop or improve the green skills in a general but concrete way.

Citizens, trainees or trainers, if the sustainable food is a topic that interests you, on which you would like to discuss or debate or if you would like to learn more about the subject, do not hesitate to follow our training!

UNIT 1

HEALTHY AND SUSTAINABLE DIETS

NUTRITION

Healthy and sustainable diets

13 hours

LEARNING OBJECTIVES

1. To recognize factors, habits and food choices influencing our health, our planet and our community.
2. To be informed about alternative ingredients and unconventional food.
3. To recognise well balanced diets according to nutritional needs.
4. To recognise proper information about health and nutritional food.

LEARNING ACTIVITIES

THEORETICAL (8 hours)	PRACTICAL (5 hours)
• Reading • Web research • Successful case study	• Research novel ingredients accepted in your country and derivative products • Comparison of diets

I. Introduction

Approximately 795 million people, one in nine of the global population, suffer from chronic undernourishment. 2 billion are overweight or obese. One in three people suffers at least from malnutrition. No country is immune. World demand for food will increase substantially in the coming decades, owing to demographic growth: the world's population is expected to increase from 7.1 billion in 2013 to 9.6 billion by 2050[1].

At the same time we need to face the constant decrease of agricultural soil area. The FAO estimates that a 60% increase in global agricultural land will be needed to meet growing protein demand. In fact, it is estimated that global meat consumption will increase by 82% by 2050, with beef specifically increasing by 95%[2]. By 2050 these dietary trends, if unchecked, would be a major contributor to an estimated 80% increase in global agricultural greenhouse gas emissions. The share of people consuming more than 3,000 kcal per day may reach 52% in 2050 compared to the present 28%[3].

We know that **our current food habits are unsustainable in the long term** not only for the planet but also for our health. For example, the average European man eats nearly 90 grams of protein per day, almost double the amount of protein he needs (56g)[4].

The over-consumption of animal-based products and ultra-processing of food with "empty calories" as well as physical inactivity put our health at risk increasing the incidence of type II diabetes, coronary heart diseases and other chronic diseases that lower global life expectancy.

From an economic point of view the consequences have also a high impact:

- A substantial productivity loss through absenteeism, job loss and premature retirement in the working population.
- An increase in public health expenditure.

Fundamental changes in the way food is produced, processed, distributed and consumed are essential for achieving sustainable development. To be more sustainable we need our food to be more affordable, accessible, healthy, nutritious and safe for all of us, in order to reduce food insecurity among the population. People should be able to choose healthy and safe food, and they should be aware of the benefits and detriments of their food behaviours.

The nutritional area of sustainable food systems takes into account the implication that different foods have for our health in a long – term period.

In this unit we explore the concept of sustainable diets and the implication of our food behaviours. It would like to be a tool to recognize proper information about health and nutritional food. Nutritional recommendations are integrate tools for sustainability that can contribute to increase health and reduce global warming at the same time.

[1] FAO (2014), "Assessing sustainable diets within the sustainability of Food System".
[2] FAO (2015). "FAO Statistical Pocketbook", Rome.
[3] European Commission (2015), "World food consumption patterns – trends and drivers", *EU agricultural markets briefs*, no. 6, June 2015.
[4] Ranganathan J., *et al.* (2016), "Shifting Diets for a Sustainable Food Future", *World Research Institute*.

II. Definition of sustainable diets

Throughout all last century, nutrition science tried to clarify which is the best diet for human health. Today we face a new challenge: we need to marry human and planet health.

Our questions are easy, but the answers are not. Are we eating too much meat? What is the right amount? Dairies are good for our health? And for the planet? Do we consume a diet primarily of plants? And is this the same everywhere? And what about fish?

FAO[5] defines the sustainable diets as: *"those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources"*.

In the same document we find this "flower" that synthesize which are the key components of a sustainable diet:

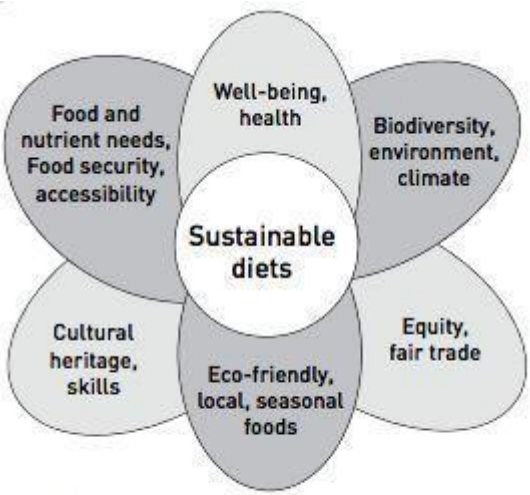


Figure 1. Schematic representation of the key components of a sustainable diet.

In this module we will focus on two of the six represented aspects[6]:

- Food and nutrient needs, food security and accessibility,
- Wellbeing and health.

Usually, two macro-indicators are used to assess the nutritional sustainability of products. The first takes into account the application of different regulations and standards regarding quality, safety and traceability as well as the origin of raw materials. The second one assesses the product nutritional quality taking into account the contents of key compounds including micronutrients and bioactive phytochemicals[7].

A report from the United Nations stated in 2010: "*A substantial reduction of the impacts* [on the environment] *is only possible with a substantial change in the world diet, away from animal products*"[8]. According to the United Nations and the Food Climate Research Network (FCRN) of the University of Oxford current food systems endanger food production and do not adequately

[5] FAO (2010), "Sustainable diets and biodiversity directions and solutions for policy, research and action".
[6] The other key components will be developed in the other areas of the framework.
[7] Azzini, E., Maiani, G., Turrini, A., *et al.* (2018), "The health-nutrition dimension: a methodological approach to assess the nutritional sustainability of typical agro-food products and the Mediterranean diet", *Journal of the Science of Food and Agriculture.*
[8] Hertwich E. (2010). "Assessing the environmental impacts of consumption and production: priority products and materials". *UNEP/Earthprint*.

nourish the population[9]. A previous study[10] shows that changing the course of current trends in food consumption will require drastic changes in the reduction of meat and dairy consumption by large segments of the world population. Other strategies, including the reduction of food waste and the implementation of precision agriculture, should be applied simultaneously, but they are not sufficient to make the world food system sustainable. The task of reviewing current food policies so that they become sustainable must start as soon as possible at the institutional level[11]. Globally we are witnessing a worrying transition to food: rising incomes and urbanization in developing countries drive high diets in sugars, refined flours and fats, meat and other animal by-products. In 2050 these dietary tendencies, if not controlled, could contribute up to 80% to the increase of greenhouse gas emissions.

The implementation of dietary solutions linked to the protection of the environment and human health is, today, a global challenge and a great opportunity at the local and global level. A recent study by researchers from the University of Minnesota[12] states that a global change in diets that depends less on meat and more of fruits and vegetables could reduce greenhouse gas emissions by two-thirds and avoid related damages with the climate for 1.5 trillion dollars.

Another line of research[13] explores dietary guidelines from a nutritional point of view and environmental sustainability. The study compares six diets and concludes that the vegan diet combines a high health score with the greatest reduction in animal protein and, therefore, with the highest sustainability. In its conclusions, as an acceptable compromise for the general public, the study suggests to promote a strict Mediterranean diet to improve both aspects simultaneously. A strict Mediterranean diet is based on foods of vegetable origin, eggs, dairy products, fish (two times a week) and meat (on occasions).

To advance towards healthy and environmentally friendly dietary patterns, it is necessary **to promote changes in consumption**, incorporating sustainability in the diet-based guidelines based on food in each country, proposing dietary recommendations for those who wish to adopt diets based on food of vegetable origin: a need neglected in many European countries.

What does healthy diet mean?

Diet is established among the most important influences on health in modern societies: it's one of the causes of premature death and chronic disease. Optimal eating is associated with increased life expectancy, dramatic reduction in lifetime risk of all chronic disease, and improvement in gene expression. The weight of evidence strongly supports that a diet of minimally processed foods close to nature, predominantly plants, is decisively associated with health promotion and disease prevention and is consistent with the salient components of seemingly distinct dietary approaches[14].

Main European food dietary guidelines give similar messages, but we can find differences in details depending on the country specific diet-related problems and food consumption patterns. The main messages of the Italian guidelines are, for example, to choose quality and limit the

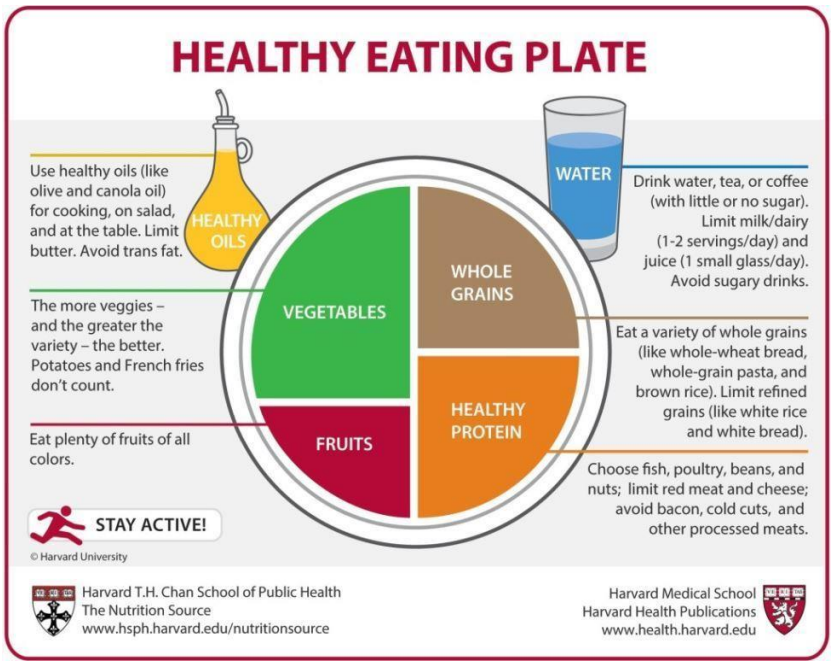
[9] Gonzalez Fischer C., Garnett T. (2016) *Plates, pyramids, planet Developments in national healthy and sustainable dietary guidelines: a state of play assessment*. Food and Agriculture Organization of the United Nations and The Food Climate Research Network at The University of Oxford.
[10] Sabaté J., Soret S. (2014), "Sustainability of plant-based diets: back to the future", Am J Clin Nutr. 100 (suppl): 476S-82S. *American Society for Nutrition*.
[11] Lang T., Barling D. (2013). *Nutrición y sostenibilidad: un discurso emergente sobre políticas alimentarias*. Procedimientos de la Sociedad de Nutrición, 72 (1).
[12] Springmann M., Godfray HCJ., Rayner M. & Scarborough P. (2016). Analysis and valuation of the health and climate change cobenefits of dietary change. *Proceedings of the National Academy of Sciences*, 113(15).
[13] Van Dooren C., Marinussen M., Blonk H. *et al*. (2014), "Exploring dietary guidelines based on ecological and nutritional values: A comparison of six dietary patterns", *Food Policy*, Vol. 44.
[14] Katz D., Meller, S. (2014), "Can We Say What Diet Is Best for Health?", *Annual Review of Public Health*; 35:1, 83-103.

amount of fats[15], while the Danish Guidelines recommend to choose low fat diary products and less saturated fat and eat more fish.

Most countries have developed a graphic representation of ***Food-Based Dietary Guidelines*** **(FBDG)** to illustrate the proportions of different foods with similar characteristics that should be included in a balanced diet, although they may have a list of messages or tips as well. Graphic formats provide a consumer-friendly framework so that if foods from the main groups are eaten each day, an important first step is taken towards achieving a healthy diet, without specific knowledge of nutrients.

One of the most important international fonts of evidence-based diet & nutrition information for clinicians, health professionals and the public is *The Nutrition Source* of the Harvard T.H. Chan School of Public Health. For Harvard a healthy diet is essentially a plant-based diet making most of our meal vegetables and fruits (1/2 of the plate), whole grain and by-products (1/4 of the plate), healthy proteins as beans, dry fruits, fish and lean meats (1/4 of the plate).

The main message of the **Healthy Eating Plate** is to focus on diet quality, for example the type of carbohydrate in the diet is more important than the amount, because some sources of carbohydrate —like vegetables (other than potatoes), fruits, whole grains, and beans— are healthier than others. Other important advises are to drink mostly water and avoid sugary beverages and ultra-processed food rich in salt, sugar and unhealthy fats.



Source: Harvard School of Public health, "Healthy Eating Plate".

But, do we know the difference between proteins, lipids and carbohydrates? What are macro and micronutrients? Let's take a look to these videos and let's refresh our minds.

- EFSA: https://bit.ly/1yMR8Sm
- MacroNutrients: https://bit.ly/1VGPlV0
- MicroNutrients: https://bit.ly/2LqS200 and https://bit.ly/2EDvngP
- Train with Kane: https://bit.ly/2SQ4DfY

Scientific evidence is not always easy to find in our over-informed world. For example we find very often all kind of claims on food packaging and this may cause some confusion.

[15] Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione, (2003), "Linee Guida per una sana alimentazione italiana".

What is a "Health Claim"?

A health claim is any **statement about a relationship between food and health**. The European Commission authorises different health claims provided they are based on scientific evidence and can be easily understood by consumers. The European Food Safety Authority (EFSA) is responsible for evaluating the scientific evidence supporting health claims.

We can have two types of claims:

- **Nutritional claims**. The nutritional indications given on food products, such as "low in fat", "without added sugar", "rich in fibre", are set and not therefore at the discretion of the food company.
- **Health claims**: any statement that the consumption of a given food can be beneficial to health, such as the claim that a food product can help to strengthen the body's natural defences or improve learning skills.

It's very important to search for the most effective information about claims that we read on food packaging through reliable sources such as European Food Safety Authority web page (EFSA). For deeper information: https://bit.ly/2eSqhxZ. Here you can see a simple video about health claims by EFSA: https://bit.ly/2GoXVMo

In the information on the labels of food we find more and more the expression "*without...*". This practice has been increasing in recent years due to some scientific studies that have provided information on the dangerousness of some substances contained in food or in their packaging.

Among these substances we find:

- Acrylamide in products that have been cooked at high temperatures,
- Glyphosate and other pesticides in cultivated foods,
- Mercury in fish,
- Bisphenol A (and other substances) in food plastics,
- Nitrites and nitrates in processed meats.

For this purpose it is necessary to be able to recognize accredited sources, especially online:

- https://bit.ly/2Rac5FH
- https://bit.ly/2GuFOVt
- https://bit.ly/2EC5Y7c

III. Impact of consumers' diets, choices and lifestyles

It's important to bear in mind that **people's food choices and nutrition-related practices are determined by many factors**: personal experience with food, their perceptions, beliefs, values, emotions and personal meanings[16].

The social and economic environment also influences food choices. Consequently, knowledge is not enough for people to eat healthy and stay active. Nutrition education must develop skills not only to transmit nutritional or health contents, but also to understand people, their behaviour and context. It's essential to integrate dietary recommendations with others linked to lifestyle: for example eating unprocessed foods implies knowing where and how to buy and to cook them, and means also find time to carry out these actions as family and/or social activities. Also, doing regular physical activity, possibly in the open air, is one of the results of having a holistic and integrated way of life. People need to take on that eat well and stay physically active are priorities in daily routines in order to maintain an optimum health not only at the physical level, but also at mental and emotional ones.

The true purpose of a healthy lifestyle is not only to live longer, but also to do so in health and enjoyment. We will deepen these essential aspects in the case study of the Mediterranean Diet as a lifestyle.

Our most important goal is to recognize factors, habits and food choices that influence positively our health, our planet and our community. People need to easily find information in order to follow the so-called ethical diets, such as vegan and vegetarian diets in a safe and healthy way. In fact, most of the associations of nutritionist and dieticians from around the world consider these diets healthful and nutritionally adequate if that appropriately planned. These plant-based diets, moreover, may provide health benefits in the prevention and treatment of certain diseases.

Another important issue is to keep the portions in proportion. What we eat is fundamental, but also how much we eat is important. As the evidence says "*a range of factors will influence the size of the portion size chosen: amongst others packaging, labeling, advertising, and the unit size rather than portion size of the food item*"[17]. Discover more about it here: https://bit.ly/2CkUMcE

[16] Contento, I. (2010), *Nutrition Education: Linking Research, Theory, and Practice. Overview of determinants of food choice and dietary change: implications for nutrition education*, Jones and Barlett Publishers: Sudbury, MA.
[17] Benton, D. (2015), "Portion size: what we know and what we need to know". *Critical reviews in food science and nutrition*, 55(7), 988-1004.

IV. Novel food, insects and alternative food

The increasing need of food of our growing population is ramping up pressure on finite environmental resources. The FAO estimates that a 90% increase in global crop production will be needed to feed the future population. One way to balance the need for increased food production with finite land can be **farming innovations** (like vertical farming and urban agriculture) as well as alternative as **novel feed and food ingredients**.

What we mean with "novel food"?

Novel Food is defined as food that had not been consumed to a significant degree by humans in the EU before 15 May 1997, when the first Regulation on novel food came into force. 'Novel Food' is the newly developed, innovative food, food produced using new technologies and production processes, as well as food that is or has been traditionally eaten outside of the EU. For example we can consider as novel food agricultural products from third countries (chia seeds, noni fruit juice), or food derived from new production processes (UV-treated food as milk, bread, mushrooms and yeast).

More in general Novel Foods must be:

- Safe for consumers
- Labeled properly, in order to avoid to mislead consumers
- If novel food is intended to replace another food, it must not differ from the original one in a disadvantageous way for the consumer.

In the last decade one of the major trend is to reconsider alternatives protein food as insects. Is it safe? Do insects taste good? Let's take a look to this video to learn more about it: https://bit.ly/1N6pBAfI. Insects are cheap, nutritious and according to some supporters, they are "delicious." Find more about cook with insects: https://bit.ly/2H63yjf and https://bit.ly/1AjdH2d

Choosing insects can be promoted for 3 main reasons:

- **Health factors**: insects are healthy, nutritious alternatives to animal products. Consider that 100 grams of beef contains 29 grams of protein, but also 21 grams of fat. On the other hand, 100 grams of grasshopper contains 20 grams of protein and only 6 grams of fat and are high in calcium, iron and zinc.
- **Environmental factors**: insect rearing is not necessarily a land-based activity and does not require land clearing to expand production and as food emits considerably fewer greenhouse gases (GHGs). Because they are cold-blooded, insects are very efficient at converting feed into protein (crickets, for example, need 12 times less feed than cattle, four times less feed than sheep, and half as much feed as pigs and broiler chickens to produce the same amount of protein). Moreover, insects can be fed with organic waste streams.
- **Economic and social factors**: insect harvesting is a low-tech, low-capital investment option that offers entry even to the poorest sections of society. This offers livelihood opportunities for both urban and rural people.

Sustainability, increasing demand for protein and high feed-to-protein conversion have pushed the development of startups around the world dedicated to insect breeding business.

V. Case study : The UNESCO Mediterranean diet

"The Mediterranean diet is more than a simple diet. It promotes social interaction, seeing as the communal meal in the community of social customs and festivities shared by a community, which in turn has given space to a remarkable body of knowledge, songs, aphorisms, tales and legends. The diet is based on respect for its territory and biodiversity and the development of the traditional trades and professions associated with fishing and agriculture in Mediterranean communities[18]".

It is difficult to find a univocal definition of Mediterranean diet. There are at least 16 countries facing the Mediterranean Sea with different culture, religion, economic and political status, and various factors that influence food choices. The term Mediterranean Diet was probably coined by Ancel Keys, American nutritionist, who observed a reduction in cardiovascular disease mortality in Greece, Southern Italy and the former Yugoslavia compared to the United States, Holland and other industrialized countries[19]. Nutritionally the Mediterranean Diet is a plant-based diet integrated with small amounts of animal proteins, that provide key nutrients and other protective substances that contribute to general wellbeing and to maintain a healthy and balanced diet.

Every day, each main meal should contain three basic elements: cereals, fruits and vegetables. A daily intake of 1.5 to 2 litres of water should be guaranteed. Olive oil is the principal source of dietary lipids because of its high nutritional quality and its unique composition. Spices, herbs, garlic and onions are a good way to introduce a variety of flavours and palatability to dishes and contribute to the reduction of salt addition. Olives, nuts and seeds are good sources of healthy lipids, proteins, vitamins, minerals and fibre. Mediterranean traditional dishes do not usually have animal origin protein foods as the main ingredient but as a tasty source. The combination of legumes and cereals are a complete and healthy protein source as well as fish (preferably oily fish).

The health benefits of the Mediterranean Diet and its protective effect against chronic diseases has already been well established by scientific evidence. Walking, taking the stairs instead of take the lift, etc., are simple and easy ways of doing exercise. But also practising leisure activities outdoors and preferably with other persons makes it more enjoyable and strengthens the sense of community. All these recommendations are shown in the new Mediterranean pyramid presented by Mediterranean Diet in 2010.

Moreover, Mediterranean diet is much more than food pattern: his cultural and lifestyle characteristics preserve the cultural identity of the community and its health.

The preference for seasonal, fresh and minimally processed foods, frugality, socialisation and the habit of cooking are key elements that describe Mediterranean Diet approach. It takes into account traditional, local, eco-friendly and bio-diverse products to contribute to the preservation of the environment and Mediterranean landscapes.

The Mediterranean diet involves a set of skills, knowledge, rituals, symbols and traditions concerning crops, harvesting, fishing, animal husbandry, conservation, processing, cooking, and particularly the sharing and consumption of food. Eating together is the foundation of the cultural identity and continuity of communities throughout the Mediterranean basin, helping integration and socialisation. It is a moment of social exchange and communication, an affirmation and renewal of family, group or community identity.

[18] UNESCO, "The Mediterranean diet".
[19] De Lorgeril M. (2013), "Mediterranean diet and cardiovascular disease: historical perspective and latest evidence", *Current Atherosclerosis Reports,* 15(12, article 370).

The Mediterranean diet emphasizes values of hospitality, neighbourhood, intercultural dialogue and creativity, and a way of life guided by respect for diversity. It plays a vital role in cultural spaces, festivals and celebrations, bringing together people of all ages, conditions and social classes. It includes the craftsmanship and production of traditional receptacles for transport, preservation and consumption of food, including ceramic plates and glasses. Women play an important role in transmitting knowledge of the Mediterranean diet: they safeguard its techniques, respect seasonal rhythms and festive events, and transmit the values of the element to new generations. Markets also play a key role as spaces for cultivating and transmitting the Mediterranean diet during the daily practice of exchange, agreement and mutual respect.

The Mediterranean Diet is, as suggested by the etymology of the word (from Greek *diaita*), a way of life, a *modus vivendi*.

Reference(s):

- BACH-FAIG, Anna, et al. Mediterranean diet pyramid today. Science and cultural updates. *Public health nutrition*, 2011, vol. 14, no 12A, p. 2274-2284.
- https://ich.unesco.org/en/RL/mediterranean-diet-00884
- http://www.nutritionheart.com/video-mediterranean-diet/
- https://dietamediterranea.com/en/
- http://www.unesco.org/archives/multimedia/?pg=33&s=films_details&id=1680&vl=Eng&vo=2

PRACTICAL ACTIVITIES

Mediterranean recipe

Pre-requisites	Knowledge of the bases of Mediterranean diet
Time	40 minutes
Tools	PC, internet connection, optional kitchen tools
Objective(s)	1. To recognize factors, habits and food choices that influence our health, our planet and our community. 2. To recognise well balanced diets according to nutritional needs.

Instructions

Read carefully the module and the case study of the Mediterranean diet.

Create (and optionally cook) a healthy Mediterranean recipe using these ingredients: cereal, legumes, vegetables, dry fruits, olive oil.

Score : 20%

Mediterranean dish with insects

Pre-requisites	Knowledge of the bases of Mediterranean diet and some insect-derived food and its uses.
Time	1 hour
Tools	PC, internet connection
Objective(s)	1. To recognize factors, habits and food choices that influence our health, our planet and our community. 2. To be informed about alternatives ingredients and unconventional food.

Instructions

Read carefully the module and the characteristics of the insect-derived food diet provided in the suggested web pages.

After consulting links about cook with insects, create a recipe completed with ALL the suggested ingredients and the instructions to cook it. Mix insects with Mediterranean ingredients and elaborate a dish as more similar as possible to a traditional one.

Score : 15%

Healthy and sustainable menu	
Pre-requisites	Knowledge of the bases of healthy diet and sustainable diet.
Time	2 hours
Tools	PC, internet connection, optional kitchen tools
Objective(s)	1. To recognize factors, habits and food choices influencing our health, our planet and our community. 2. To be informed about alternative ingredients and unconventional food. 3. To recognise well balanced diets according to nutritional needs. 4. To recognise proper information about health and nutritional food.

Instructions

After reading the module and the suggested links about healthy and sustainable diet, create a menu.

Create and optionally cook a menu according to your country with both sustainable and healthy ingredients composed of: 4 starters, 4 main courses, 4 "desserts".

All the ingredients and cook techniques must be healthy and, according to the country, as more sustainable as possible.

Score : 25%

List of healthy and sustainable products	
Pre-requisites	Knowledge of the main sustainable and healthy food product.
Time	20 minutes
Tools	PC, internet connection
Objective(s)	To recognise proper information about health and nutritional food.

Instructions

Read carefully the module, analyse this web contents and choose between this list the products that are both sustainable and healthy : whole grain bread, bacon, peppers, tomatoes, blueberries, eggs, almonds, butter, olive oil, potatoes, oranges, milk, tuna, apple, aubergine, cow meat, pasta, rice, pumpkins, beans, cheese, onion, garlic.

Find at least 10 that meet both requirements.

Score : 10%

Nutritional Claims	
Pre-requisites	Knowledge of the best sources where find trustable information about nutrition and knowledge of the concept of health claim.
Time	30 minutes
Tools	PC, internet connection
Objective(s)	To recognise proper information about health and nutritional food.

Instructions

Free gluten diet: it's good for everybody?

After reading the module and the suggested links about nutritional claims search a good evidence based source and find an answer to the question.

Score : 10%

Evidence based information about food security	
Pre-requisites	Knowledge of the best sources where find trustable information about food security.
Time	15 minutes
Tools	PC, internet connection
Objective(s)	To recognise proper information about health and nutritional food.

Instructions

What is acrylamide? How can we avoid the creation of acrylamide in food?

After reading the module and the suggested links about food security search a good evidence based source and find an answer to the question.

Score : 10%

Evidence based information about nutrients	
Pre-requisites	Knowledge of the best sources where find trustable information about nutrition.
Time	15 minutes
Tools	PC, internet connection
Objective(s)	To recognise proper information about health and nutritional food.

Instructions

In which food can we find calcium?

After reading the module and the suggested links about nutrients search a good evidence based source and find an answer to the question.

Score : 10%

UNIT 2

BIODIVERSITY, SEASONALITY AND ORGANIC FOOD

ECOLOGY ♻

Biodiversity, seasonality and organic food

18 hours

LEARNING OBJECTIVES

1. To understand the importance of biodiversity in connection to climate change and the food choices.
2. To know the local biological and seasonal food produces for each country or region.
3. To teach the consumers the added value of seasonal and biological food.
4. To learn over again food preservation techniques and to be able to use them in the off-seasons, respecting their sustainable character.
5. To explain why the use of food products respectful to human and planet can improve the productivity of a company.

LEARNING ACTIVITIES

THEORETICAL (4 hours)	PRACTICAL (14 hours)
• Reading • Web research • Successful case study	• To go to producers/suppliers (market, sustainable grocery, etc.) then construction of a seasonal calendar • To learn how to use different techniques of food preservation

I. Introduction

This learning unit offers key reading on three important issues which are closely linked: biodiversity, seasonality and organic food.

- **Biodiversity**, or the diversity of living species and their genetic characters, ensures the survival of ecosystems and as a result, the sustainability of food production and food security.

- **Seasonality** is an excellent way to contribute to a sustainable food system, especially by supporting local producers, by reducing environmental impact and by protecting biodiversity and food heritage.

- **Organic and/or sustainable food** production preserves not only the environment, but also improves public health by bringing significant benefits to human beings as well as to the economy and to the social cohesion in rural areas.

In this module, we will see how these three main notions – sustainable to development – are intertwined and interdependent. Initially, this module provides a definition of the concepts of biodiversity and climate change, but also gives the keys to understand how apprehending sustainable, organic and industrial food, three well separated principles. Finally, we will see different conservation techniques to maintain products, and avoid food waste and making it possible to consume aliments outside the production period.

For deeper information: Agriculture in Education (08/02/2015), *14 Introduction to Food Security* [on Youtube].

II. Definitions

1. Biodiversity and climate change

The **term biodiversity**[1] appears at the end of the 80th, and is dedicated, in 1992, at the Earth Summit in Rio where they present it as one of the main challenges of the protection of the environment, endangered by over-exploitation of the resources of the sea and the earth. 5 parameters are at the origin of this danger: the increase of the world population, the massive industrialization, the depletion of non-renewable natural resources, the industrial production of food and the degradation of the environment linked to the model of industrial growth.

The Kyoto protocol in 2005 highlights the protection of biodiversity to meet the needs of present generations without breaking the availability of future generations. To protect the environment and the biodiversity, the implementation of "sustainable development" is essential and passes through the economy and the rational management of natural resources at the global level.

[1] CNRS.fr, « Biodiversité : que recouvre ce mot ».

Our planet enters a new area, it warms up and this is mainly due to human activities (industry, pollution, over-exploitation of land, waste and overuse of water, etc.) and their greenhouse gases, but also the increase of urban planning reaching the natural habitat of some species.

Climate change has many consequences: an increase in the acidity of the oceans, a decrease in snow cover of the mountain peaks and the great ice barrier, heavy rainfall, more frequent heat waves, more intense tropical cyclones and the slowing of ocean currents. These changes are affecting many natural systems, with as affect the disappearance, by 2050, of more than 25% of animal and plant species.

In practice, a change in the concentration of CO_2 in the atmosphere, a change in temperatures and increased precipitations affect the metabolism of animals, the growth of plants. Some species will develop at the expense of others.

New flora and fauna life cycles grow longer or shorter. Fruit trees bloom earlier in the season and suffer from the late frosts.

The temperature increase requires the animals to migrate to the North. For example, in the North Sea there are now anchovies and sardines, traditionally fishes of the South seas, while cod, a fish of the North Sea is migrating to the north to find colder waters. Some species aren't able to adapt and will disappear like the sturgeon which had been missing for a decade. At the same time, the arrival of other species of the world to our country threatens the native biodiversity.

The biodiversity of a large number of ecosystems is threatened whereas traditionally they are influencing the human ways of life, agriculture, fishing and so our nutrition mood.

2. Industrial, sustainable and organic food

Industrial food

With the **economic globalization**, many food products are the results of an assembly involving several countries, and thousands of kilometres of transport. Finally, transformed products from the industrial alimentation are more expensive due to transportation, packaging, marketing, consumption then owing to main ingredients, and pollute heavily (energy waste and greenhouse gas emissions).

By the **industrialization of the principal ingredients** such as flour, sugar, oils, by removing the fibre, wheat germs, by heating oils, etc. products lose on food-value: reduction of percentage of fatty acid levels, and generation of toxic products. At the same time, there are more than 300 additives allowed in industrial food products: dyes, exhausts of taste, conservatives, antioxidants, sweetener, etc., but also pesticides and chemical fertilizers.

Food industrialization also leads to the reduction of the diversity of basic agricultural commodities; many varieties disappeared, resulting in the impoverishment of local producers and the weakening of biodiversity.

Finally, the industrial agri-food model has fostered intensive agriculture ensuring European self-sufficiency food while destroying agricultural jobs and generating strong inequalities of income between farmers and endangering natural resources.

Sustainable food

The FAO[2] defines sustainable food as "*Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources".*

Talking about sustainable food is to approach the question of access to quality food, respectful of the health, the environment and the human. However, there is no European official "sustainable" certification.

What are the criteria for sustainable consumption?

1. Fight against food waste, which requires the use of conservation techniques adapted to the products, use leftovers in the fridge, cook whole vegetables etc.
2. Buy local and seasonal products, is focus on local producers, buy and eat fruits and vegetables of the season in short circuit.
3. Promote plant proteins, so eat more grains and legumes and reduce meat consumption.
4. Focus on quality fat and use cold pressed vegetable oils, eat fatty fishes, etc.
5. Use and consume full or semi-complete products such as cereals, pasta, rice and artisan bread.
6. Use fresh and unprocessed products, buy no industrialized vegetables, meat, fish etc. and take time to cook.
7. Eating "home" preparations avoids eating products, industrial ones, bad for the health and which enrich the agri-food industries.

To consume on a sustainable way and to apply responsible food choices requires changes in habits! So, **the sustainable food has issues at different levels: health, social, environmental and economic.**

Concerning health issues, in recent decades, our nourishment has changed greatly. Industrial, transformed and purchased food in supermarkets has developed diseases such as obesity, cardiovascular problems, diabetes and food allergies.

From a social point of view, access to sustainable and quality food is a fundamental right not yet admitted to all. Several studies show that households with a modest income guide their food choices to less expensive food and of low nutritional quality.

The challenge of sustainable food is to allow everyone to have a quality, healthy and balanced diet at a socially acceptable price. We have to raise awareness among the consumers and to guide them towards socially responsible choices.

About the environmental issues, a large amount of our food – even the so called "organic" products – travel thousands of kilometres, which has an impact on pollution and the carbon footprint of our consumption patterns.

The production of fruits and vegetables in greenhouses greatly increases the use of fossil fuels and the intensive use of water, which contributes to the depletion and the pollution of the planet.

[2] Food and Agriculture Organization of the United Nations

The intensive production also impoverishes farmland. Produced and non-consumed food takes 30% of the croplands. Food waste is found at all stages of the food chain: from the production to the consumption.

Intensive production is energy intensive and uses advanced mechanization and a massive use of chemical fertilizers, pesticides, fungicides, all issued from fossil energy and jeopardizing the natural functioning of soils and biodiversity.

Economically, the right to sustainable food includes ensuring decent income to producers in the South and the North. It is a question of supporting economic players who produce services based on local, ecological and sustainable production.

Supporting sustainable food will reduce food waste, reduce packaging and food rubbish, will support small local producers and will so have an impact on the economy and the environment and especially to rediscover the pleasure to "eat well" and restore moments of conviviality with family, with friends around healthy and balanced meals.

Organic food

"Organic" means a product or a food sample issued from organic agriculture. The mode of agricultural production is natural, and uses **no chemical synthesis**, such as pesticides, chemical herbicides, artificial fertilizers or growth hormones.

According to the FAO, organic agriculture contributes to food security, mitigates the effects of the problems associated with climate change. It helps to protect biodiversity and sustainable food, reinforces the nutritional adequacy and stimulates rural development by creating income and jobs in the less developed areas.

Organic agriculture is closely related to agricultural politics that determine the choices concerning export and import, in terms of economic, environmental and social objectives. However, from a social point of view, organic food is not as precise as sustainable food.

EU organic farming logo (source : CE[3])

From a commercial point of view, for a product to be considered "organic" it must be certified by an official label. However, a product can be certified organic even when he comes from a remote area of the world and when he travelled thousands of kilometres using a polluting transport. Labelling does not guarantee good labour working conditions.

In conclusion, is it better to buy a salad not certified "organic" from a local producer who participates in sustainable agriculture or a certified organic salad from the supermarket?

For deeper information: https://bit.ly/29u5boW

[3] Commission européenne, "Agriculture biologique".

III. Techniques of food preservation

Conservation techniques can be different types:

- The **heat**: pasteurization, sterilization, canning, semi-conserves. This technique is more often for the agri-food industry.
- The **cold**: refrigeration, freezing, deep freezing.
- The **change of atmosphere**: vacuum
- The **separation and the elimination of water**: drying, salting, brining, candying and smokehouse.
- The **fermentation**: alcoholic (wine, beer), lactic (sauerkraut, pickles, cheese) and acetic (vinegar)

These different techniques allow to avoid food waste, consuming food all year round while eating nutritional and tasteful quality products, to buy at low prices seasonal goods and/or to recover the seasonal harvest off-season and especially to avoid industrially processed products; fostering this way responsible behaviour of consumers.

IV. Case study: Host table Foresto

The main objective is **promoting the use of local and seasonal products and to develop civic awareness**

In 2017, the Brussels asbl For.e.t., desirous to be an active player in sustainable food, decided to open a neighborhood restaurant offering menus and products using essentially food of short circuits to promote agriculture, reasonable and sustainable farming and local producers.

The host table is working to avoid food waste: reduced card, unpacked fresh food, minimum storage, no processed or industrial product. In order to reduce energy consumption, the association has also promoted a low-fitted kitchen.

With this project, Foresto also organizes work training for a public excluded from the employment market, mostly from sub-Saharan Africa and automatically far away from the European eating habits. By this training, and thanks to the restaurant, the project combines employment creation, learning, and development of sustainable food.

The key points of the project are:
- Support to small local producers (farmers, cooperatives, Belgian breweries);
- Financial profitability: turnover allows to cover expenses and provides a financial bonus;
- Limit consumption of fossil fuels: low consumption of electricity and gas, little storage space;
- No waste: fresh products in bulk, rotation of the food so no loss, orders limited to weekly consumption;
- Job creation for a vulnerable public excluded from the labour market.

The impact of the project at several levels:
- Development of a social economy project;
- Outreach to the customer to the theme of sustainable and local food;
- Commitment of little qualified staff excluded from the labour market;
- Use of fresh and seasonal products processed in-situ;
- Establishment of a local area network (from producers to consumers);
- Suggesting a healthy diet with a net added value on the level of nutritional qualities.

To develop this project of social and sustainable economy model in other regions or countries, it is necessary:

- To find resources for the staff: supervisors and learners (for students, it is either necessary to seek approval from Government, or to establish partnerships with employment services).
- To find suitable premises, purchase materials and equipment (grants or private funds)
- To create a methodological program aimed at learners far away from the employment market and poorly trained learners, but also aimed at the commercial aspect to welcome properly the clients to the restaurant.
- To ensure the good management of the project (horeca, pedagogy, social control, management) properly human resources.

The partnership was developed as follows:

- Governments through labour contract targeting a disadvantaged public and the approval of the project.
- Local producers: Walloon farmers' cooperatives, organic brewers, Brussels bakers, etc.
- Customers are sensitive to the concept and the values.

Référence(s) : http://foret-asbl.be/

PRACTICAL ACTIVITIES

Construction of a local seasonal calendar (plant and animal species)	
Pre-requisites	Following the theory activities and understanding the difference between industrial, sustainable and organic food.
Time	10 hours
Tools	Visiting a distributor or a producer in the food sector.
Objective(s)	1. To understand the importance of the biodiversity in connection to climate change and food choices. 2. To know the local biological and seasonal food produces for each country or region. 3. To teach the consumers the added value of seasonal and biological food.

Instructions

Firstly and in class, the attendees must identify seasonal and local products for 3 categories of foods (meat, fruit and vegetables) and identify the different types of distributors (large and small surfaces, market live producers).

In a second time, they visit a distributor or producer (market, small surface like a sustainable or organic store, a producer as a farm or a vegetable producer of an urban project, etc.).

By group, the attendees must identify products:
- concerning meat (pork, beef, poultry, etc.), being able to know the gestation and calving annual periods, "traditional and natural".
- regarding fruit, being able to know 3 fruits per season.
- regarding the vegetables, being able to know 3 vegetables per season.

In class and by group, the attendees must build a seasonal calendar by products.

At the end, each calendar is presented to the class.

Criteria

- Respect of the completion time given.
- Respect of the received instructions.
- Quality of production and the contents of the calendar.
- Quality of the oral presentation from the point of view of content, the chosen method and the understanding of the subject by other subgroups.

Score : 60%

Learn how to use different techniques of food preservation	
Pre-requisites	Knowing cooking basis.
Time	4 hours
Tools	Kitchen equipment
Objective(s)	To learn over again food preservation techniques and to be able to use them in the off-seasons, respecting their sustainable character.

Instructions

Firstly and in class, identify the main conservation techniques by type of food or goods then demonstration of 4 conservation techniques commonly in restaurants or in private (cold, the change in the atmosphere, the separation and removal of water and fermentation).

The attendees are divided by subgroups and each of them puts into practice a technique:
- freezing according to the standards of raw and cooked meat,
- vacuum cooked preparation: a soup,
- The acetic fermentation of pickles,
- The candying sweet apples and tomatoes drying.

Completing the preparations by a good method of conservation and a correct timing (duration of maximum retention for consumption).

Criteria

- Respect the market forward and hygiene of the food industry (HACCP) standards.
- Choice of necessary and adequate equipment according to the technique and the goods to be used.
- Respect for process engineering.
- Execution time.

Score : 40%

UNIT 3

WATER AND LAND MANAGEMENT FOOD FOOTPRINTS

ECOLOGY ♻

Water and land management food footprints

26 hours

LEARNING OBJECTIVES

1. To be conscious of the use of water in the global food supply chain.
2. To recognize alternative ways to reduce the use of water and energy.
3. To understand the need for changing to a sustainable way of doing things, individually and collectively.
4. To understand what is the food footprint impact.

LEARNING ACTIVITIES

THEORETICAL (16 hours)	PRACTICAL (10 hours)
• Reading • Web research • Successful case study	• Footprint good practices • Calculation of your own footprint

I. Introduction

The sustainable management of land and water for agricultural uses is fundamental for global food security, especially given the climate change and the growing instability of weather. In recent years, humanity has become aware of the imperative need to preserve natural resources, avoiding waste and, above all, avoiding contamination of them.

It is still far from reaching a rational use of these natural resources that although they are, in part, renewable, there is a danger that the increase in their use and pollution will exceed their self-regenerating capacity. One of the keys to carry out this process is to be able to measure the impact that every human action has on the territory: hence, the concept of ecological footprint, a way to "measure sustainability".

Can we measure sustainability? How? Are there any economic indicators?

These are just some of the questions we can ask when we talk about sustainability and its possible measurement. In light of the theoretical complexity of the definition of sustainability, its measurement through a single aggregated macroeconomic indicator appears to be a difficult task. Income measures deriving from national accounts, such as the Gross Domestic Product (GDP) or the Gross National Product (GNP), are inadequate in providing an explanation of the interactions between the economic system and the natural system, which is why it is necessary to change the traditional income in order to construct macroeconomic sustainability indicators that are more representative or an income indicator that contains economic evaluations related to consumption and degradation of natural resources, and services provided by the natural environment to the population.

How much are we using the resources available on our Planet and how many are we still available? Mankind needs what nature provides us, but as we know natural resources are not inexhaustible. The Ecological Footprint originates from the need to quantify in some way the requests for natural resources.

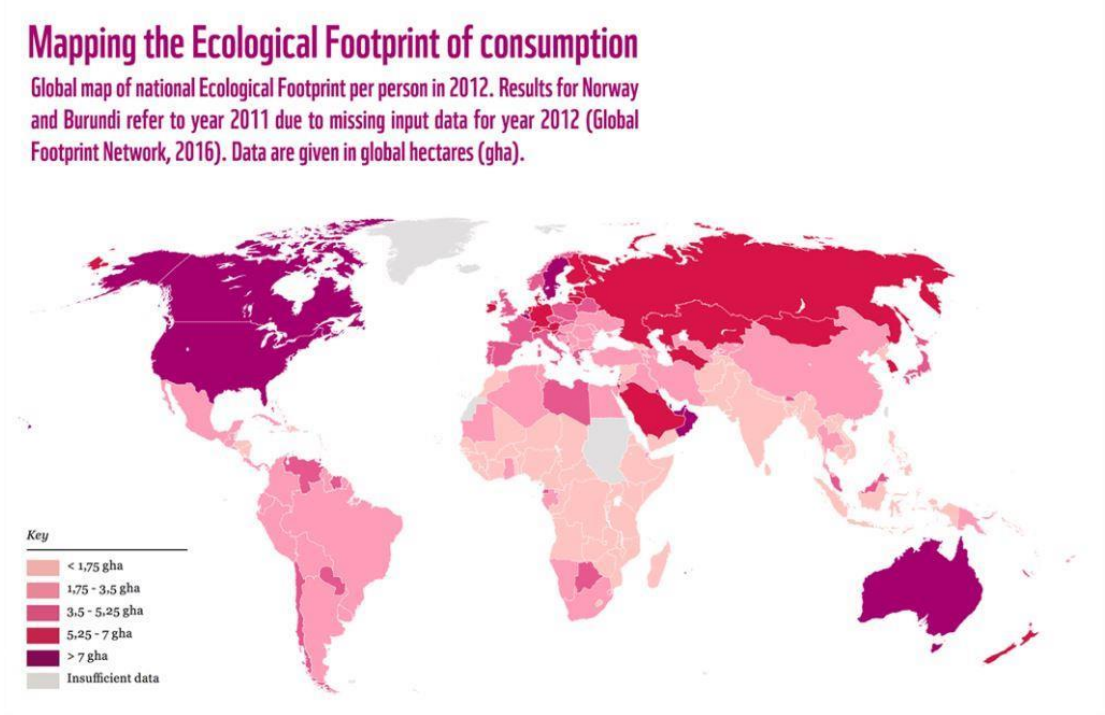
II. Let's discover how ecological footprint was born

The concept of ecological footprint was introduced by Mathis Wackernagel and William Rees of the University of British Columbia in their book "Our Ecological Footprint: Reducing Human Impact on the Earth", published in 1998. Starting in 1999, WWF updates the calculation of the ecological footprint in its database every two years (Living Planet Report).

For deeper information: https://bit.ly/2MsjKg1

In 2003 Mathis Wackernagel and others founded the *Global Footprint Network*, which aims to improve the extent of the ecological footprint and to give it a similar importance to that of the gross domestic product. The *Global Footprint Network* currently collaborates with 22 countries - including Australia, Brazil, Canada, China, Finland, France, Germany, Italy, Mexico, United Kingdom, Russia, South Africa, Switzerland - and with government agencies, local authorities, universities, institutes research, consulting firms, associations.

Nowadays the ecological footprint is widely used by scientists, companies, governments, agencies and institutions working to monitor the use of natural resources and promote sustainable development.



WWF[1]

The ecological footprint had been calculated in terms of impact on the environment in different cities. Among them, London, UK serves as a good example: the ecological footprint of that city is 120 times the area of the city itself.

For deeper information: https://bit.ly/2LnknEv

A typical North American city with a population of 650,000 would require 30,000 km^2 of land – an area roughly the size of Vancouver Island, Canada – to meet domestic needs alone without even including the environmental demands of industry. In comparison, a similar size city in India would require 2,800 square kilometres.

For more examples related to the calculated ecological footprint in relation with different cities, click at: https://bit.ly/2Lm7VVA

The ecological footprint **measures the surface area required in land and water to produce, with the available technology, the resources consumed by people and to absorb the waste produced.** Have we ever wondered "how long does it take our planet to regenerate the resources that we, humanity, consume in a day, a week, a month, a year?" Well, the Earth, currently, needs about a year and four months to regenerate what we use within a year. For this reason, the need arose to quantify our requirements in some way and make long-term forecasts so as not to find ourselves in a situation of real emergency of over-utilization of natural resources.

Since a few decades, humanity has been living in such a situation that **the annual demand for resources used is above what the Earth is able to generate each year**. By measuring the imprint of an individual, a population, a city, a company, a nation or all of humanity, we can evaluate the pressure we exert on our planet, to help us manage our natural resources with a certain criteria and to manage those available in such a way as not to exhaust them on a short time scale.

Look at the charts in the attached: https://bit.ly/2R1IDRV

[1] WWF, "Living Planet. Report 2016. Risk and resilience in a new area", 2016.

III. Definitions: water and land footprint

The ecological footprint is a **statistical tool** designed **to assess the environmental impact of consumption**. The main concept is that every human good or activity involves environmental costs - that is, withdrawal of natural resources - quantifiable in terms of square meters or hectares of surface. Depending on the type of consumption, one will refer to one type of surface rather than another.

The ecological footprint measures the biologically productive area of sea and land necessary to regenerate the resources consumed by a human population and to absorb the waste produced. Using the ecological footprint it is possible to estimate how many "planet Earth" would be used to support humanity, if everyone lived according to a specific lifestyle.

How big is our ecological footprint? We can discover it here: https://bit.ly/W0wxbV
And let's calculate our paper impact on the planet here: https://bit.ly/2EBDDhe

In regard to food production we have three types of "footprints" that the production of each type of food has on the environment:

- The **carbon footprint**: it evaluates the emissions of greenhouse gases responsible for climate change and is measured in grams of equivalent mass of CO_2.
- The **water footprint**: calculates the volume of fresh water used directly and indirectly to produce a food along the different stages of the production chain, the quantities of water necessary to dilute the pollutants produced during the process are also included here. It is measured in litres or cubic meters.
- The **ecological footprint** (land or sea: calculates the biologically productive area of land (or sea) necessary to provide the resources and absorb the emissions associated with the production system; it is measured in square meters or hectares. In most cases these indicators underestimate part of the environmental impact of food production as they do not take into account the traces produced by the herbicides, pesticides and fertilizers used.

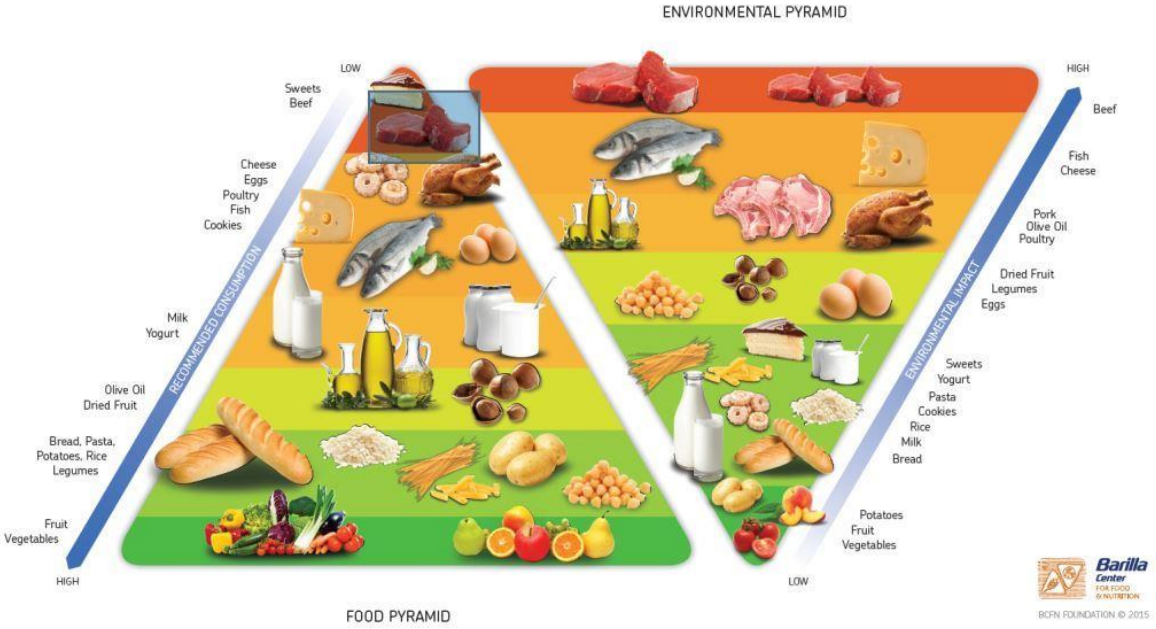
The water footprint measures water use in terms of volume (expressed in m^3) of evaporated and/or polluted water and may be calculated not only for each product or activity, but also for each well-defined group of consumers (an individual, family, inhabitants of a town or an entire nation) or producers (private companies, public entities, economic sectors).

- The water footprint of a **product** (tangible good or service) consists of the total volume of freshwater consumed to produce it, taking into consideration the various phases in the production chain.
- The water footprint of an **individual, community or nation** consists of the total volume of freshwater consumed either directly or indirectly by the individual, community or nation (water consumed to produce goods and services).
- The water footprint of a **company** consists of the volume of freshwater consumed during the course of its activity, added to that consumed in its supply chain.

The Water Footprint does not simply indicate the volume of water consumed, but also refers to the quality (in addition to the quantity) of water and where and when it is consumed.

IV. If it's good for the planet, it's good for you!

Foods with a lower environmental impact is also the most beneficial for human health: it is food of vegetable origin, especially fruits and vegetables.



BCFN Double Pyramid[2]

Most foods must be **handled before consumption**. Handling processes include washing, peeling, cutting, mixing, cooking, cooling and possible packaging.

During most of these operations, **energy is used and waste is often generated**. The amount of energy used per kg of food depends largely on the type of tools used during handling and can vary greatly depending on whether it has been carried out in private homes, in industrial kitchens or in restaurants.

The most important processes with respect to energy consumption and consequently with greater or lesser impact on environmental sustainability are cooking and cold storage. Among the different cooking techniques, the one with the least impact is, by far, microwave cooking followed by boiling, as can be seen in the following table, extracted from the study carried out by the Barilla Centre for Food and Nutrition Foundation in 2012[3]:

Cooking techniques	Energy (MJ)	Carbon Footprint (grams of CO_2 eq.)	Ecological Footprint (m^2 of land)
Microwave cooking	0,34	59	1
Boiling	3,5	420	5
Frying	7,5	900	12
Roasting (oven)	8,5	1020	13

Other researches have also shown great differences in footprint between plant products grown in the field or in greenhouses and between plant products from retail and purchased directly from the producer.

[2] Barilla Center for Food & Nutrition, "Double Pyramid".
[3] Buchner *& al.* (2012), "Double pyramid: Healthy food for people and sustainable food for the planet", *Barilla Center for food and nutrition*.

Carbon footprint of 1kg of potatoes[4]:

Product	Carbon Footprint gCO_2-eq/kg	Source
Potatoes	160 (at field)	LCA food dk
	220 (at retail)	
	98 - 116	Ecoinvent 2004 (Potato IP, at farm, CH, [kg])

Carbon footprint of 1kg of vegetables[5]:

Product	Carbon Footprint gCO_2-eq/kg	Source
Lettuce	400 - 500	Hospido *et al.* (2009)
	4,000 (greenhouse)	
Tomatoes	154	Andersson (2000)
	3,000 - 5,000 (greenhouse)	LCA food dk

Here we can find some useful tips for reducing the ecological footprint: https://bit.ly/2EC7Mx0

Water is deeply linked with our food security as we can understand very well in this video: https://bit.ly/2rK9VOG

V. The impact of intensive farming on the ecological footprint

Intensive farming is **an agricultural intensification and mechanization system** that aims to maximize yields from available land through various means, such as heavy use of pesticides and chemical fertilizers. This intensification and mechanization has also been applied to the raising of livestock and aquaculture with billions of animals, such as cows, pigs, chickens and fishes, being held indoors and in special tanks. That's what we know as **factory farms**.

Intensive farming practices produce more and cheaper food, which has helped feed a booming human population and may prevent surrounding land from being converted into agricultural land, but has grown to become the biggest threat to the global environment through the loss of ecosystem services and global warming, has led to the emergence of new parasites and re-emergence of parasites previously considered to be 'under control'.

Furthermore, intensive farming kills beneficial insects and plants, degrades and depletes the very soil it depends on, creates polluted runoff and clogged water systems, increases susceptibility to flooding, causes the genetic erosion of crops and livestock species around the world, decreases biodiversity, destroys natural habitats and, according to WWF, "*Farming practices, livestock, and clearing of land for agriculture are significant contributors to the build-up of greenhouse gases in the atmosphere*", as we can see also in this video: https://bit.ly/2EzEIpD.

Science can give us **real solutions** through precision agriculture, drop irrigation, new crop varieties, but the governments should regulate and subsidize good practices among farmers and

[4] Buchner *& al.* (2012), *op. cit.*, p.72.
[5] Buchner *& al.* (2012), *op. cit.*, p.70.

people. With better tillage practices, efficient grey water recycling, the promotion of smarter diets it's possible to conciliate intensive farming and sustainability.

For deeper information: https://bit.ly/2KOni80

VI. Case study: Group CAP

Group CAP is an industrial company that manages the integrated water service on the territory of the Metropolitan City of Milan and in several other municipalities of the provinces of Monza and Brianza, Pavia, Varese, Como according to the in-house model providing, that is, guaranteeing the public control of the member bodies in compliance with the principles of transparency, accountability and participation.

Through a decade of know-how and the skills of its staff, it combines nature of the water resource and its management with a managerial organization of the water service able to make investments in the territory and increase knowledge through IT tools.

Sole manager of the Metropolitan City of Milan, in terms of size and heritage, the CAP Group is one of the most important utilities at national. In 2017 it won the Top Utility absolute award for best Italian Utility.

The goals of Group CAP project are:

- Public control of the member bodies in compliance with the principles of transparency, responsibility and participation
- Through a very long know how, it combines the public nature of the water resource and its management with a managerial organization able to realize investments and to increase the knowledge of infrastructures through IT tools.

The project appears of absolute interest for:

- *Research and innovation*

The CAP Group is involved in numerous knowledge, innovation and development projects with the aim of guaranteeing the excellence of its design solutions, making use of the best available technologies and minimising environmental impact and health and safety risks for its workers. CAP Group works in collaboration with universities and research centres in various thematic areas: the optimisation of the use of energy; the innovative design of the water and hydraulic service; the management and reduction of purification sludge produced and requiring disposal; the integration of smart systems for the remote management of meters, measurements and field analyses; the analysis of emerging micro pollutants and their treatment.

- *Environment*

The numerous projects and actions with an environmental impact have been characterized by the slogan #Waterevolution and concern different sectors:

  - From the sewage sludge of the treatment it produces biomethane, nutrients (methane, phosphorus, nitrogen) and fertilizer. Residual sands are recovered for industrial purposes and wastewater reused in agriculture.
  - The rains are recovered in the dense network of canals that surrounds our cities and become a precious resource for agriculture.
  - The new smart meters allow to control consumption in real time with an App.
  - Water quality is controlled by the smartphone and it is easier to save and protect the environment.
  - 100% green energy: procurement of energy obtained only from renewable sources.
  - Wastewater algae: reduction of micro-pollutants by introducing microalgae in the waste water purification process.

- Carbon footprint: calculate the carbon footprint in order to evaluate and plan CO_2 emission reduction interventions.

- *Local actors*

Involvement of municipalities, schools and citizens through promoting and sensitizing to use of tap water in school canteens, in citizens' homes and in public places.

Impact of Group PAC:

- Analyse and calculate the carbon footprint,
- Plan interventions and actions for energy efficiency and adaptation and mitigation of climate change,
- Reduction in plastic consumption,
- Reduction of drinking water loss,
- Recovery of sludge and rainwater for agriculture,
- Savings and transparency for consumers,
- Savings for the same Group CAP.

The innovative research and model that the CAP Group has developed throughout the water supply chain could be applied in other European and extra-European territorial contexts.

Reference(s):

- https://www.gruppocap.it/en
- https://www.gruppocap.it/il-gruppo/comunicazione-e-media/video

Extra sources

For another interesting example of case study, please have a look of this video:

- http://www.viticolturasostenibile.org/Home.aspx
- http://ec.europa.eu/environment/water/quantity/good_practices.htm

PRACTICAL ACTIVITIES

Footprint good practices	
Pre-requisites	Knowledge of the concept of footprint and its different types.
Time	4 hours
Tools	PC, internet connection, word of mouth
Objective(s)	To better understand the concept of the footprint and how is possible to reduce it.

Instructions

- After having read the module, consult the following source www.footprintnetwork.org/category/case-studies/
- Identify different good practices to reduce your ecological footprint.
- Then choose one of them and analyze it.
- Make a presentation (written or oral) sharing the possible strategies that can be adopted by everyone in daily life.

Criteria

- Respect of the instructions received.
- Relevance of identified good practices.
- Quality of the oral presentation in terms of content and understanding of the subject by the other subgroups.

Score: 50%

Calculate the footprint	
Pre-requisites	Have a good knowledge about how measuring the sustainability and have understood what the footprint is and which the different types that exist are.
Time	6 hours
Tools	PC, internet connection, word of mouth
Objective(s)	To be able to calculate, analyse and suggest a reduction of the footprint (at individual and family level and during a scholar year).

Instructions

After understanding what is the footprint and the different types that exist, each student is required to calculate her/his own ecological footprint: http://www.footprintcalculator.org/signup

- Calculate (an estimate) of the average weekly food consumption (family level)
- After viewing the suggested links and videos, identify which activities you already carry out daily and empowered to include in your daily good habits at least 3 new behaviours responsible and aware of the water saving (which allow the reduction of the water footprint).
- Throughout the school year, each student will compile a logbook that will be monitored on a quarterly basis, in order to detect any changes / improvements in water use / consumption behaviour. How many and which behaviours have changed?

Criteria

- Respect of the instructions received.
- Relevance of the responsible behaviours identified.
- Quality of the monitoring implemented.

Score: 50%

UNIT 4

FOOD LOSS AND FOOD WASTE

ECOLOGY

Food loss and waste

14 hours

LEARNING OBJECTIVES

1. To understand the importance of the food loss and food waste challenges.
2. To explain why food waste and food loss are a problem and a loss of money.
3. To identify strategies to reduce food waste and legal ways to give a second life to the food and /or to donate leftovers.
4. To understand the role that packaging does play.
5. New product lines aimed at minimizing waste and/or reusing discarded parts.

LEARNING ACTIVITIES

THEORETICAL (8 hours)	PRACTICAL (6 hours)
• Reading • Web research • Successful case study	• Dos & Don'ts List • Practical remedies • Diary of waste

I. Introduction

Food waste and losses are one of the most **unacceptable consequences of our modern way of living**. Even worse, it could be considered as a part of our life-style: we throw food in the trash bin as it is the most natural thing to do, while it's a very recent behaviour. In a world where hundreds of millions of people still suffer from hunger and malnutrition, also in high-income countries (some 55 million people in the EU cannot afford a quality meal every second day), an enormous amount of edible food is thrown away during all the food process, from farm to fork: harvest, industrial transformation, retail, supermarkets, restaurants and cafeterias, households.

In the EU, around 88 million tonnes of food waste are generated annually with associated costs estimated at 143 billion euros.

To give an example, in Italy every year 145 kilos per person is thrown in the trash bin; in school cafeterias, this happens to 1 each 3 meals, and the food waste for supermarkets accounts for 18,8 kilos per square meter.

Wasting food is not only an ethical and economic issue but it also depletes the environment of limited natural resources. By reducing food losses and waste we can also:
support the fight against climate change (food waste alone generates about 8% of Global Greenhouse Gas Emissions); save nutritious food for redistribution to those in need, helping to eradicate hunger and malnutrition ; save money for farmers, companies and households.

All actors in the food chain have a role to play in preventing and reducing food waste, from those who produce and process foods (farmers, food manufacturers and processors) to those who make foods available for consumption (hospitality sector, retailers) and ultimately consumers themselves.

The European Commission is taking the issue of tackling food waste very seriously. Being more efficient will save food for human consumption, save money and lower the environmental impact of food production and consumption.

This unit aims to give general knowledge on food losses and food waste and highlight the importance and the benefits to reduce wasted food and packaging. Moreover the unit would propose strategies and tools to identify the preferred options for handling excess food (reduction and preventions, reuse, recycling). To tackle this issue across the entire supply chain, it is also essential to know the regulation and the new policies aimed at reducing food waste. This unit is closely related to the **circular economy** one, since food waste prevention is an integral part of the Commission's new Circular Economy Package.

For deeper information:
- Food waste in EU: https://bit.ly/2e1ktEs
- In US : https://bit.ly/2PM0V4X

II. Definitions

1. Food loss and food waste reduction: definitions and strategies

Imagine how everything we eat travels across a food chain, a journey that stretches from farm to fork. FAO studies show that an astounding one third of all the food we produce for human consumption never actually reaches a fork. Whether we categorize uneaten food as "lost" or "wasted" depends on when it falls off the food chain.

Most people have seen food waste in their everyday lives. At the end of the food chain, consumers may throw out excess food, let it spoil, or develop other behaviours that waste food unnecessarily. Food "loss" actually occurs earlier in the food chain and usually behind the scenes. Due to inefficiencies in food production and processing, food can lose nutritional value or even need to be discarded before it reaches the consumer. Both cases are considered food loss.

More than 40% of food losses and waste in developing countries occurs at the post-harvest and processing stages, while in industrialized countries, more than 40 percent of food losses and waste occur at retail and consumer levels. **Understanding when food loss or waste occurs is important because it affects how we build more sustainable food systems.**

Food loss is a global problem and it is defined as "*the decrease in quantity or quality of food*". Food waste is part of food loss and refers to discarding or alternative non-food use of food that is **safe and nutritious** for human consumption along the entire food supply chain, from primary production to end household consumer level. **Food waste** (which means **any food lost**) is recognized as a distinct part of food loss because the drivers that generate it and the solutions are different[1] .

Each year, an estimated one-third of all food produced for human consumption is lost or wasted world-wide. FAO estimates indicate that the per capita food waste at consumer level in Europe and North-America is 95-115 kg/year while in sub-Saharan Africa and South/Southeast Asia is 6-11 kg/year[2].

In fact, you can actually see the difference across Europe and Central Asia. In general, the European Union and other high-income countries in the region have significantly greater levels of food waste. Middle- and low-income countries aren't wasting nearly as much food, instead they struggle predominantly with food loss issues.

Farmers and processers are using outdated machinery and technologies, and food production systems remain unorganized and fragmented. The lack of access to specialized equipment for transportation, processing, cooling and storage only adds to the extensive food loss at the harvest, post-harvest and storage stages of the food supply chain.

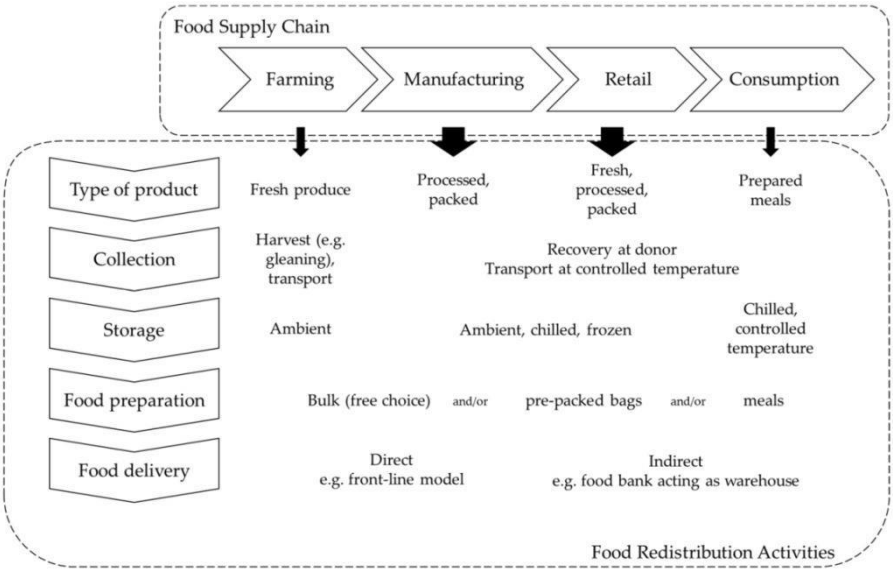
For deeper information: https://bit.ly/1v3QRWc and https://bit.ly/2Mtg1L9

[1] FAO, "Food Loss and Food Waste".
[2] FAO, Policy Support and Governance, "Food Loss and Food Waste".

2. Disposal strategy: "the second life of the product"

Giving food a second life is a very effective way to reduce food waste. You can find very interesting case studies in EU and around the world, but it all depends on national legislations since the handling, storing and distribution of food are very sensitive issues due to the need to ensure a good quality of the conservation status, not the affect the second life consumers.

Food redistribution activities (FRAs), such as charities, are acknowledged as a tool for addressing food insecurity and preventing food surplus wastage ensuring economic, environmental, and social benefits.



Source: The Second Life of Food - An Assessment of the Social Impact of Food Redistribution Activities in Emilia Romagna, Italy, 2017.

In the Netherlands, an innovative restaurant called Instock is working to solve the issue of food waste and raise awareness around it, by creating delicious dishes using food that would otherwise go to waste. It is a very different approach because Instock it's a company therefore creates occupation and profits in full accordance with the principles of circular economy. They empower people to join our cause by simply enjoying the "harvest of the day". Each morning, Instock's drivers wake up before stores open and collect unsold food items. The products, all of which meet food safety guidelines, are then turned into fantastic meals that are sold at the various Instock locations. By doing so they don't just save food, but also change people's perception toward food.

For deeper information:
- The second life of food
- Itene ltd
- Instock ltd

3. Packaging reduction through education and innovation

According to EuroStat data, food waste from manufacturing, food services and catering, retail and wholesale sectors represents a 58% of all food waste generated in the EU, amount responsible for 99 million tons of CO_2 emissions annually – the equivalent of almost 2% of the total EU emissions in 2008. Combined with increases in both population and disposable income, food waste generation is expected to climb up to 126 million tons per year by 2020 if no actions are taken.

Packaging systems play a **key role** in food losses prevention; however, packaging itself is a source of waste. Any assessment regarding the impact of food packaging on the environment must consider the positive benefits of reducing food waste throughout the supply chain. Recent FAO report indicates that about 30% of food production is currently lost generating waste. Inadequate preservation/protection, storage, and transportation have been mentioned as causes of food waste.

Packaging in general and active packaging in particular reduce total waste by extending the shelf-life of food products, thereby extending their usability.

Active (smart, intelligent) packaging usually means having active functions beyond the inert passive containment and protection of the product. Intelligent and smart packaging usually involve the ability to sense or measure an attribute of the product, the inner atmosphere of the package, or the shipping environment. So one of the new "Research & Development" trends to solve this issue is the development of Active Packaging technologies, able to extend food shelf life even twice as much as conventional packaging does. These innovative solutions avoid food losses not only in households but also in the industry and commercial sectors. Antimicrobial, antifungal, oxygen, CO_2 release are just a few examples of what these agents incorporated in the packaging material release to the product, thus keeping a high quality performance during a longer time and thus, increasing the products´ shelf life and avoiding tons of food waste. An example of this type of packaging is an active packaging for red meat that extends five more days the meat shelf life, considering as a reference the present solution of the packaged meat in modified atmosphere

For deeper information: D. Schaefer, Wai M.Cheung, *Smart Packaging: Opportunities and challenges*, Procedia CIRP, Volume 72, 2018, Pages 1022-1027, [online].

III. Countries' laws

There's no EU specific regulation about food waste, but food waste prevention, as before said, is an integral part of the Commission's new **Circular Economy Package**. The Circular Economy Package consists of an EU Action Plan for the Circular Economy (2015) and annex to the action plan outlining the timetable for proposed actions, and related legislative proposals on waste. The Revised EU Waste Legislation, adopted on 2018 by co-legislators, calls on Member States to take action to reduce food waste at each stage of the food supply chain, monitor food waste levels and report back regarding progress made.

The Italian parliament was among the first to pass a very innovative law on food waste and loss, the so called "Legge Gadda n° 166/2016", pushed by a strong action of civil society and academics. This law focuses a lot on the incentives and on bureaucratic simplification, instead of insisting on fines or penalties.

This law has also proved to be very effective: in the first year of implementation, there's a less 40% of food waste and the food donation from the organized large-scale distribution to no profit organizations such as *Il Banco Alimentare*, increased for over 21%. There's still a lot to do, since Italian people: in 2016 food waste was at an average of 145 kilos per family/year and 63 per person, and only 1 year later it was of 84 and 36 respectively. The law has been very much appreciated by consumer's association, as it encourages second life of food and donations through a system of tax deduction and incentives.

Public/private partnership is essential to the implementation of effective strategies. For instance some city councils offered to cut by 20% the tax on urban wastes to those supermarket or retail shops who donate food surplus to people in need.

For deeper information:
- https://bit.ly/1njgLl6
- https://bit.ly/2UUzmKr

In EU, as all over the world there is a countless number of examples of how PPPs (public private partnerships) are trying to shape the food world according to a different vision that is more efficient and conduct towards a zero waste solution. Best practices have been implemented by institutions, private companies, NGOs and charities, consumers.

FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) is a European Project, operating in 2013-16, about working towards a more resource-efficient Europe by significantly reducing food waste. It includes many European retail partners and its website displays many case studies in the member countries

A very important and interesting database on food loss is the Italian structure ***Waste Watcher***, an observatory launched by a private company in 2003 and based on the **Last Minute Market** initiative.

In UK we found **WRAP**, an organization working with private and public partners to make this happen. Its website provides very clear examples of how the new scenario should be a number of interesting case studies.

IV. Case study: Zero Waste Hotel and Restaurants

Zero Waste Hotel and Restaurants is an Italian project inspired to prof. Paul Connett's zero waste philosophy, applied to the fields of hospitality and catering. It was developed by a consulting company in the Sorrento Peninsula and firstly applied in Hotel Conca Park in Sorrento, where UCMed was once settled. The project aims at stimulating innovation through consulting and training. A special focus was made to reduce food waste.

The importance of this case study it that it can be applied to any restaurant or hotel of the world, and in a very easy and affordable way. It will result in a decrease of food waste, waste in general and money savings.

The project includes also economic connotation: the basic idea, in fact, is to work in synergy with the local administrations to restructure the rates of the waste tax based on the amount of the waste produced and the quality of the differentiated collection carried out.

For participating businesses, the strategy proposes the fulfillment of some steps by establishing operating guidelines, aimed at achieving concrete policy of waste and wastage reduction. A necessary condition for the success of the program is to obtain a management and a formation of staff in line with the principles of environmental sustainability.

The project can be applied anywhere, already various new partnerships have emerged, including one in Slovenia.

Reference(s): http://www.hotelrifiutizero.it/it/

PRACTICAL ACTIVITY

Imagine an innovative business	
Pre-requisites	Have business knowledge.
Time	6 hours
Tools	PC, internet connection, word of mouth
Objective(s)	Implement an innovative company that prevents food loss and waste.

Instructions

The attendees must work in groups and build an innovative business model where preventing and reducing food loss and waste is a key element.

During the first four hours, the attendees will structure their project, which will be presented to the other groups and to the instructor during the next two hours. A discussion will follow.

Criteria

- Integrate theoretical elements learned before.
- Relevance and viability of the business model.
- Quality of the presentation.

Score: 100%

UNIT 5

CIRCULAR ECONOMY AND RESILIENCE

ECONOMY

Circular economy and resilience

26 hours

LEARNING OBJECTIVES

1. Better understanding of the circular economy.
2. Better understanding of the concept of resilience applied to enterprises.
3. To underline the potential economic value of circular economy as winning business.
4. To learn how to rethink your business dimension.
5. To explore new sustainable collaborations and opportunities.

LEARNING ACTIVITIES

THEORETICAL (12 hours)	PRACTICAL (14 hours)
• Reading • Web research • Successful case study	• Visiting a business (restaurant or hotel) and evaluating it according to the Zero Positive Protocol criteria. • Building a company-specific business model in compliance with the principles of the circular economy and finding sources of funding for the circular economy at the local level.

I. Introduction

Every year in Europe, 600 million tons of waste are lost, although they could be recycled or re-used. 40% of waste produced by EU households is recycled (the figure can range from 80% to 5% depending on the regions). Moreover, nearly 100 million tons of food products are wasted yearly…

In the context of an ever-increasing demographic pressure, the **linear economic model** (extraction – production – disposal) does not respect the Earth natural resources renewal rate. The **circular economy** is an alternative model that takes into account the recovery and the re-use of resources. As such, the circular economy is part and parcels of the transition towards a sustainable economy, which is attentive to both human and environmental needs.

The circular economy is a cross-sectional and multidimensional concept. As "waste management" is one of its key dimensions, it is an economic model relevant to the development of a sustainable consumption.

This learning unit aims to give attendees the **tools and analytical skills to understand the stakes and economic opportunities pertaining to the circular economy**, especially in the food industry. As applied to the food industry, the circular economy model bears great relevance and attests to the sector's ability to adapt to changing social and environmental priorities. It is important to shed light on the viability and profitability of the circular economy model.

The main question this module tries to answer is: ***What is the circular economy and what role does it play in promoting a sustainable and responsible economy?***

The first part of this module aims to introduce basic concepts related to the circular economy and to the idea of resilience. The second part highlights the economic benefits of the circular economy model for enterprises. Thirdly, the module gives an overview of policies and programmes implemented at the European level to support sustainable initiatives. It concludes with a case study exemplifying how to rethink one's enterprise from a sustainable perspective.

II. Definitions

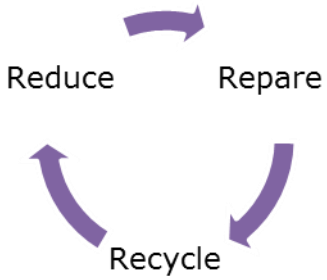
1. Circular economy

One of the current definitions of circular economy is offered by the French Environment and Energy Management Agency (ADEME):

> "*A system of exchanges and production which, at all stages of the cycle of life of products (goods and services), aims to increase the efficiency of the use of resources, and to decrease its environmental impact. Generally speaking, the circular economy must seek to reduce the waste of resources and energy, while limiting environmental impacts and increasing welfare. It is about doing more with less*[1]."

[1] ADEME, « Économie circulaire » (translation from French by Pour la Solidarité).

The principles of the circular economy



However, the circular economy is an evolving and multidisciplinary concept deriving from earlier economic models such as:

- The **loop economy**, which is based on the observation that the traditional economy, in other words the linear economy, which follows the "extraction-production-disposal" pattern, is not efficient in the way it uses resources. In 1976, in the aftermath of the first oil shock, Walter Stahel and Geneviève Reday came up with the first definition of the loop economy, in a research report to the European Commission. The report sought to raise awareness of the need to recycle and to reduce energy consumption.

- The ***cradle to cradle*** concept is based on the idea that all raw materials are resources, hence there is no such thing as waste. The entire cycle of production is thought in such a fashion as to maintain the quality of raw materials throughout all of the multiple cycles of life of products. Moving beyond the discourse on growth reduction, which traps consumers into a "back to the stone age logic", the cradle to cradle logic aims to have a positive impact on the economy in terms of profit, in both a socially fair and environment-friendly perspective.

By prioritizing **short circuits**, **local production** and **collaborative consumption** the circular economy model foster both the sustainability and the creation of local jobs, while promoting fairer and environment-friendly working conditions. To ensure a successful transition towards a circular economy model, it is important to act on all stages of the value chain, from production to consumption. Hence, the development of the circular economy challenge implies **three main areas for action**: 1) waste management; 2) supply of economic actors and 3) demand and consumer behavior. The circular economy is also based on **seven fundamental pillars**: recycling, sustainable supplying, eco-conception, industrial and territorial ecology, the functionality economy, responsible consumption and the extension of products' duration of use.

2. Resilience

Although the Earth's resources are technically sufficient to feed the global population, famine is still an issue in certain parts of the world. Thus, ensuring global food security is more a matter of access to food than a matter of food production. Increasing the supply of food resources is not the right adequate answer to famines or environmental issues which mankind must face. On the contrary, the implementation of a sustainable food system, to secure access to healthy and sufficient food for all while preserving natural resources, would build human resilience to climate disruptions.

Resilience corresponds to **mankind's ability to find solutions in order to adapt to a changing environment, namely climate change.**

As explained above, the circular economy model encompasses all stages of the value chain, from production to storage, transport and consumption. An efficient model is a model in which all stakeholders take concrete actions to extend product lifecycle. If human resilience is increased by the development of a sustainable economic model, then the circular economy is an appropriate response to climate change.

III. Circular economy and business opportunities

1. The economic potential of circular entrepreneurship

The circular economy is not only a formidable opportunity to respond to the climate emergency, it is also a viable and profitable economic model.

The circular economy and the social economy, whose respective merits are no longer to be demonstrated, are complementary. As the cornerstone of the social economy, re-use is also a key concept in the circular economy: recycling, energy, agriculture, etc. Territorial anchorage and cooperation between stakeholders are also key components of both economic models.

The models are similar but also complementary: the circular economy seeks to minimize waste production and human impact on the environment, while preserving economic benefits; and the social economy guarantees these benefits on a social as well as environmental level. Furthermore, the collaborative economy, an important dimension of the social economy, provides alternatives to traditional consumption behaviors, for instance by providing a service instead of a direct product purchase.

Due to a high demand, the social economy is a favorable ground for the development of the circular economy. Moreover, many sources of funding, subsidies and investment opportunities are dedicated to circular economy projects: it is a way of getting a head start when starting a sustainable yet profitable economic activity.

For deeper information:
- SYSTEMIQ, Ellen Macarthur Foundation (2017), *Achieving Growth within*, [online].
- EASAC (2016), *Indicators for a circular economy,* [online].

2. Enterprises, territories and the circular economy

The circular economy can **generate growth**, **create jobs** and **reduce the environmental impact** of our societies. Price volatility, supply risks and dwindling resources are some of the factors that lead enterprises to consider transitioning towards the circular economy model. Indeed, the linear economic model has several drawbacks exacerbated by the current economic and environmental crisis:

- Structural losses, marginal value creation,
- Market risks,
- Supply risks,
- Environmental impacts,
- Increasing number of circular-economy friendly legal frameworks, barriers to the linear economy,
- Technical advances favouring the circular economy, sluggish growth of the traditional economy in the innovation sector,
- Development of alternative economic models such as the collaborative economy (choosing services over products),

- Urbanisation facilitating an economy based on sharing through the greater proximity of individuals.

Contrary to its linear counterpart, the circular economy can provide a solution to these challenges.

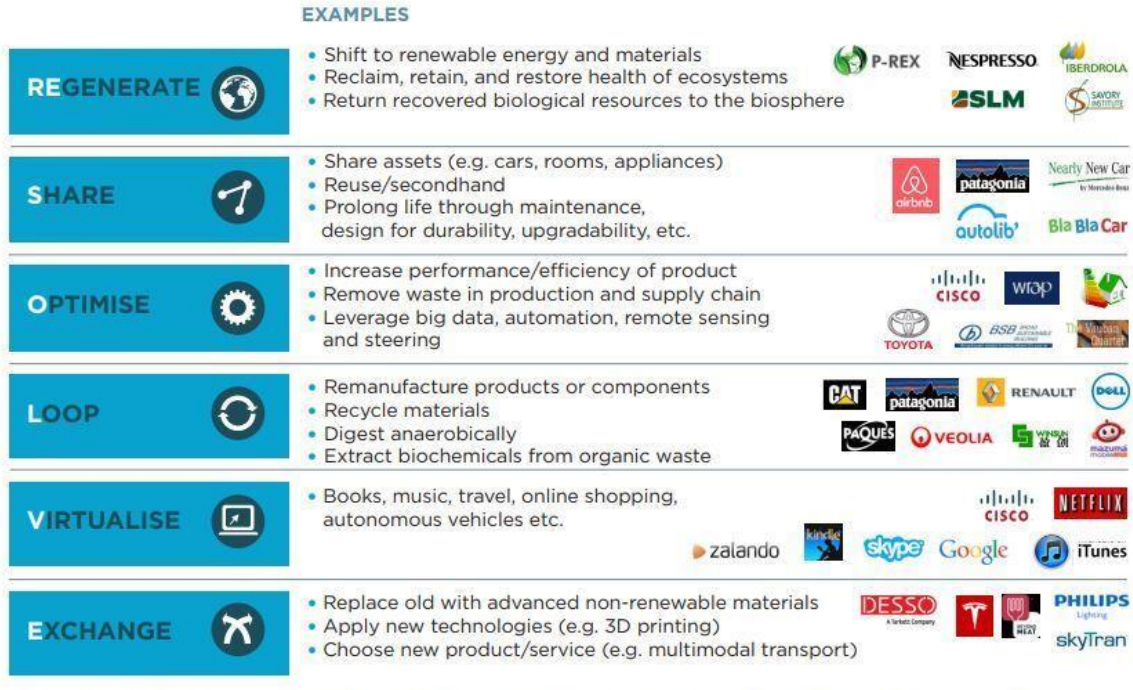
In addition to its aforementioned social and environmental virtues (the relocalisation of the economy contributes to the reduction of CO_2, the re-use of resources prevents the massive and intensive extraction of new raw materials, etc.), the circular economy model has significant economic benefits:

- Reduction of expenses and risks related to raw material supplying, reduction of the risks related to import,
- Integrated management and integration of the production cycle,
- Local production and consumption, customer loyalty,
- Increased productivity through simplified production processes,
- More reliable cash flow forecasts,
- Job creations in meaningful and up-and-coming sectors,
- Central role of innovation, which multiplies technical advances, improves the quality of materials, increases the productivity of the workforce and allows for more energy efficiency while creating more profit. As such, the concept of eco-innovation is to be considered through the lens of the circular economy model, as it systematically takes into account both the social and environmental dimensions.

In a nutshell, by adopting a circular economy model, enterprises would **reduce their input costs, secure their raw material supply chain, respond to an increasing demand in the service industry and optimize their costumer relation.**

According to the Ellen MacArthur Foundation, enterprises (and States) should implement six principles in order to organize their transition towards a circular economy: this is known as the ReSOLVE theory.

FIGURE 10 **THE RESOLVE FRAMEWORK**



Source: Company interviews; Web search. S. Heck and M. Rogers, *Resource revolution: How to capture the biggest business opportunity in a century*, 2014.

Source: Foundation Ellen MacArthur

3. Main challenges to the development of the circular economy

One of the main challenges of the circular economy is that there is a considerable amount of work to do as regards advocacy work and public awareness raising. Indeed, the circular economy is not only about waste management and food waste, it is also about **the way a product is made**, about where its components come from and about the management of the workforce. It is important to inform citizens about the all-encompassing objectives of the circular economy model, as these objectives pervade all steps of the product's cycle of life.

Hence, for the circular economy to become a credible alternative to the current production ethos, there is a crucial need for **cooperation** between the different sectors which intervene in the supply chain. This type of cooperation is still insufficient.

IV. Exploring new sustainable opportunities for collaboration

1. Policies implemented at the EU level

Several EU policies provide a framework for the circular economy. Depending on their specificities, these policies can be either legally binding, which means that they can be interpreted by the national judges of the Member States, or non-binding, which means that they only aim to influence national policies.

For deeper information: https://bit.ly/2HcYdG9

- *Directive 2008/98/EC on waste*

An EU directive establishes compulsory targets for Member States, but leaves them the freedom to decide how to implement these binding guidelines.

The overarching orientations of EU policy regarding waste management are the following:
- The polluter pays principle,
- The proximity principle, which calls for waste to be managed as close as possible to the production site,
- The enlarged responsibility of the producer,
- The compulsory nature of waste prevention programmes imposed on the Member States.

The directive also establishes a hierarchy of waste management priorities: limiting waste production, preparing waste for re-use, recycling, recovering, and eliminating it in a safe and environment-friendly way.

For deeper information: https://bit.ly/2NGVmb3

- *The Europe 2020 strategy – June 2012*

The Europe 2020 strategy steers the European Union's general policy. It has seven major objectives, including one establishing the goal of "a more resource-efficient Europe". The overarching objective of this dimension of the Europe 2020 strategy is to accelerate Europe's

transition towards sustainable growth, towards a greener and more competitive low-carbon economy.

For deeper information: https://bit.ly/2QoB84q

- *The "circular economy package" and the "Closing the loop – An EU action plan for the circular economy"– December 2nd 2015*

The European Commission action plan "Closing the loop – An EU action plan for the circular economy" (COM(2015) 614) is part of its new circular economy package. The action plan lays out several steps that must be taken to accelerate the transition towards a circular economy model.

The plan follows an implementation schedule and sets out the following areas for action:
- Producing more responsibly,
- Developing sustainable behavioural patterns of consumption,
- Improving waste management,
- Transforming waste into resources : market for secondary raw materials and re-use of water,
- Implementing sectorial mesures: plastics, food scraps, critical raw materials, construction, etc.,
- Promoting and supporting innovation and investment,
- Developing indicators to monitor progress.

The new circular economy package, which was proposed in December 2015 by the European Commission, also contains four legislative proposals, which amend the following acts:
- The waste framework directive (2008/98/EC),
- The landfill directive (1999/31/EC),
- The packaging directive (94/62/EC),
- The directives on end-of-life vehicles, batteries and accumulators, and waste electrical and electronic equipment (2000/53/EC, 2006/66/EC and 2012/19/EU).

To give two significant examples of what the package aimed to achieve, we can mention the 65% recycling of local waste and the 75% recycling of packaging waste targets, to be reached by 2030. The package also aimed to reduce landfills to a maximum of 10% of total waste before 2013.

Overall, the package has been criticized for not being ambitious enough.

In the March 2017, the European Parliament adopted a more ambitious position than the initial proposal of the European Commission, notably as regards the ambition level of targets. In the Council, Member States reached an agreement in May 2017. In December 2017, the Parliament and the Council reached a compromise agreement, which was formally adopted by the Parliament in April 2018 and by the Council in May 2018. The final version of the package includes the following provisions:
- 70% of packaging waste is to be recycled by 2030
- Landfilling of municipal waste is to be reduced to 10% of total waste by 2035
- All Member States should reduce food waste by recycling or composting 30% of food scraps by 2025 and 50% by 2030.

For deeper information: https://bit.ly/2QDRZAl

2. Promotion and funding

The Horizon 2020 program supports innovative initiatives, namely in the field of sustainable development, climate and the circular economy. For deeper information: https://bit.ly/2xaZINh

For instance, the COSME program and the InnovFin tools aim to provide support for SMEs, which are an essential transition vector and are very active in circular economy areas such as recycling, repair and innovation. For deeper information: COSME and InnovFin

The LIFE program is a financial tool which supports environmental initiatives geared towards nature, biodiversity and climate preservation. The aim of the program is not only to facilitate the transition towards an environment-friendly economy, but also to support the implementation of the 7th Environment action program. For deeper information: LIFE and 7e EAP

In addition to these support measures implemented at the European level, it is important to get information from national, regional and local public authorities, but also from private investors such as foundations.

V. Case study: Zero Positive Protocol (PZ+)

Il Protocollo Zero Positivo - Zero Positive Protocol (PZ+) is part of a territorial marketing strategy applied mainly in the Sorrento Peninsula and in Napoli area.

The main concept is to bring Social Responsibility among the qualifying elements in the tourism/catering sector. PZ+ can be subscribed by any company who want to commit itself in respecting the 10 principles, thus delivering to UCMed (or the local organization) and to the clients, all the information needed to verify, monitor and promote this commitment.

Respecting the 10 values of ZP+ must be considered useful to progressive path, client-tailored, and must be compatible with the company needs and economic and organizational strength.

The PZ+ could be a very innovative tool of territorial marketing if applied to a high percentage of companies in one area, and it could spread to neighboring areas, once the stakeholders realizes that it attracts an increasing number of clients.

Therefore the interaction between policy makers and enterprises should be very important, and so is the involvement of all the community, like local producers.

The impact for companies is high because, with almost zero expenses, it attracts an increasing number of clients: people nowadays are more and more aware about what they eat, the environmental and social impact of what they buy and so on. The impact has never been assessed at a territorial level.

PZ+ is applicable everywhere, at zero costs.

UCMed is one of T4F partners. It provides training and consultancy in food and tourism sector, with a focus on culture and sustainability.

Reference(s):

- http://www.ucmed.it/progetti/protocollo-zero-positivo/
- http://www.ucmed.it/

PRACTICAL ACTIVITIES

To apply the principles of the Zero Positive Protocol to a local restaurant or hotel	
Pre-requisites	Knowing the 10 principles of the Zero Positive Protocol.
Time	8 hours
Tools	Visiting a restaurant or a hotel.
Objective(s)	Redefining and rethinking your business

Instructions

Firstly, the attendees must select an establishment (restaurant or hotel) in their local area.

Then, the attendees go to this establishment and evaluate through the criteria of the Zero Positive Protocol if these are well respected.

By working group and in class, attendees evaluate one by one the various criteria of the Zero Positive Protocol and comment positively and/or negatively on how these are taken into account.

Each working group proposes solutions and/or adjustments to better integrate these 10 principles into the business model of the chosen institution.

Finally, each group presents their project to the class.

Criteria

- Respect of the time of the activity.
- Respect of instructions received.
- Good understanding the 10 principles of the Zero Positive Protocol.
- Quality of the oral presentation (from the content and understanding of the subject by the other groups).

Score: 50%

Creating a business model based on the principles of circular economy	
Pre-requisites	1. Notions in economy, knowing what a business model is. 2. Having followed the theoretical module on the circular economy.
Time	6 hours
Tools	PC, internet connection, word of mouth
Objective(s)	1. Underlining the potential economic value of circular economy as winning business. 2. Learning how to rethink your business dimension. Understanding the business dimension of circular economy. 3. Exploring new sustainable collaborations and opportunities.

Instructions

By working groups, the attendees must imagine a restaurant, a hotel or a bar whose model is congruent with the principles of the circular economy. To this end, they must create a business model based on these principles.

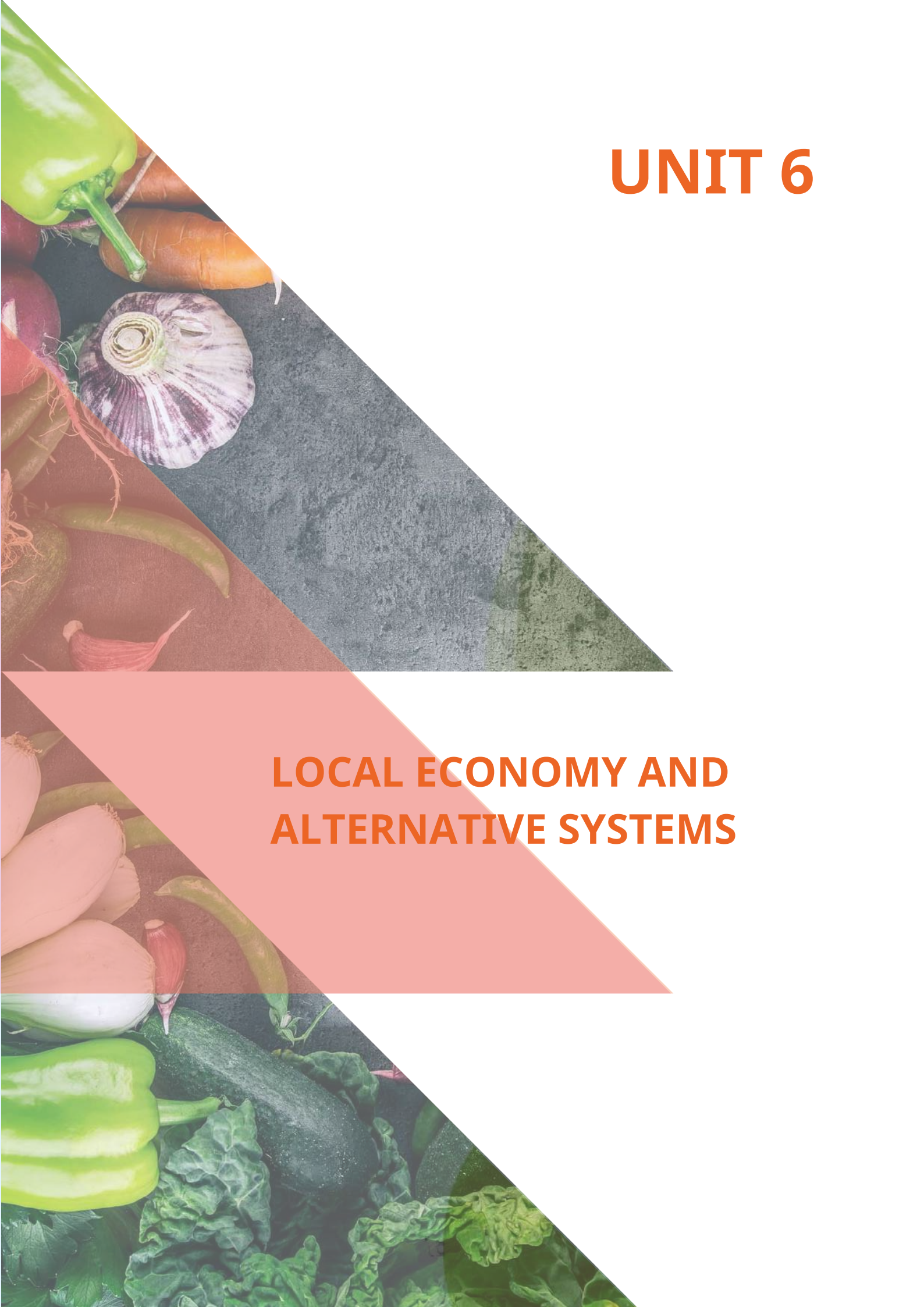
During the first two hours, the attendees build their project. For the next two hours and by groups, the attendees must identify their options for support and/or subsidies, available at the national, regional or local level.

To finish, each project will be presented to the other groups and to the instructor during the next two hours.

Criteria

- Respect of the time of the activity.
- Respect of instructions received.
- Respect of circular economy basis.
- Relevance of the support and/or subsidies identified.
- Viability of the business model.
- Quality of the oral presentation (from the content and understanding of the subject by the other groups).

Score: 50%



UNIT 6

LOCAL ECONOMY AND ALTERNATIVE SYSTEMS

ECONOMY

Local economy and alternative systems

12 hours

LEARNING OBJECTIVES

1. To recognize the local economy development as a key for new business opportunities.
2. To better understand how local foods influence our lives and economy.
3. To recognize the critical role of local governments partnerships.
4. To explore how innovation encourages sustainable food system.
5. To recognize the economic value of short supply chain in food business.
6. To safeguard and transmit the know-how of production and distribution methods.

LEARNING ACTIVITIES

THEORETICAL (6 hours)	PRACTICAL (6 hours)
• Reading • Web research • Successful case study	• Recognize a list of alternative local markets present within the range of 20 kilometers from your neighborhood and interview 1 of the alternative market options you found.

I. Introduction

The **increased industrialization** and **commodification of food production** has impacted significantly on European food culture. We can eat exotic foodstuffs, uniform products and without seasonality: strawberries and zucchini in winter and fennels in summer. Many of us shop weekly by car at supermarkets and are unaware of how and where the food we eat –and its ingredients– are produced. The dominance of highly processed food in our diet contributes to our poor nutrition and increases prevalence of diet-related illnesses. In fact, few companies now dominate the supply of seeds, agri-chemicals, processing, logistics and even food production. For example, in 2011 four retailers controlled 85% of the German national food market, and three retailers controlled 90% of the food market in Portugal. In 2009, just five retailers controlled 70% of the market in Spain[1].

These patterns of production and trading also imply a **loss of traditional knowledge, skills, and culture among both farmers and consumers**. This concentration of power can result in unfair trading practices, which undermine the livelihoods of small farmers and producers across the supply chain and move those of us who do not farm further away from the sources of the food we eat[2].

However, the last two decades have witnessed a **revival of local food systems**: short food supply chains and local markets, where farmers sell their products directly to consumers or with a minimum of intermediaries, have flourished in all EU countries, both in rural and urban areas. Selling farm products directly or through short supply chains is in many cases an important source of revenue for farmers, contributing to their wellbeing and to the viability of rural areas. Local economies also benefit from such schemes, which have the potential to create jobs. On average, 15% of EU farms (mainly, small farms) sell more than half of their production directly to consumers. However, there are significant differences between countries: while the share of farms involved in direct sales is nearly 25% in Greece, 19% in Slovakia and around 18% in Hungary, Romania and Estonia, it is less than 5% in Malta, Austria and Spain[3]. This shows that consumers want to establish a short distance between them and producers, without intermediaries and a link to the territory in order to preserve community values and traditional products.

In this module we describe the economic value of the development of local and short food supply chain, its relationship with concept as food security and food sovereignty and some alternative food systems developed among the Europe.

II. Local economy for a sustainable development

Unlike organic food, there is **no legal or universally accepted definition** of local food. In part, it is a geographical concept related to the distance between food producers and consumers. In addition to **geographic proximity** of producer and consumer, however, local food can also be defined in terms of social and supply chain characteristics.

Local food purchases can be twice as efficient in terms of keeping the local economy alive even because local food systems (where production, processing, trading and consumption of food take place across a relatively small geographical area) have been described as an important source of employment opportunities with **positive multiplier effects**: a huge part of the money spent to

[1] Nicholson C. and Young B. (2012), "The relationship between supermarkets and suppliers: What are the implications for consumers?", *Consumers International and Europe Economics*.
[2] FAO (2012), "The State of Food Insecurity in the World".
[3] European Parliament (2016), "Short food supply chains and local food systems in the EU", *briefing*.

buy local food remains in the local community[4]. Hence, local food systems have the potential to positively influence the local economy.

Short supply chains in local markets have been shown to increase income for producers, generate greater autonomy for farmers, and to strengthen local economies by supporting more small businesses. This can **improve the viability of small farms, reduce the carbon footprint from food distribution, and enhance household food security** by giving people on low income access to good food and healthy diets.

Buying directly from the farm or from street markets can sometimes **be cheaper** than buying from supermarkets, and can also help stop shoppers from buying too much and having to throw food away.

Shopping for local fresh fruit and vegetables can also help support healthier diets. People are more likely to see and try seasonal produce if they see it at a farmers' market or farm shop – creating a more varied diet – and they can also get ideas for cooking tips.

In this video you can find why eating local food is good for local economy: https://bit.ly/2SUox9t

It is also interesting to take a look at this assessment table conducted by the European Commission on local farming and direct sales and reflect on benefits and challenges for "going local".

Table: SWOT analysis of local farming and direct sales

Strengths:	Weaknesses:
• Diversity of product • Fresh, seasonal food • Transparency / traceability in the local farming and in particular direct sales • Building relationship, trust • Responsiveness to consumer's demand • Control over the final price, more competitive consumer price, increase of bargaining power • EU tools and support measures	• Small production volume, seasonality of production • Relatively high cost of establishing and selling in alternative chains • Low capacity to join existing certification schemes • Lack of training, infrastructure, know-how and skills • Cost of regulation/controls
Opportunities:	**Threats:**
• Big interest in the origin of food and growing interest in buying « local » • Increased consumer motivation for "fair" trade • Opening of new marketing channels in the local economy • Member States' and regional authorities ready to act/support • Locally visible environmentally sound production and low carbon emitting supply chains	• Competitiveness of the business model • Societal changes: migration trends, ageing population • Difficulties for consumers to recognise "local" food • Long working hours, stress

[4] Friends of the Earth Europe (2015), "Eating for the farm".

III. Local food systems for food sovereignty

According to recent researches, the production of sustainable, locally grown foods is key to providing long-term food security for communities. Local food production reduces the economic and environmental impact of transporting food, increasing the availability of local and seasonal foods, such as fruits and vegetables and enables people to avoid processed, unhealthy foods. But, **what does food security mean?**

"***Food security*** *exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences in order to lead a healthy and active life*." This definition includes: "*the availability of food, access to food, biological utilization of food, and stability* [of the other three dimensions over time][5]."

In contrast, the concept of **food sovereignty** is focused primarily on small-scale agriculture (including livestock, forestry and fisheries) of a non-industrial nature, preferably organic, mainly using the **concept of agro-ecology**.

Whereas food security comprises mainly the concept of affordable and accessible food for all, food sovereignty is respectful to cultural diversity and the environment. The latter is concerned with issues such as production, land distribution, international trade system, and biodiversity conservation. Food sovereignty embraces a moral understanding of the economy, and questions the ethical basis for our economic decisions and our current legal system. "*Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems*[6]."

The seven pillars of food sovereignty

1. **Focuses on food for people**: Puts people's need for food at the center of policies; insists that food is more than just a commodity.
2. **Builds knowledge and skills**: Builds on traditional knowledge; uses research to support and pass this knowledge to future generations; rejects technologies that undermine or contaminate local food systems.

[5] FAO (2006), "Food security".
[6] La Via Campesina (2003), "Peoples' Food Sovereignty – WTO Out Of Agriculture".

3. **Works with nature**: Optimizes the contributions of ecosystems; improves resilience.
4. **Values food providers**: Supports sustainable livelihoods; respects the work of all food providers.
5. **Localizes food systems**: Reduces distance between food providers and consumers; rejects dumping and inappropriate food aid; resists dependency on remote and unaccountable corporations.
6. **Puts control locally**: Places control in the hands of local food providers; recognizes the need to inhabit and to share territories; rejects the privatization of natural resources.
7. **Food is sacred**: Recognizes that food is a gift of life, and not to be squandered; asserts that food cannot be commodified.

Food sovereignty highlights the need for a democratic food system, one that involves inputs from citizens as well as producers. Food security is concerned with the protection and distribution of existing food systems. Thus, **how local initiatives contribute to global food sovereignty and how can urban food systems contribute to a socially fair transition towards a more sustainable world that includes all social groups of the population?**

Take a look at this video: https://www.youtube.com/watch?v=haCBwIUz7HI

IV. Definition of Alternative Food Systems (AFSs)

It is difficult to present a unified definition of alternative food systems for all EU countries; the term of AFSs can be considered an **umbrella term** that includes different models with some **specific characteristics** to go **beyond the conventional food systems**.

AFSs are emerging with the aim of **reconnecting** producers and consumers and **relocating** agricultural and food production. AFSs have their roots in **organic farming**. Historically organic farming has been characterized socioeconomically as being: local or community controlled, embedded economically into the local community/region (i.e. most products are grown and consumed locally), and structured to promote the interaction of producers and consumers (locally) in ways that familiarize each with the wants and needs of the other so that they promote cooperation, trust and social cohesion (e.g. cooperatives)[7,8].

The **main characteristics** of AFSs are based on:

1. The redefinition of the relationships between producer and consumers showing clear signals as to the origin of food.
2. The development of new relationships for new types of supply and demand with new requirements that link price with quality criteria. Usually, this food is defined by the place and the farm where it has been produced, and serves to enhance the image of the farm and the territory as a source of quality foods.
3. Emphasis on the relationship between producer and consumer to build values and meaning, rather than solely the type of product itself, and all these are summarized in the ability to engender some form of connection between the consumer and the food produce.
4. Alternative food system initiatives also strive to improve environmental conditions by promoting on-farm biodiversity, natural resource conservation, carbon footprint reduction by minimizing 'food miles', while promoting greater consumer awareness on the origins and quality of their food.

[7] Sumelius, J. & Vesala, K.M. (2005), "Approaches to Social Sustaina-bility in Alternative Food Systems", *Ekologiskt Lantbruk*, n°47,

[8] In reference to the recent growth of organic production, Saunders argues that organic farming is being incorporated into the conventional agriculture (i.e. global distribution channels). In other words, convergence with conventional agriculture is resulting in a subsequent loss of 'localness', community values and control of organic farming.

More in general, the **concept of proximity** and the **relationship of trust** created within consumers and producers can support greater democratic control over food systems.

V. Short food supply chain (SFSC)

SFSC were originally identified as **examples of "resistance" of farmers to modernization of the food system**. Resistance consists in the facts that, by selling directly to consumers, farmers bypass intermediaries and give farmers the possibility of keeping a bigger share of the added value within the farm and within the local economies.

"Short" refers to both **physical and social distance**. *Physical distance* is the distance of transportation, or food miles[9] of a product from the place of production to the point of sale. *Social distance* is the opportunity for producers and consumers to interact and share information. Information exchange includes details about the origin, production method and sustainability of the product, but also the identity, values and ethics of both producer and consumer[10].

The direct interaction between producers and consumers in many SFSCs brings about more intangible social proximity aspects such as: mutual knowledge and respect of each other, trust, solidarity and compromise between producer and consumer, acknowledgment of the quality features of the food product and the conditions of production, ethics and values, (re)connection with traditions and identities, collective civic engagement in the local food system, intensity and directionality of information flows, and balance of power between the actors.

In many cases, SFSCs increase the possibility for the consumer to make conscious choices and increase food sovereignty. Therefore, SFSCs allow consumers and producers opening wider dimensions than those strictly limited to food production-distribution-consumption practices and become engaged together in new forms of food citizenship or civic food networks[11]. Short food supply chain (SFSC) is one of the main models of AFS. The figure (2) summarizes the meaning attributed to SFSCs and that can be also extended for other models of AFSs.

Meaning of food in SFSCs	Meaning of production-distribution system in SFSCs
"fresh", "diverse", "organic", "slow" , "quality", "seasonal", "traditional", "local", "regional", "taste", "delicious", "food heritage", "cultural identity", "fair", "sustainable"	"small scale", "short", "traditional", "local", "environmentally sustainable", "embedded", "fair", "transparency", "traceability", "corporate social responsibility", "local economy", "lower emissions", "rural-urban linkages", "self-esteem" "social acknowledgement", "prestige of food producers", "sustainability"

Figure 2. Meaning attributed to SFSCs

In the table below, we show you some models of AFS based related to local food and local economy present in Europe.

[9] Pretty, J.N., Lang, T., Morison, J. and Ball, A.S. (2005), "Food miles and farm costs: The full cost of the British food basket", *Food Policy*, 30.1: 1-20.
[10] Gava, Oriana & Bartolini, Fabio & Brunori, Gianluca & Galli, Francesca (2014), "Sustainability of local versus global bread supply chains: a literature review", Paper Conference, *Italian Association of Agricultural and Applied Economics*.
[11] Renting H., Schermen M., Rossi A. (2012), "Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship", *Int. Jrnl. of Soc. of Agr. & Food*, Vol. 19, No. 3, pp. 289–307.

Type of initiative	Description and benefits	References
Community gardens/ urban agriculture (consumer as producer /actor model)	Citizens collectively cultivate and harvest food on shared private or public land, general in urban or peri-urban areas. Benefits include food systems' awareness and education, health benefits10, community-building, and increased urban green spaces.	Sustainable community garden in the city https://bit.ly/2BsCu7w
Community Supported Agriculture (CSA) (producer-consumer partnerships)	Direct partnership between a group of consumers and producer(s) whereby the risks, responsibilities and rewards of farming activities are shared (typically) through long-term agreements. Generally operating on a small and local scale, CSAs aim to provide sustainably produced quality food, with benefits both for access to healthy diets of 'eaters' and more stable and higher incomes for farmers. CSA works in the following manner: a group of consumers' finance works on the farm. They sign a one-year contract and pay fixed membership dues. In exchange, the farm provides the members with food. Once a week, it delivers fruit, vegetables and occasion- ally animal products to distribution centers that are close by. The exact deliveries depend on the season. The members regularly help out on the farm and can take part in deciding on what to plant.	ASAT ROMANIA https://bit.ly/2Flbb4e Overview of community supported agriculture in Europe: https://bit.ly/2A3YVQC
Community supported fisheries (CSF) and fish basket schemes	A community-supported fishery (CSF) is an alternative business model for selling fresh, locally sourced seafood. Community supported fisheries aim to promote a positive relationship between fishermen, consumers, and the ocean by providing high-quality, locally and seasonally caught seafood to members. There are also short distribution chains for fish like *local catch* in order to have fresher products, reduce the environmental impact of transport (food miles) and support artisanal fishing close to home, where we can verify that ecosystems are being respected and resources used wisely.	RSC Responsible Supply Chain: PINTAFISH for fair fish https://bit.ly/2UVvjxv
Short and responsible supply chains: direct sale from producer to consumer model	Consumers purchase food directly from local producers' on-farm or in communal spaces, according to seasonal availability. Benefits can include higher revenues for producers, access to local, quality foods for consumers, and community development.	Short Food Supply Chains as drivers of sustainable development. Case studies https://bit.ly/2b7VH4L
Ethical purchasing groups	Ethical purchasing groups are groups of consumers who purchase collectively and directly from producers who are chosen on the basis of local and sustainable production principles. Ethical purchasing groups were born from the desire to build a healthy economy from the bottom up where ethics were worth more than the profit and quality was more important than quantity.	Made in south Italy https://bit.ly/2Cliupi
Food `Hub	A food hub is an organization that supports producing, aggregating, processing and distributing local foods by building relationships among stakeholders in the food value chain. Food hubs are a critically important link in the food value chain, connecting small, local food producers with the wholesale and retail purchasers who make up the vast majority of food purchasers.	Färm: https://bit.ly/2QDyADq

VI. Case study: Tagurpidi Lavka (Reverse Bridge), Tallin, Estonia

"*People buy apples or garlic from the other side of the world when they actually grow right here very well – we can easily grow our products and eat locally. The environmental impact of food could be much less if everywhere people ate more locally, knew the producers and farmers in their area, knew the value of food like a personal thing, knew where was grown."* (R. Lepa, cofounder of *Tagurpidi Lavka*).

Tagurpidi Lavka is a social enterprise, established on 2009, with the main goal to confront people who live in urban areas with the question where their food comes from. *Tagurpidi Lavka* wants to make local food products of Estonian small farms more available to people living in cities in Estonia. Thus, *Tagurpidi Lavka* wants to make local food products their preferred choice, so that their consumer habits would be more environmentally friendly, healthy and supportive of the local rural economy. *Tagurpidi Lavka* cooperates with about 50 local farmers and delivers their products to a couple of hundred people living in urban areas. Thanks to its activity, the social enterprise employs about 10, who live in villages and small towns have an income. This is important to allow people to remain living in the countryside, avoiding desertification of the rural areas.

How does it work? *Tagurpidi Lavka* buys food products, especially organic products, from small farmers in rural areas of Estonia and sells them in and around Tallinn. It sells the products on markets and via an e-shop, where clients can order products in advance and have them delivered to their front door. *Tagurpidi Lavka* pays local farmers and producers a fair price for their products. It doesn't force them to accept the lowest price possible, but instead sit down with them to reach a common agreement keeping in mind the farmers' uncertain situation and market prices. *Tagurpidi Lavka* is pursued a fair-trade approach but also environmentally friendly. *Tagurpidi Lavka* reuses most of its packaging and uses as much biodegradable packaging as possible. Moreover, it conducts information and awareness campaigns on the importance of proper food choices and improves citizens' awareness on sustainable behaviors.

The goal of *Tagurpidi Lavka* is to confront people who live in urban areas with the question where their food comes from and to promote organic farming and fair prices for Estonian local small-scale farmers. *Tagurpidi Lavka* cooperates with about 50 local farmers and delivers their products to a couple of hundred people living in urban areas.

The social enterprise through its business model supports economic development in Estonian rural areas. The revenue of the social enterprise is generated from the sale of local farming products. The clients in Tallinn have placed an average of 12,7 orders over the course of the last three years. More than 210 clients have ordered products on a regular basis (every month), making *Tagurpidi Lavka* a self-sustainable social enterprise.

Tagurpidi Lavka generated an average additional income of 110€ per month for their local farmers and supported the starting of farming activities that without *Tagurpidi Lavka*, would not have had enough market access to even start their activities.

For example, *Küpsikoda* founded in 2013 by three young women who wanted to sell hand-made cookies made exclusively of vegetarian ingredients. *Tagurpidi Lavka* added them to the selection of food products in the online store. So far, this has been the best marketing channel for *Küpsikoda* because local markets or trades don't take place often enough to generate a steady income and without a certification of organic product they cannot have access to organic market.

This business model can be developed in any country. The idea is very simple: to bring local and organic food produced by small-scale farmers into the cities. In fact, across Europe there are already activities with the similar approach. e.g. *Local to you* in Italy (www.localtoyou.it) and *ASAT* in Romania (http://asatromania.ro)

Tagurpidi Lavka was been supported by donations, local and national entities. It is member of the *Estonian Social Enterprise Network.*

Reference(s): http://tagurpidilavka.ee/

Extra sources

- Local Catch
https://webgate.ec.europa.eu/fpfis/cms/farnet/files/documents/FARNET_Marketing_the_Local_Catch-8_EN.pdf

- Alternative Food Systems: Global and Local Variants
https://www.e-education.psu.edu/geog3/node/1037

PRACTICAL ACTIVITY

Discover the local alternative food systems in your neighborhood	
Pre-requisites	Knowledge of the concepts of Alternative Food Systems and Short food supply chain.
Time	6 hours
Tools	PC, internet connection, word of mouth.
Objective(s)	To understand what is the current alternative food offer around our neighborhood; improve the level of knowledge and consciousness of our territory and local food offer.

Instructions

1. Read carefully the module and the definition of Alternative Food Systems and Short food supply chain. After having understood those concepts, make an online research looking for the alternative systems currently present in your territory and in your neighbourhood. Go to the local market places, talk with local organisations, and ask for more information than the ones found online. At last, make a list of all options you have found and analyse which could be the most interesting for you!

2. Once you have chosen the best option for your shopping habits, organize a meeting with one of the producer and ask them about their working conditions, how the price of the product was established, what kind of agricultural practices they use, etc.

Criteria

- List of at list 10 sources used for the research (website, newspaper, social media pages, etc).
- List of market options found including: contacts, venues, characteristics.
- Definition of at least 5 key questions for the interview.
- Presentation (written or oral) of the interview realised.

Score: 100%

UNIT 7

ETHIC AND INCLUSIVE FOOD BUSINESS MODELS

SOCIAL

Ethic and inclusive food business models

18 hours

LEARNING OBJECTIVES

1. To identify the value-based food supply chains (adequate wages in the entire value chain).
2. To explore the ethical issues you face each time you decide what to produce, eat or purchase food.
3. To understand the relationship between food security and fair trade.
4. To explore alternative business models to be more sustainable.
5. To recognize the importance of CSR and the role corporations should play in advancing and addressing social and global challenges.

LEARNING ACTIVITIES

THEORETICAL (12 hours)	PRACTICAL (6 hours)
• Reading • Web research • Successful case study	• CSR Good Practices

I. Introduction

"*Human suffering should never be an ingredient in our food, yet millions of people producing the food we buy at supermarkets* [...] *are working in appalling and unsafe conditions for shockingly little pay*" said Irit Tamir, Director of Oxfam America's Private Sector Department. "*Working in dangerous conditions, earning low wages, and living in poverty, these workers can hardly feed their families…*[1]"

Take a look at this video to start: https://bit.ly/2GsF1EF

Did you know that in the European Union (EU) just 10 supermarkets account for over half of all food retail sales? Millions of women and men who produce our food are trapped in poverty and face brutal working conditions, despite billion-dollar profits in the food industry, according to a new report published by Oxfam. This report "Ripe for Change[2]" shows how the supermarkets keep an increasing amount of the money their consumers spend – as much as 50 percent in some cases – while the share that reaches workers and food producers has fallen – sometimes to less than 5 percent. For example in Italy, 75% of women workers on fruit and vegetable farms said they or a family member had missed meals in the past month, because they couldn't afford enough food. In the EU, the average earning of small-scale farmers who make food products is less than half of what they need for a decent standard of living. And the gap between a living income and actual income is greater where women make up most of the workforce.

The rapid spread of more formal supermarkets, so-called "***supermarket revolution***"[3], while has offered consumers a wider range of products at a lower price than traditional retailers, also has entailed rapid organizational changes in the whole food supply chain. This revolution has also impacted power relationships within food supply chains and the locus of power and decision-making moved from farmers and producers to traders and retailers, and from governments to the private sector and multi-national corporations.

The aim of this unit is to explore the **social dimension of food sector**: from fair trade to social economy enterprise models. The key elements of this unit are: inclusion, equity, respect, responsibility and opportunity.

II. Definitions

Even if the current food supply chain model is deeply ingrained, and will not be easily reformed, poverty and inequality shouldn't be the major ingredients in supermarket supply chains. Thus, how can we do? **How can we develop a sustainable food value chain?** How can we improve the relationship between stakeholders and secure producers' incomes? https://bit.ly/2Qe32j1

But, first of all we can try to understand the meaning of value chain.

A value chain is a model developed by Michael Porter in 1985 used to describe the process by which businesses receive raw materials, add value to the raw materials through various processes to create a finished product, and then sell the finished product to customers. The basic model of Porters Value Chain is as follows: https://bit.ly/2LoiOpV

[1] Oxfam America (2018), "Poverty and Inequality are Ingredients in Supermarket Supply Chains, Even at Socially Conscious Whole Foods", Press release.
[2] Oxfam and partners conducted surveys in 2017 of hundreds of small-scale farmers and workers in supermarket supply chains across five countries using the Household Food Insecurity Access Scale (HFIAS) method.
[3] Reardon, T., Timmer C.P., Barrett C.B., and Berdegué J. (2003), "The rise of supermarkets in Africa, Asia, and Latin America", *American Journal of Agricultural Economics*, 85(5): 1140–1146.

Based on Porter, how do you develop a value chain in the food sector?

Food value chains (FVCs) comprise all activities necessary to bring farm products to consumers, including agricultural production, processing, storage, marketing, distribution, and consumption[4]. Developing FVC can deliver higher value as a whole and increase profits for each stakeholder from production to consumption. **How to create a food price that can be fair both for producers and consumers? How an agro value chain should work to be sustainable?** Look this video https://bit.ly/2LmKJGN

Sustainable food value chain (SFVC) is defined as: "*the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society, and does not permanently deplete natural resources[5]"*.

Summing up, a sustainable food value chain:

- is profitable throughout (**economic sustainability**).
- has broad-based benefits for society (**social sustainability**).
- shows a positive or neutral impact on the natural environment (**environmental sustainability**).

It is identified **ten principle** of sustainable food chain development[6]:

In term of social sustainability SFVC refers to the **critical aspect of inclusiveness**. Although inclusiveness refers to equitable access to resources and markets and to having a voice in decision-making, ultimately it relates to equitable distribution of the value added relative to the investments made and risks taken. This is not only socially desirable but also amplifies the growth process through multiplier effects. That is to say, every stakeholder (farmers and processors, young and old, women and men etc.) should feel they receive their fair share (win–win), and there are no socially objection able practices such as unhealthy work conditions, child labour, mistreatment of animals or violations of strong cultural traditions. Unless this is the case, the model will not be sustainable in the medium term.

[4] Gómez, Barrett, Buck *et al.* (2011), "Research Principles for Developing Country Food Value Chains", *Science*, Vol. 332, Issue 6034, pp. 1154-1155,
[5] FAO (2014), "Developing sustainable food value chains : Guiding principles", Rome.
[6] For more information please read "Developing sustainable food value chains. Guiding principles" by FAO 2013.

Behind the price of our plate there are a lot of things that it should be considered from the high quality of fresh food to decent job condition of workers. Thus, very cheap food is usually synonym of unsustainable food not only for our health (e.g. fast food products) but also for the society and the workers exploited. In a SFVC, wages of food workers should be designed to provide fair compensation based on the true cost of production. Fair wages are determined by a number of factors, including the amount of time, skill, and effort involved in production, but also the living wages where products are made and the purchasing power in a community or area.

Fair trade takes in account these things. It's a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering **better trading conditions** to, and **securing the rights of marginalized producers and workers –** especially in the South. They are engaged actively in both supporting producers and awareness raising consumers. To better understand the importance of fair trade on food sector, please take a look at this video https://bit.ly/2CmbZlV and visit this website https://bit.ly/2UVzUjf.

SFVC is based on inclusivity and respect of all stakeholders. An inclusive business model is a commercially viable model that benefits low-income communities by including them in a company's value chain on the demand side as clients and consumers, and/or on the supply side as producers, entrepreneurs or employees in a sustainable way. Social economy enterprises represent inclusive business models for different reasons.

III. Social economy enterprises as inclusive food business

In Europe, social enterprises are closely linked to the tradition of the social economy, which is characterized by principles and values such as solidarity, the primacy of people over capital, and democratic and participative governance. There are many definitions of social enterprise and the European Commission has proposed the following operational definition of social enterprises: "*an operator in the social economy whose main objective is to have a social impact rather than make a profit for its owners or shareholders. It operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. It is managed in an open and responsible manner and, in particular, involves employees, consumers and stakeholders affected by its commercial activities*[7]". Within its definition the Commission includes enterprises:

- whose social or societal objective of the common good is the reason for their commercial activity, often in the form of a high level of social innovation.
- whose profits are mainly reinvested with a view to achieving this social objective.
- and whose method of organization or ownership system reflects their mission.

Many actors in the social economy have already started developing alternative food systems. All over Europe we can see Community Food Enterprises, local exchange communities, social farms, participatory supermarkets, consumers' cooperatives, solidarity grocery stores, canning cooperatives, innovative social businesses working with food waste and so on. All of these organizations are working on multiple levels to achieve social, environmental and economic goals. These diverse and innovative social enterprises are active in communities and are often tackling social disadvantage while providing much-needed goods and services.

[7] European Commission, Social Business Initiative (2011), "Creating a favourable climate for social enterprises, key stakeholders in the social economy and innovation", COM(2011) 682 final, p.2.

For more information, you can read the study "How social economy enterprises contribute to sustainable food system" redacted by Diesis [online]. Social enterprises have been proven to be **versatile organizations**, which address areas of unmet or inadequately met **social need** and create **new social opportunities** where other actors have failed to act. One of these examples is the **social farming**.

IV. Social farming

The term "social farming" refers to a **set of practices** that use agricultural resources – animals, plants, gardens, forests, landscape – to promote therapeutic and rehabilitative actions of social inclusion, educational and social services useful to the daily life of local communities and rural areas[8].

Thus, social farming is a significant example of **social sustainability**. While producing food, social farms pay close attention to the needs of people and the environment, and create networks in tune with other public and private actors in the territory. They are a collective action to build new strategies, concepts, ideas and organizations that meet social needs. In Europe, a growing number of farming initiatives are being implemented with the aim of supporting disadvantaged people, through therapy, rehabilitation and social or labour market reintegration, and providing training and education. This multifunctional approach to farming has attracted attention from multiple stakeholders such as the European Economic and Social Committee (EESC), which in 2012 published an opinion containing a number of proposals and recommendations to the Commission, including the definition of a reference legal framework and the possibility of public support for initiatives in various countries.

Social farming can be a tool to respond to the growing needs of the population, both in terms of socially, economically and environmentally sustainable agricultural production, and in terms of providing socio-sanitary and socio-occupational services. It represents **a participatory and relational model of territorial development** that is **committed to building social cohesion and the local community**. It is not only the result of productive activities and social activities, but something completely new and more articulate.

It is an alternative system where **food** can be considered a **tool of social activation**, and where the active participation of the community can be a tool to promote a proper awareness of food issues.

Social farming is founded on a strong belief in **equity**. In accordance with this value, it tends primarily and progressively to follow organic and eco-sustainable production and agro-ecological systems capable of simultaneously safeguarding the health of all living things and the environment.

Social farming, as a multifunctional approach, may also open possibilities to enhance some other functions of agriculture, such as landscape management, supporting biodiversity and animal welfare. It is an experience where difficulties are the engine for the development of innovative and ecological solutions for the environment, society and local economy.

Social farming across borders (SoFAB) was a highly successful European INTERREG IVA Funded project which operated in the Border counties of Ireland and all of Northern Ireland in the period

[8] Di Iacovo F. (2008), *Agricoltura sociale: quando le campagne coltivano valori*, Franco Angeli, Milano.

2011-2014 and give us some interesting suggestions on this kind of farming. Take a look at this video to know more about https://bit.ly/2QApwyW.

In the last decade there has been a significant example of social entrepreneurs involved in sectors like circular economy, waste management and more in general in green economy. They contribute to smart and sustainable growth, by taking their impact on the environment and social cohesion into account in their long-term vision.

V. How can be green and social entrepreneur in the same time?

Here you can see your story that better explain the concept of green social entrepreneur: https://bit.ly/1Vjm2eY. **Have you ever heard before about green skills? Or green job? What is the meaning of green economy?**

1. Green social entrepreneur

In the 20th century, the economist most closely associated with the term 'entrepreneur' was Schumpeter, who described entrepreneurs as the innovators whose function is to reform or revolutionize the pattern of production.

As suggested by the Organization for Economic Co-operation and Development (OECD), the social entrepreneur has the goal of addressing pressing social challenges and meeting social needs in an innovative way while serving the general interest and common good for the benefit of the community.

Social entrepreneurs play an important role in facing **social, economic, and environmental challenges**, while contributing to **job creation**, especially at local level, as well as to **democratic participation** and the **improvement of welfare services delivery**. We are witnessing the emergence of social entrepreneurs who are thinking greener, who consider social issues as closely interconnected with environmental issues. These new professional figures – green social entrepreneurs – are seeking **to make changes in the relationship between economy, ecology and society through a multilevel approach to sustainable development**.

As stated by Zahedi and Otterpohl, green social entrepreneur could play **two important roles** in sustainable development: firstly, as an innovative community to change the structure of the economy through sustainability and secondly, as a community which creates and changes the norms in a society so as to maintain sustainable development.

TYPE OF ENTREPRENEURSHIP	CORE MOTIVATION
Eco-entrepreneurship	Contribute to solving environmental problems and create economic value
Social entrepreneurship	Contribute to solving societal problems and create value for society
Sustainable entrepreneurship	Contribute to solving societal and environmental problems through the creation of a successful business
Institutional entrepreneurship	Contribute to changing regulatory, societal and market institutions

Source: Schaltegger S. & Wagner M., 2012

The greening of the economy is expressly addressed in the Europe 2020 strategy, which specifies targets to reduce greenhouse gas emissions, and to increase energy from renewables and energy efficiency. Social enterprises have the potential to deliver on these targets, set in response to climate change. Their potential is insufficiently exploited, not least because their way of working and their impact on employment is not well known across Europe.

One of the most explicative examples in Europe that encompasses both aspects green and social is the entrepreneur of *Permafungi* from Belgium. *PermaFungi* is a project for urban agriculture and circular economy whose mission is to help make our cities more resilient. It recycles coffee grounds into two valuable products: oyster mushrooms and compost. This technique completely transforms waste into two useful products. *PermaFungi* actively promotes sustainable development through social, economic and environmental actions in Brussels. This social enterprise produces and sells fresh mushrooms and compost, and is developing a network of decentralized production. When the founders started their enterprise they wanted to show that production and consumption habits could be changed by focusing more on environmental and social issues than exclusively on the logic of profit. For them the social enterprise model represented the best way to develop their mission based on the three pillars of sustainability.

2. Corporate Social Responsibility

Even a profit company should be held accountable for its impact on society. This is important for the sustainability, competitiveness, and innovation of enterprises and the economy. A company should become socially responsible by following the law, integrating social, environmental, ethical, consumer, and human rights concerns into their business strategy and operations.

This video clip tries to give competent but also entertaining answers to better understand what Corporate Social Responsibility (CSR) is: https://bit.ly/2QZq2Gg

More in general, corporate social responsibility can be defined as "*continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large*[9]".

[9] Fontaine M. (2013), "Corporate Social Responsibility and Sustainability: The New Bottom Line?", International Journal of Business and Social Science, Vol. 4 No. 4.

A proper CSR should provide the following information about the company in respect to these four themes (CSR Assessment Table):

Environment	Social	Ethics	Sustainable Procurement
Operations • Energy Consumption & GHGs • Water • Biodiversity • Local & Accidental Pollution • Materials, Chemicals & Waste **Product** • Product use • Product end of life • Customer Health & Safety • Environmental Services & Advocacy	**Human Resources** • Employee Health & Safety • Working Conditions • Social Dialogue • Career Management & Training **Human Rights** • Child Labor, Forced Labor & Human Trafficking • Diversity, Discrimination & Harassment • External Stakeholder Human Rights	• Corruption • Anti-Competitive Practices • Responsible Information Management	• Supplier Environmental Practices • Supplier Social Practices

Finally, a green social entrepreneur has to respect the **Agenda 2030 and Sustainable Development Goals!**

VI. Case study: Chico Mendes

1. Description

Chico Mendes Onlus is a non-profit fair trade cooperative founded in Milan in 1990. In 2017 it joined the Solidarity Cooperative of Brescia (founded in Rovato in 1987) giving life to the largest fair trade organization in the Italian region of Lombardy.

This cooperative promotes a fairer and more sustainable economy, more ethical and responsible, that respects people and protects the environment. The products marketed are ethical, supportive, sustainable and qualitative. They come from Italy and all over the world, are controlled throughout the production chain and then put on sale in *Altromercato* sales outlets. Indeed, *Chico Mendes Onlus* works with small fair trade producers all over the world and Italian

social economy companies that they select and periodically follow according to the rules established by *Equo Garanito*, the Italian General Assembly of Fair Trade and Solidarity.

Social aspect? Direct communication among producers, traders, distributors, Fairtrade Labelling Organisations International (FLO) and companies; dialogue, transparency, equity and respect, including the insertion of vulnerable people into the labour market (fair trade chain).

Environmental aspect? Low environmental impact, it is preferred the biological agriculture.

Stakeholders? Direct contact with Italian and international producers (from all the continents) and involvement of municipalities and schools for projects with social impact on the territory (information/dissemination activities).

Direct economic impact:
- Fair price for producers from the South and the North of the planet (it permits commercial reciprocal advantages – from disadvantaged situations to self-sufficient),
- Guarantee of the minimum price for the local producers,
- Fair trade premium to be used for projects of social development by the producers (like schools, infrastructures and hospitals),
- Loan/credit for producers.

Indirect impact on families of producers, community in general.

This project is replicable in any context with similar characteristics. It has to be taken in consideration that it covers many fields of interest, like: food, cosmetics, fashion and second-hand clothes, handcrafts and catering services.

For deeper information see the "social report 2016", especially at page 4 and page 10.

Reference(s): https://www.chicomendes.it/

Extra sources
For more information related to the social entrepreneurship please take a look of this video: https://www.youtube.com/watch?v=1ecKK3S8DOE
https://www.fondazioneslowfood.com/it/cosa-facciamo/i-presidi/ (available in English)
http://www.systemicfooddesign.it

PRACTICAL ACTIVITY

CSR good practices

Pre-requisites	Knowledge of the concepts of Corporate Social Responsibility.
Time	6 hours
Tools	PC, internet connection, word of mouth
Objective(s)	To be able to compare labels, taking in consideration their components.

Instructions

1. Read carefully the module and the definition of CSR. After having understood the concept, make an online research looking for the CSR examples in the food sector.

2. Once you have chosen at least 3 examples of CSR make analysis and comparison using the CSR Assessment Table presented in the content of the module.

The CSR Assessment Table presented 4 areas and for each area different information that CSR should have. Check which of the information mentioned in the CSR Assessment Table are present in your CRS examples and make a comparison between them.

Criteria

List of 3 CSR examples market options including contacts, venues, and characteristics.

Make a list of ten criteria mentioned in the CSR Assessment Table.

After the analysis of the CSR Assessment Table, make a comparison between CSR examples (similarity and di similarity and divergences).

Score: 100%

UNIT 8

FOOD AND CULTURAL HERITAGE

SOCIAL

Food and cultural heritage

18 hours

LEARNING OBJECTIVES

1. To better understand food values and its implications on social and cultural level.
2. To recognize the multiple values of food.
3. To understand the unique characteristics of food and their cultural heritage linked to the identity of the territory.
4. To identify alternative business models (cultural, touristic activities related to food sector) to promote sustainability and local development.

LEARNING ACTIVITIES

THEORETICAL (10 hours)	PRACTICAL (8 hours)
• Reading • Web research • Successful case study	• Europe common meals • Europe quality labels • Foods from the world

I. Introduction

The relationship between food, conviviality and the identity of people within the great culinary traditions has a role in influencing lifestyles, production and economic factors. **Culture can codify the rules for a wise diet** with a complex series of rituals, recipes, regulations and traditions.

The unit travels along the path that has transformed eating into culture and communication, looking into the food tradition and to explore the business opportunity of culinary tourism.

II. The historical, social and cultural importance of food

The main role of food is **to nourish** the body of living organisms: we all need to feed ourselves to survive. But, in addition to satisfying a basic physiological need, food has a fundamental role in the process of **becoming human**: different cultures consider edible different products and elaborate them in different ways, so that gastronomy is often the hallmark of a culture and society, a kind of "language" that helps us understand what we are.

In fact, the social and cultural implications of food are so **profound** that they are at the basis of the birth of the very concept of family and community, which arise when someone voluntarily decides to share with other human beings a food obtained with effort, reinforcing in that way a close bond between them. The evolution of everything that concerns food is representative of the evolution of the societies themselves, with milestones such as the conquest of fire (about 400,000 years ago), the manufacture of flint weapons to hunt large animals or the implementation of agriculture and livestock, around 10,000 B.C., which allowed the emergence of permanent settlements and later the construction of towns and cities.

III. Food and cultural diversity

The FAO[1] talks about the social and cultural factor of the nutrition: "*What one society regards as normal or even highly desirable, however, another society may consider revolting or totally inedible. Animal milk is commonly consumed and liked by many people in Asia, Africa, Europe and the Americas, but in China it is rarely taken. Lobsters, crabs and shrimps are considered delicacies and prized foods by many people in Europe and North America, but are revolting to many people in Africa and Asia, especially those who live far from the sea. The French eat horse meat; the English generally do not. Many people will delightedly consume the flesh of monkeys, snakes, dogs and rats or will eat certain insects, yet many others find these foods most unappealing. Religion may have an important role in forbidding the consumption of certain foods. For example, neither the Muslim nor the Jewish peoples consume pork, and Hindus do not eat beef and are frequently vegetarians*[2]*.*"

All this **diversity** depends on several elements: biological and ecological determinants, cultural, economic, political, religious factors that that have shaped the way in which the human being has eaten from the beginning of time.

[1] Food and Agriculture Organization of the United Nations
[2] Latham M.C. (1997). "Human nutrition in the developing world", *Food & Agriculture Org*, n°29, Rome.

To learn more about the nutritional advantages of traditional eating habits or why certain food taboos were established, it is highly recommended to read the aforementioned FAO article[3].

Some elements of comparison...

In **Asia**, the main diet consists of starches (wheat and rice flour and legumes), vegetables (bamboo, lotus roots and soya), meat, fish and eggs, vegetable oils (sesame and soya) and drinks such as rice tea and alcohol. Fruits and dairy products are in the minority and desserts are often taken at tea time.

In **Africa**, food is mainly composed of starchy foods (rice cereals, semolina, millet), vegetables (manioc leaves, okra, tomatoes, peppers), meat, fish and eggs (beef, lamb, pork depending on religion and on the continent; fresh or smoked fish on the coast), groundnut and palm oil and drinks like sweet tea, soluble coffee, sodas and alcohol. Fruits and dairy products are rarely consumed. Desserts are mainly found in cities.

In **South America**, there are starches (rice, quinoa, legumes, potatoes), vegetables (tomatoes, peppers, peppers, avocado), meat, fish and eggs (chicken, beef, pork and on the continent and grilled fish and seafood on the coasts) and drinks such as beer, sodas, fruit juices and alcohol. The fruits are varied (fresh or dry) and eaten daily.

In **North America**, food is plentiful (products are in high quantities), fast food is omnipresent and constitutes a large part of the meals. There is a wide variety of food products: vegetables, fruits, starches, etc., but North American eating habits are characterized by 4 things:

- Fast food: hamburger, hot dog, french fries, soda and very sweet pastries.
- The influence of the whole world through their immigration: Italian, Irish, Asian and Hispanic.
- Industrially processed products.
- A new trend for a particular social class: "super nutrition" closely linked to health and well-being with a high nutritional density.

In **Europe**, there are significant disparities between North-Central, South and East Europe. But in general, food is characterized by several trends: a balanced diet, junk food and world cuisine. In the East, the diet is richer in starches and smoked products. In the South, Mediterranean cuisine focuses on olive oil, fresh fish, vegetables and fruit. At the Centre, the dominance is French and the food is varied and gastronomic.

IV. Tradition and industrialization of food production and consumption

The availability of food is critical for the human being; hence, in addition to innovating in food production techniques, great efforts have also been made to conserve food with methods such as salting, smoking or drying, among others: conservation techniques that allow preserve food produced in large quantities to consume them later.

On the other hand, the ecological conditions that allow producing and preserving certain foods instead of others depending on the geographical location of a specific human community, have given rise to diets and specific recipes that are an important cultural identity sign. Perhaps the Mediterranean diet, which in 2013 entered in the Representative List of the Intangible Cultural

[3] Latham M.C. (1997). "Human nutrition in the developing world", *Food & Agriculture Org*, n°29, Rome.

Heritage of Humanity of UNESCO[4], is the most characteristic example of how food, through gastronomy, become a fundamental bridge between popular and institutionalized culture.

In traditional diets and recipes there is a close relationship between food, local production, temporality (availability depending on the time of the year) and conservation methods for subsequent periods of scarcity. Instead, current production and consumption habits have changed radically after millennia in which people prepared directly - and often even produced - the food they consumed. The Industrial Revolution modified the patterns of production through the introduction of mechanization, the widespread use of pesticides, herbicides, antibiotics, growth hormones. Undoubtedly this has increased the production volumes but with possible effects on health and on the planet that only recently have begun to be questioned.

Revolutionary conservation processes such as pasteurization or deep-freezing have also appeared, relegating other traditional conservation techniques to minority use.

The **agri-food industry** has grown enormously, filling our refrigerators with ultra-processed foods (the so-called "junk food") and making increasingly evident the **contradictions** that an unsustainable production model entails: the production capacity has exploded and tons of food are wasted while Hunger is still a pressing problem in many countries. Meanwhile, developed countries face alarming rates of childhood obesity and the variety of indigenous fresh foods available decreases in favour of others produced on a large scale and in countries far away from the place of consumption. These contradictions partly explain the growing interest in recovering techniques of traditional production, elaboration and consumption and the vindication of the geographical and cultural singularity of certain products.

V. Varieties and tradition through the geographical indications: POD, PGI, TSG

Originally, all the processes related to food (from the selection of food to the actual act of eating) depend, among other factors, on the ecological conditions. The diets of human beings were based on the foods of their geographical area.

In 1993, Europe created **three labels** that allowed the manufacturer to certify the traditions and specific qualities of its food and agricultural products. The objective is to help protect and promote products with particular characteristics linked to their geographical origin and their traditions. They are included within the Area of Agriculture and Rural Development of the European Commission, more specifically, within the European Policy of Agricultural Product Quality[5]. They are the following:

- POD: Protected Designation of Origin
- PGI: Protected Geographical Indication
- TSG: Traditional Speciality Guaranteed

The PDO and PGI labels refer to a specific region of origin of the product. They guarantee that production, processing and elaboration are carried out in a precise geographical area with recognized know-how. The TSG label, however, shows a production process or a traditional recipe, but does not refer to an origin. These labels allow consumers to easily recognize these products and rely on "the authenticity" of regional origin and traditional manufacturing. They also give legal protection to producers and are a useful marketing tool both in the EU and in international markets.

[4] UNESCO, (2013), "Patrimonio Cultural Inmaterial, La dieta mediterránea".
[5] European Commission (1993), "Quality Labels".

Through the DOOR system – Database of Origin & Registration[6] – it is possible to find all European products with some type of geographical indication, as well as their current official certification.

In reference to European policies, it is also possible to consult the geographical indication denominations included in the agreements between Europe and non-European countries[7].

If you also wish to consult information on geographical indications worldwide, the following sources may be very useful:
- WIPO -World Intellectual Property Organization-
- oriGIn - Organization for an International Geographical Indications Network-
- Appellations d'Origine Protégée en Europe [AOP Europe]

Finally, CIAT -International Centre for Tropical Agriculture- provides a series of interactive online maps to obtain information about where the food we consume globally comes from[8].

VI. Gastronomy and tourism: opportunities for sustainable local development

As it has been shown previously, the agri-food sector (food production, its treatment, preparation, conservation, consumption, etc.) is a powerful tool to enhance the identity of the territories and, at the same time, generate economic development throughout the value chain. Part of this economic development comes from the hand of visitors eager to eat as the local community does, sharing traditions and acquiring authentic knowledge through multiple local resources, such as the landscape, cultural heritage (tangible and intangible) or the natural heritage, among others.

These needs of visitors and tourists result in **economic opportunities** in the agri-food sector and more in general throughout the territory, through the creation of initiatives and activities linked to food. Thus, the food cycle linked to tourism gives way to the development of multiple strategies and activities depending on the possibilities of the destination territory and the needs of the demand[9].

Numerous concepts define the great heterogeneity of types of tourism linked to the agri-food sector in the territories. The most representative ones would be:
- Agri-Food Tourism, example for Spain
- Gastronomic Tourism
- Agrotourism

It is also worth mentioning, for its founding values and its worldwide expansion, the movement called Slow Food.

To expand information and have a global vision on tourism linked to the agri-food sector please see Hall *et al*[10].

The responsibility of travellers in social and environmental matters is growing[11] the great challenges faced by the planet Earth make concepts such as sustainability, authenticity, fair trade or "Km 0 food" have increased relevance in tourists' decisions. All these concepts show the way

[6] European Commission, DOOR, "Agriculture and Rural Development".
[7] European Commission (1993), "Quality Labels".
[8] CIAT, "Where our food cops came from".
[9] Vanhove, N. (2017). *The Economics of Tourism Destinations: Theory and Practice*. Routledge.
[10] Hall, C. M., Sharples, L., Mitchell, R., Macionis, N., & Cambourne, B., (2004), *Food tourism around the world*, Routledge.
[11] Center for Responsible Travel (2017), "The Case for Responsible Travel: Trends & Statistics".

forward in terms of business development, entrepreneurship, creation of initiatives and implementation of strategies at the territorial level.

For deeper information: https://bit.ly/2PrGL0T and https://bit.ly/2a7FXg2

Thus, the key to success will be, to a large extent, to converge territorial needs with the needs expressed by tourists. Taking into account that the territory, its people and resources are the main attraction, innovation will be determined by the level and quality of the tourist experience that is achieved without losing the very essence and the authentic values of the tourist destination[12].

VII.Case study: TerriuS, Natural Feeling

TerriuS is a social enterprise based in Portugal and founded in 2011. Their activity is based on the discovery of the Mediterranean diet through the establishment of trusted local partnerships, particularly with small producers and industries in the Alentejo region.

TerriuS main activities are the following:

- Purchase and negotiation with small producers.
- Transformation and development of local products into new products of high added value.
- Agricultural consultancy and training for small and young farmers.
- Valorisation of local products, in particular through certifications.
- Involvement with the community through workshops, guided tours for schools and groups, and promotion of regional products.
- Tourism activities based on the sustainable food system.

By pursuing their main goal, that is to say the sustained and the fair commercialization of the excellence from their region, *TerriuS* has succeeded in adding value to the local products, including the recovery of the PDO and PGI certifications based on a local sustained development which promotes the preservation of the natural heritage and the recognition of the region of Alentejo.

TerriuS works with local small producers and industries, and in this way the initiative is contributing both to the local development of the area and to the attraction of young people to the rural context. Indeed, the social impact of the initiative is probably the most relevant. *TerriuS* works with around 30 farmers. They have also recovered 2 old products that nobody was producing (chestnut and acorn flours). This has created new jobs.

The initiative has been awarded several years in recognition of the excellence of its agri-food products.

Reference(s): http://www.terrius.pt/index.php?l=3

[12] Keller, P. (2006). "Innovation and tourism policy", *Innovation and growth in tourism,* p.17-40.

PRACTICAL ACTIVITIES

Europe common meals	
Pre-requisites	Having read and understood the contents of the unit.
Time	4 hours
Tools	Map of Europe, internet access (optional), bibliographical consultation.
Objective(s)	To be aware of how Europe's cultural diversity is also reflected in its gastronomy and eating habits.

Instructions

A. With a trainer:
- Subgroups (from 3 to 4 people) identify and define the 3 most common daily meals in Europe.
- Complete a map of Europe using photos, images etc. as support.
- Each group presents and explains the result of the work done.

B. Without a trainer:
- Choose a region of Europe (North, South, East or West)
- For the chosen European area, look for information, documentation and interesting data in cookbooks, on websites etc. about the characteristics of the 3 most common daily meals in the area.
- Complete a map of Europe using photos, images etc. as support.

Criteria

- Respect for the execution time given for the activity,
- Respect for the guidelines provided,
- Quality of the realization and content of the map,
- Quality of the oral presentation from the point of view of the content, the methodology used, and the understanding of what was presented by of the other groups.

Score: 35%

European quality labels	
Pre-requisites	Having read and understood the contents of the unit.
Time	2 hours
Tools	Possibility of visiting an establishment, photo camera.
Objective(s)	To know the European labels and what their presence is in food establishments.

Instructions

A. With a trainer:
- Single students or subgroups (from 3 to 4 people) visit a supplier (or his web page) or a food distributor and find 3 products that contain a European label.
- Each group presents and explains the result of the work done.

B. Without a trainer:
- Visit a food distributor (large or small surface).
- Identify and photograph 3 different food products (eggs, cheeses, oils, wines, etc.) each of which contains a European label of different quality.

Criteria

- Respect for the execution time given for the activity,
- Respect for the guidelines provided,
- Quality of the oral presentation from the point of view of the content, the methodology used, and the understanding of what was presented by of the other groups.

Score: 35%

Food from the world	
Pre-requisites	Having read and understood the contents of the unit.
Time	2 hours
Tools	Internet access (optional), bibliographical consultation.
Objective(s)	To be aware of how cultural diversity is also reflected in its gastronomy and eating habits.

Instructions

A. With a trainer: single students or subgroups (from 3 to 4 people) identify 5 foods and/or spices used in Europe and their history and origins throughout the 5 continents (America, Europe, Asia, Oceania, and Africa). Each group presents and explains the result of the work done.

B. Without a trainer: search information, documentation, etc. (in cookbooks, on websites and observing their own culture) about 5 foods and/or spices used in Europe and their history and origins throughout the 5 continents (America, Europe, Asia, Oceania, and Africa).

Criteria

- Respect for the execution time given for the activity,
- Respect for the guidelines provided,
- Quality of the oral presentation from the point of view of the content, the methodology used, and the understanding of what was presented by of the others groups.

Score: 30%

Conclusion

The European Union and the world are now facing different challenges to which we all must adapt. Growth, employment, inclusion and sustainable development are the key elements of these transitions. The partners of the European project "Training for Sustainable Food Systems Development" are committed to making these four concepts the core of their two-year project led between Belgium, Spain and Italy.

Policy makers, public authorities, companies, associations and civil society must act together and are the driving force of the transition towards a more inclusive and sustainable society. Participating in this training, cultivating your knowledge of sustainable food, gradually changing your eating habits and moving towards a healthier and respectful of planet's resources diet mean **joining the movement like other thousands of European citizens who have chosen to work for a more sustainable world. Thank you!**

For more information on the project, please contact

marie.schuller@pourlasolidarite.eu
alessia.sebillo@diesis.coop

BIBLIOGRAPHY

Unit 1: Healthy and sustainable diets

Agensia española de consuma, seguridad alimentaria y nutrición [online].

Azzini, E., Maiani, G., Turrini, A., *et al.* (2018), "The health-nutrition dimension: a methodological approach to assess the nutritional sustainability of typical agro-food products and the Mediterranean diet", *Journal of the Science of Food and Agriculture.*

Benton, D. (2015), "Portion size: what we know and what we need to know". *Critical reviews in food science and nutrition*, 55(7), 988-1004.

Contento, I. (2010), *Nutrition Education: Linking Research, Theory, and Practice. Overview of determinants of food choice and dietary change: implications for nutrition education*, Jones and Barlett Publishers: Sudbury, MA.

De Lorgeril M. (2013), "Mediterranean diet and cardiovascular disease: historical perspective and latest evidence", *Current Atherosclerosis Reports,* 15(12, article 370), [online].

EFSA, "Nutrition and health Claims", [online].

EFSAchannel, "Nutrition: dietary reference values", [on Youtube].

EFSAchannel, "What are health claims and how are they assessed?", [on Youtube].

Eufic, [online].

European Commission (2015), "World food consumption patterns – trends and drivers", *EU agricultural markets briefs*, no. 6, June 2015, [online].

European Food Safety Autority, [online].

FAO (2010), "Sustainable diets and biodiversity directions and solutions for policy, research and action", [online].

FAO (2014), "Assessing sustainable diets within the sustainability of Food System", [online].

FAO (2015). "FAO Statistical Pocketbook", Rome, [online].

FAO (2016), "Food and Agriculture. Key to achieving the 2030 Agenda for Sustainable Development", [online].

FAO, [online].

FAO, IFAD, and WFP (2015), "The State of Food Insecurity in the World 2015", *Meeting the 2015 international hunger targets: taking stock of uneven progress*.

Federal public service, Health, Food Chain Safety and Environment, [online].

Gonzalez Fischer C, Garnett T. (2016) *Plates, pyramids, planet Developments in national healthy and sustainable dietary guidelines: a state of play assessment*. Food and Agriculture Organization of the United Nations and The Food Climate Research Network at The University of Oxford.

Harvard School of Public health, "Healthy Eating Plate", [online].

Harvard T.H. Chan, School of public health, "Healthy Eating Plate", [online].

Health Literacy, "Nutrition 2 - Water, Vitamins, Minerals and Fiber", [on Youtube].

Hertwich E. (2010). "Assessing the environmental impacts of consumption and production: priority products and materials". *UNEP/Earthprint*, [online].

Intangible cultural heritage, "Mediterranean diet", [online].

Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione, (2003), "Linee Guida per una sana alimentazione italiana", [online].

Katz D., Meller, S. (2014), "Can We Say What Diet Is Best for Health?", *Annual Review of Public Health*; 35:1, 83-103.

Lang T., Barling D. (2013), *Nutrición y sostenibilidad: un discurso emergente sobre políticas alimentarias*, Procedimientos de la Sociedad de Nutrición, 72 (1).

Meyer, N., & Reguant-Closa, A. (2017), "Eat as If You Could Save the Planet and Win!" Sustainability Integration into Nutrition for Exercise and Sport, *Nutrients*, 9(4), 412.

ProVidMarketing, "Macro Nutrients Explainer Video", [on Youtube].

Ranganathan J., *et al.* (2016), "Shifting Diets for a Sustainable Food Future", *World Research Institute*, [online].

Sabaté J., Soret S. (2014), "Sustainability of plant-based diets: back to the future", Am J Clin Nutr. 100 (suppl): 476S-82S. *American Society for Nutrition*, [online].

Springmann M., Godfray HCJ., Rayner M. & Scarborough P. (2016), "Analysis and valuation of the health and climate change cobenefits of dietary change", *Proceedings of the National Academy of Sciences*, 113(15).

Stayfit4health, "Micro-Nutrients and their importance", [on Youtube].

Swindurn, B., Sacks, G., & Ravussin, E. (2009), "Increased food energy supply is more than sufficient to explain the US epidemic of obesity", *The American journal of clinical nutrition*, 90(6), 1453-1456.

The European consumer organization, [online].

The Feed, "Edible insects: the future of food? I The Feed", [on Youtube].

Tilman, D., & Clark, M. (2014), "Global diets link environmental sustainability and human health", *Nature*, 515(7528), 518.

Train with Kane, "Basic Nutrition and Macro - Nutrients Video Animation by Train With Kane", [on Youtube].

UNESCO, "The Mediterranean diet", [online].

Van Dooren C., Marinussen M., Blonk H. *et al*. (2014), "Exploring dietary guidelines based on ecological and nutritional values: A comparison of six dietary patterns", *Food Policy*, Vol. 44.

World resources institute, [online].

Unit 2: Biodiversity, seasonality and organic food

Adéquations, « Agricultures & alimentations », [online].

CNRS.fr, « Biodiversité : que recouvre ce mot », [online].

Collectif (2019), *Le Petit Larousse illustré*, Paris.

FAO, "Sustainable Food and Agriculture", [online].

Le portail de l'Économie, des Finances, de l'Action et des Comptes publics,, « Conservation des aliments : toutes les techniques », [online].

WWF.be, « Alimentation », [online].

Unit 3: Water and land management food footprints

Barilla Center for Food & Nutrition, "Double Pyramid", [online].

Buchner *& al.* (2012), "Double pyramid: Healthy food for people and sustainable food for the planet", *Barilla Center for food and nutrition*, [online].

Comprehensive assessment of water management in agriculture, "Books: water for food, water for life", [online].

CreativeBeards, "INNOwater - European Water Stewardship", [on Youtube].

Earth overshoot day, "Food", [online].

Earth overshoot day, "I beef up my plant-based diet", [online].

Earth overshoot day, "I'll be a garbage collector for a day", [online].

European Commission, Environment, "Water Scarcity & Droughts in the European Union", [online].

EWP the voice of water, "The European water partnership", [online].

FAO, "AquaMaps", [online].

FAO, "Land & Water", [online].

IIEA1, "Arjen Hoekstra on The Water Footprint of Modern Consumer Society", [on Youtube].

Moovly, "The Ecological Footprint Explained", [on Youtube].

Synergy Files, "Ecological Footprint and Carbon Footprint Explained", [on Youtube].

UN Water, "Monitor and Report", [online].

UN WWAP hosted by UNESCO, "Where is Water? - The Water Rooms #2", [on Youtube].

Water Footprint Network, [online].

WWF, "Living Planet. Report 2016. Risk and resilience in a new area", 2016, [online].

Unit 4: Food loss and food waste

EU Fusion, [online].

European Commission, Food, "Food Waste", [online].

FAO, "Food Loss and Food Waste", [online].

FAO, Policy Support and Governance, "Food Loss and Food Waste", [online].

Food Waste Reduction Alliance, [online].

Morone P., Papendiek F., Tartiu V.E. (Eds) (2017), *Food Waste Reduction and Valorisation - Sustainability Assessment and Policy Analysis*, Springer.

Principato L. (2018), *Food Waste at Consumer Level - A Comprehensive Literature Review*, Springer.

Segre A., Galiani S. (2011), *Transforming Food Waste into a Resource*, RSC Publishing.

Waste Watcher, [online].

Unit 5: Circular economy and resilience

ADEME (2017), « Économie de la fonctionnalité, de quoi parle-t-on », [online].

ADEME, « Économie circulaire », [online].

Aurez V. et Georgeault L. (2016), *Économie circulaire : système économique et finitudes des ressources*, Deboeck supérieur, [online].

Bourguigon D. (2018), "Circular economy package. Four legislative proposals on waste", *European Parliamentary Research Service*, [online].

Cellule environnement, « Qu'est-ce que l'économie circulaire », [online].

Collectivités viables, « Les systèmes alimentaires durables », [online].

Commission européenne (2014), « L'économie circulaire : connecter, créer et conserver la valeur », [online].

Commission européenne (2014), Économie circulaire, économiser les ressources, créer des emplois, L'environnement pour les européens, *Magazine de la direction générale de l'environnement*, [online].

EASAC (2016), *Indicators for a circular economy,* [online].

EPEA Paris, « Qu'est-ce que le cradle to cradle », [online].

Eymeri P. (2015), « L'économie circulaire, moteur du développement durable », *Confrontations Europe*, [online].

Fondation Ellen Max Arthur (2015), "Growth within a circular economy vision for a competitive Europe", [online].

Godard O. (2013), « La science économique face à l'environnement : la « résilience » d'une discipline », *CNRS Éditions*, [online].

IEW, Économie circulaire, définition et principes généraux, [online].

Les Rencontres Responsabilités & Performances (2016), *L'économie circulaire, la nouvelle énergie de l'entreprise* ? Declic, [online].

Oree, « Contexte et enjeux », [online].

Oxfam (2011), « Gouvernance pour un système alimentaire résilient », [online]

Rebaud A-L. (2017), « Économie circulaire et ESS : complémentarités et synergies », *Pour la Solidarité*, [online].

Rebaud A-L. (2017), « Vers une économie circulaire en Europe », *Pour la Solidarité*, [online].

Rousset F. (22 avril 2017), « Le Parlement européen adopte le paquet économie circulaire », *Actu-Environnement*, [online].

Rousset F. (22 mai 2018), « Paquet économie circulaire : les Etats membres ont approuvé le texte », *Actu-Environnement*, [online].

RSEnews (2016), « L'économie circulaire, un nouveau modèle pour l'entreprise », [online].

SYSTEMIQ, Ellen Macarthur Foundation (2017), *Achieving Growth within*, [online].

Unit 6: Local economy and alternative systems

Diesis (2016), "How social enterprises contribute to sustainable food systems", [online].

European Commission (2013), "Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics", *JRC Scientific and Policy Reports*, [online].

European Parliament (2016), "Short food supply chains and local food systems in the EU", *briefing*, [online].

Fair Trade. "Who's got the power? Tackling imbalances in agricultural supply chains", [online].

FAO (2006), "Food security", [online].

FAO (2012), "The State of Food Insecurity in the World", [online].

FAO (2013), "Food security and sovereignty", [online].

FAO (2014), "Developing sustainable food value chains", [online].

Friends of the Earth Europe (2015), "Eating for the farm", [online].

Gava, Oriana & Bartolini, Fabio & Brunori, Gianluca & Galli, Francesca (2014), "Sustainability of local versus global bread supply chains: a literature review", Paper Conference, *Italian Association of Agricultural and Applied Economics*.

Hogan, L. and Thorpe, S. (2009), "Issues in food miles and carbon labelling", Research report 09.18, *Canberra: ABARE*, [online].

La Via Campesina (2003), "Peoples' Food Sovereignty – WTO Out Of Agriculture", [online].

Nicholson C. and Young B. (2012), "The relationship between supermarkets and suppliers: What are the implications for consumers?", *Consumers International and Europe Economics*, [online].

Pretty, J.N., *et al.* (2008), "Multi-year assessment of Unilever's progress towards agricultural sustainability I: indicators, methodology and pilot farm results", *International journal of agricultural sustainability*, 6.1: 37-62.

Pretty, J.N., Lang, T., Morison, J. and Ball, A.S. (2005), "Food miles and farm costs: The full cost of the British food basket", *Food Policy*, 30.1: 1-20.

Renting H., Schermen M., Rossi A. (2012), "Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship", *Int. Jrnl. of Soc. of Agr. & Food*, Vol. 19, No. 3, pp. 289–307.

Richards R. (2016), "Alternative Food Systems: Expectations & Reality", *gradfoodstudies*, Vol. 2 No. 2, [online].

Saunders, F. (2004), "The Sustainability and Social Equity of Alternative Agri-food Systems", *Maaseudun uusi aika*. 12:4, 57-70.

Sumelius, J. & Vesala, K.M. (2005), "Approaches to Social Sustaina-bility in Alternative Food Systems", *Ekologiskt Lantbruk*, n°47, [online].

University of Ghent (2015), "Local urban food policy in relation to the global food sovereignty", *Summary report of the debate International seminar*, Ghent, June 11-12, 2015, [online].

University of Missouri-Columbia (2011), "Availability of local food key to improving food security", *ScienceDaily*, [online].

Unit 7: Ethic and inclusive food business models

Bulsei GL (2014), "Il sale della terra. Cibo e cooperazione verso Expo2015", VIII colloquio scientifico sull'impresa sociale.

Bureau of European Policy Advisors (2011), "Empowering people, driving change: Social innovation in the European Union", [online].

DEFRA (2012), "The role of social enterprises as inspirers of sustainable living".

Di Iacovo, F. (2014), "Agriculture and Social sustainability. In Sustainability of the agri-food system: Strategies and Performances", *Proceedings of the 50th SIDEA Conference*, Lecce, Chiostro dei Domenicani, [online].

Di Iacovo F. (2008), *Agricoltura sociale: quando le campagne coltivano valori*, Franco Angeli, Milano.

European Commission, Social Business Initiative (2011), "Creating a favourable climate for social enterprises, key stakeholders in the social economy and innovation", COM(2011) 682 final, [online].

FAO (2014), "Assessing sustainable diets within the sustainability of Food System", [online].

FAO (2014), "Developing sustainable food value chains : Guiding principles", Rome, [online].

FAO (2016), "Food and Agriculture. Key to achieving the 2030 Agenda for Sustainable Development", [online].

Fontaine M. (2013), "Corporate Social Responsibility and Sustainability: The New Bottom Line?", *International Journal of Business and Social Science*, Vol. 4 No. 4, [online].

Gómez, Barrett, Buck *et al.* (2011), "Research Principles for Developing Country Food Value Chains", *Science*, Vol. 332, Issue 6034, pp. 1154-1155, [online].

OEDC/European Commission (2013), "Policy Brief on Social Entrepreneurship: Entrepreneurial Activities in Europe", [online].

OXFAM (2016), "The journey to sustainable food, a three-year update on the behind the brands campaign", [online].

OXFAM (2018), "Ripe for Change: Ending human suffering in supermarket supply chains", [online].

Oxfam America (2018), "Poverty and Inequality are Ingredients in Supermarket Supply Chains, Even at Socially Conscious Whole Foods", Press release, [online].

Portman M. (1985), *Competitive Advantage: Creating and Sustaining superior Performance*, Free Press, First edition.

Reardon, T., Timmer C.P., Barrett C.B., and Berdegué J. (2003), "The rise of supermarkets in Africa, Asia, and Latin America", *American Journal of Agricultural Economics*, 85(5): 1140–1146.

Sumner J. (2013), "Good food for all: the role of social economy in sustainable food systems", *OISE/University of Toronto*, [online].

Tilman, D. & Clark, M. (2014), "Global diets link environmental sustainability and human health", *Nature*, 515(7528), pp.518–522.

Timmer, C. Peter. (2009), "Do Supermarkets Change the Food Policy Agenda?", *World Development*, Elsevier, vol. 37(11), pages 1812-1819, [online].

United Nations, "Transforming our world: The 2030 agenda for sustainable development", [online].

Zahedi A. & Otterpohl R. (2016), "Towards sustainable development by creation of green social entrepreneur's communities", 12th Global conference on sustainable manufacturing, *ScienceDirect,* [online].

Unit 8: Food and cultural heritage

Center for Responsible Travel (2017), "The Case for Responsible Travel: Trends & Statistics", [online].

CIAT, "Where our food cops came from", [online].

European Commission (1993), "Quality Labels", [online].

European Commission, DOOR, "Agriculture and Rural Development", [online].

European Commission, "Quality Scheme explained", [online].

Hall, C. M., Sharples, L., Mitchell, R., Macionis, N., & Cambourne, B., (2004), *Food tourism around the world*, Routledge.

Keller, P. (2006). "Innovation and tourism policy", *Innovation and growth in tourism,* p.17-40, [online].

Latham M.C. (1997). "Human nutrition in the developing world", *Food & Agriculture Org*, n°29, Rome.

UNESCO, (2013), "Patrimonio Cultural Inmaterial, La dieta mediterránea", [online].

Vanhove, N. (2017). *The Economics of Tourism Destinations: Theory and Practice*. Routledge.

WIPO, "World Intellectual Property Organization", *Geographical Indications*, [online].

TRAINING FOR SUSTAINABLE FOOD SYSTEMS DEVELOPMENT

www.trainingforfood.eu
#Training4Food

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