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SSPICEIT!
Sustainability Skills Program for International Catering operators and Entrepreneurs through Integrated Training

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Città metropolitana di Roma Capitale · POUR LA SOLIDARITÉ European think & do tank · CIPFP CAMINO DE SANTIAGO ESCUELA DE HOSTELERÍA & TURISMO DE LA RIOJA · Escola Profissional AMAR TERRA VERDE · AKMI · WORK'S · iED · CAPITALE LAVORO

Submodule n°4: Investigating the Intersections of Food and the Environment

THEMATIC AREA	**Relationships between food, people, and environment**
SUB AREA OF REFERENCE	*Sustainable Food*
HOURS	5

LEARNING OBJECTIVES
1. **Understand** the environmental impact of food. 2. **Comprehend** the concept of sustainable food.

LEARNING ACTIVITIES	
Theoretical	**Practical**
✓ Reading ✓ Web research ✓ Case study	✓ Researching the causes, mechanisms, and consequences of contemporary environmental issues

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CONTENT

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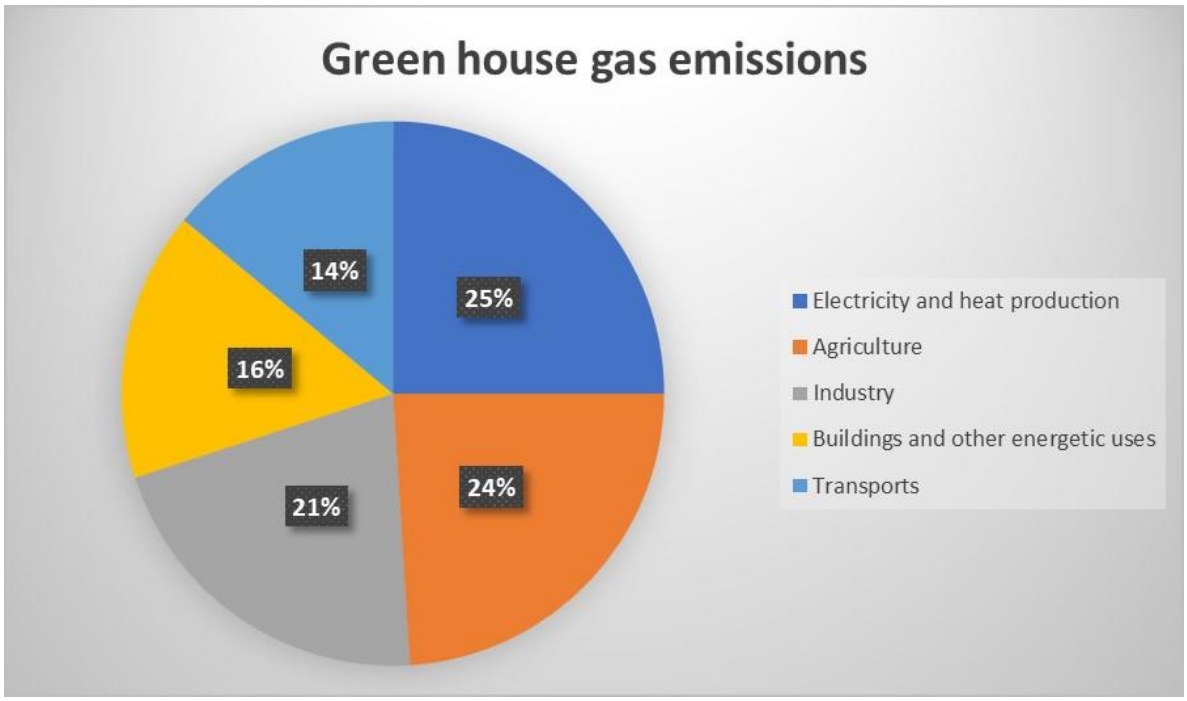
SUBMODULE 4: Investigating the Intersections of Food and the Environment

1. Introduction: The ecological footprint of industrial food

Two studies "*Enhancing NDCS for food systems*", published in August 2023 by WWF, UNEP and Climate Focus, and "*Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets*"[1] published in November 2022 by the journal Science have reached the same conclusion: the food system – that refers to all the activities linked to products growing, harvesting, processing, packaging, transport, sale, consumption and finally to the management of produces waste – significantly pollutes the planet.

According to the first of these two studies, the agriculture and the use of soil and forests are responsible for about **24% of the global greenhouse gas emissions** – against 25% generated by electricity and heat production, 21% by the industry, 14% by the transports and 16% by the buildings and other energetic uses (IPCC, 2014).



[1] Clark, M. A., Springmann, M., Hill, J., Tilman, D., & Fraser, H. (2020). Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. Science, 370(6517), 705-708. Retrieved from: https://www.science.org/doi/full/10.1126/science.aba7357

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Fig. 5 – Greenhouse gas emissions

However, if we consider the *entire* food system, so including the emissions arising from agriculture and use of soil, transport, packaging, processing, detail sale and consumption, including food wastage and generated waste, it is responsible for **from 21% to 37%** of the human-caused greenhouse gas emissions each year. These figures raise the question to know why the food system have such an impact on the environment.

Intensive Agriculture is a system of agricultural intensification and mechanization aimed at maximizing land yields through various means, such as the extensive use of pesticides and chemical fertilizers. This intensification and mechanization have also been applied to livestock farming and aquaculture, where animals are raised indoors and in special tanks. This is what we refer to as industrial agriculture and farming.

While these industrial agricultural practices have allowed for increased food production at lower costs, thereby helping to feed a growing human population (while preventing the need to convert more land into farmland), they have become one of the largest global environmental threats due to factors such as:

- **The use of chemicals**: Conventional agriculture relies heavily on chemical pesticides and synthetic fertilizers, which can leach into water sources, degrade soil health by depleting organic matter, and have detrimental effects on ecosystems, including non-target species, pollinators, and soil organisms.

- **Land Use and Deforestation**: Conventional agriculture often involves large-scale monocultures, which require extensive land clearing. This contributes to deforestation and habitat destruction, leading to the loss of biodiversity and disruption of ecosystems. The conversion of natural habitats to agricultural land also reduces the planet's capacity to absorb carbon dioxide, exacerbating climate change.

- **Greenhouse Gas Emissions**: Conventional food production contributes to greenhouse gas emissions, primarily through the use of synthetic fertilizers, livestock emissions, and energy-intensive machinery. Furthermore, with economic globalization, many food products involve assembly that spans multiple countries and tens of thousands of kilometers of transportation. Finally, food

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waste in landfills generates methane, a potent greenhouse gas.

- **Genetic Diversity Loss**: Conventional agriculture often favors a limited number of high-yielding crop varieties, leading to a loss of genetic diversity, which impoverishes local producers and weakens biodiversity.

- **Food waste**: Intensive production depletes agricultural land. Food produced and not consumed occupies 30% of cultivated land on its own. Food waste can be observed at all stages of the food chain, from production to consumption.

Moreover, there is an impact on human health: Through the industrialization of staple products like flour, sugar, oils (by removing fiber, wheat germ, heating oils, etc.), products become nutritionally depleted, resulting in decreased vitamin and fatty acid content and the presence of toxic substances.

The impact of all these elements on the environment is calculated using the concept of "environmental footprint," which we will explore more in depth in Module 3 of this course.

In summary, intensive agriculture kills beneficial plants and insects, degrades, and depletes the soils it relies on, leads to the runoff of polluted water, increases the risk of flooding, causes genetic erosion of crops and species worldwide, reduces biodiversity, destroys natural habitats, and significantly contributes to the accumulation of greenhouse gases in the atmosphere. These environmental impacts underscore the need for more sustainable and regenerative approaches to food production that prioritize biodiversity conservation, soil health, water conservation, reduced chemical inputs, and lower carbon emissions. Transitioning to more sustainable agricultural practices can help mitigate these environmental impacts and promote a healthier and more resilient food system. As we will see in the following sections, organic farming and sustainable food systems constitute potential solutions to the issues raised by industrial farming.

2. What is organic food?

The term "organic" refers to a food or product that comes from organic farming. The mode of agricultural production is natural and does not use any synthetic chemicals,

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such as pesticides, chemical herbicides, artificial fertilizers, or growth hormones. According to the FAO, organic farming contributes to food security, mitigates the effects of climate change-related issues, protects biodiversity and sustainable food, enhances nutritional sufficiency, and promotes rural development by generating income and employment in less-developed areas.

Organic farming is closely related to agricultural policies that determine choices regarding exports and imports, hence economic, environmental, and social objectives. However, from a social perspective, organic food is not as precise as sustainable food.

Fig. 6 – EU organic logo

From a commercial perspective, for a product to be considered "organic," it must be certified by an official label. However, a product can be certified organic even if it comes from a distant region of the world and has travelled thousands of kilometers using **polluting transportation methods**. Labelling also does not guarantee the **working conditions** of the labour force. Therefore, having an "organic origin" label does not necessarily ensure that its origin can be considered sustainable.

3. What is a sustainable food system?

According to the FAO[2], a sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social, and

[2] Food and Agriculture Organization of the United Nations. (2018). *Sustainable food systems: Concept and framework*. Retrieved from https://www.fao.org/3/ca2079en/CA2079EN.pdf, p.1.

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environmental bases to generate food security and nutrition for future generations are not compromised. This means that:

- A sustainable food system is profitable throughout (*economic sustainability*).
- A sustainable food system has broad-based benefits for society (*social sustainability*); and
- A sustainable food system has a positive or neutral impact on the natural environment (*environmental sustainability*)

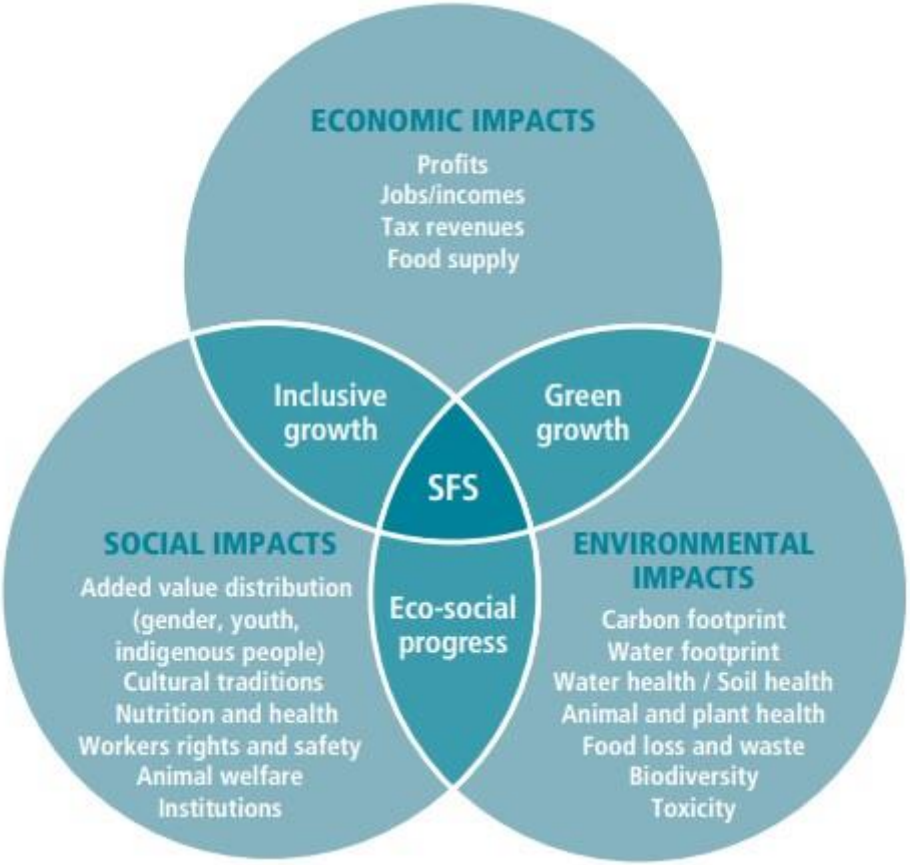

Fig. 7 – Sustainable food system[3]

[3] Food and Agriculture Organization of the United Nations. (2018). *Sustainable food systems: Concept and framework*. Retrieved from https://www.fao.org/3/ca2079en/CA2079EN.pdf, p.4.

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Moving towards a sustainable food system implies reorganizing the food cycle into a more circular one:

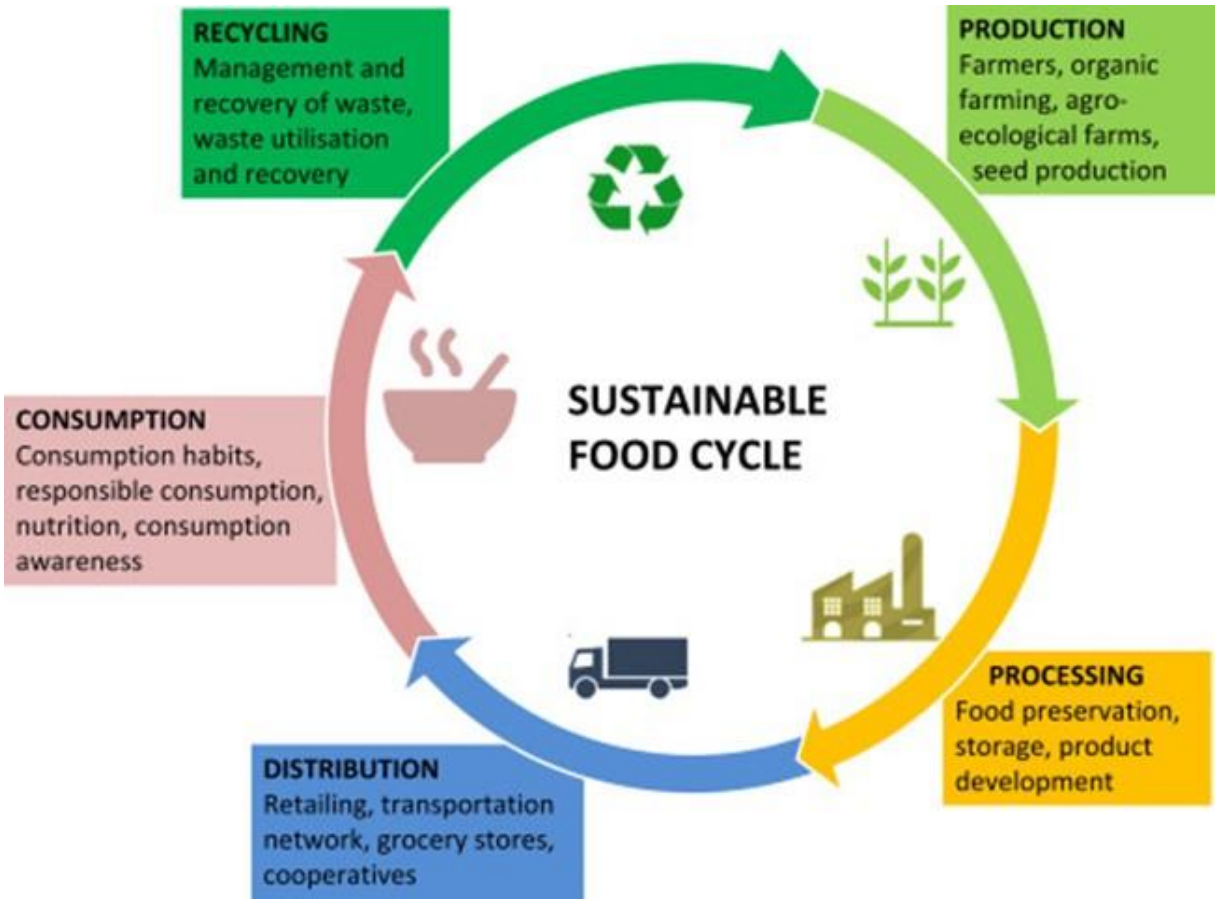

Fig. 8 – Sustainable food cycle

These changes can begin at the scale of small businesses. In fact, adopting sustainable food practices can be beneficial for the economic growth of such businesses. We will delve deeper into the philosophy of the circular economy in Module 2 of this training.

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4. Why should we adopt sustainable food practices in the food industry?

Overall, sustainable food practices are vital for businesses in the food industry to meet consumer expectations, comply with regulations, achieve cost savings, build resilience, drive innovation, ensure long-term viability, and engage stakeholders. By embracing sustainability, businesses can create value not only for themselves but also for the environment and society as a whole.

- **Consumer Demand**: There is a growing demand for sustainable and environmentally friendly products among consumers. By adopting sustainable food practices, businesses can meet this demand, attract environmentally conscious customers, and enhance their brand image and reputation in a rapidly changing business landscape.

- **Regulatory Compliance**: Governments and regulatory bodies are implementing stricter regulations and standards related to sustainability and environmental impact.

- **Cost Savings**: Implementing sustainable food practices can lead to cost savings in the long run. Energy-efficient equipment, waste reduction measures, and sustainable sourcing can help lower operational costs, improve efficiency, and reduce waste disposal expenses.

- **Supply Chain Resilience**: Sustainable food practices promote stronger and more resilient supply chains. By diversifying sourcing, supporting local and regional producers, and prioritizing sustainable agriculture, businesses can reduce dependence on fragile global supply chains and enhance their ability to withstand disruptions.

- **Innovation and Competitive Advantage**: Embracing sustainable food practices encourages businesses to seek innovative solutions and adopt cutting-edge technologies. This drive for innovation can lead to the development of new products, improved processes, and more efficient operations.

- **Stakeholder Engagement and Collaboration**: Embracing sustainable food practices allows businesses to engage with stakeholders, including suppliers, customers, employees, and communities. This engagement can lead to new business opportunities, increased customer loyalty, and stronger relationships with stakeholders.

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In the rest of our training, we will explore various ways to implement sustainable food practices in a business. For the remainder of this chapter, we will focus on the individual scale, specifically the contents of our plates, through the concept of a sustainable diet. Indeed, beyond the societal dimension, our individual dietary habits can also have an impact on our environmental footprint.

Exercise : *Creating a Sustainability Charter for a Restaurant or Café*	
Pre-requisites	Understanding of sustainability principles in the food industry. Knowledge of environmental and social impacts of food systems.
Time	2 hours
Tools	Paper, pens Template for the sustainability charter (optional)
Objectives	1. To create a comprehensive sustainability charter that promotes responsible food practices in a restaurant or café setting. 2. To understand and apply sustainable practices 3. To work collaboratively in a group to draft, discuss, and present sustainable solutions for the food service industry.

Instructions

1. **Group Formation:**

You will work in group or alone (depending of the instruction of your teacher). Each group (or student) will be tasked with creating a sustainability charter for a restaurant or café.

2. **Charter Creation:**

Each group (or student) will look up on the Internet to find an example of a sustainable restaurant or café. Then, based on the informations you will find, you will create a sustainability charter that outlines specific actions which promote sustainability within the restaurant or café. Below you will find an example of a sustainability charter to inspire you.

3. **Presentation and Discussion:**

After creating their sustainability charters, each group will present their charter to the class.

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Example : *A Sustainability Charter for "The Green Kebab"*

The Green Kebab

At "The Green Kebab", we are dedicated to blending delicious, authentic flavors with a commitment to protecting our planet. This charter highlights the five key principles that guide our sustainability efforts.

1. Local and Ethical Ingredients

We source our meats and vegetables from local, sustainable farms that uphold high standards of animal welfare and environmentally friendly practices.

2. Zero-Waste Mindset

Our kitchen operates with a zero-waste philosophy. Leftover ingredients are repurposed creatively, and all organic waste is composted. We also encourage customers to take only what they can eat to reduce food waste.

3. Sustainable Packaging

Our kebabs and sides are served in biodegradable or recyclable packaging. We offer discounts to customers who bring their own reusable containers.

4. Energy Efficiency

Our cooking processes prioritize energy-efficient equipment and techniques. We also strive to minimize water use during food preparation and cleaning.

5. Community and Education

We engage with our community to promote sustainable eating habits through workshops and collaborations with local organizations. We're committed to sharing the benefits of conscious consumerism with our customers and staff.

At "The Green Kebab", every bite is a step toward a greener future. Thank you for supporting our mission to make fast food sustainable!

Signed,

The Green Kebab Team

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CASE STUDY

Host table Foresto

Fig. 12 – Picture of the FORESTO restaurant

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 neighbourhood restaurant offering menus and products using essentially food of short circuits to promote agriculture, reasonable and sustainable farming, and local producers.

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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.

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Fig. 13 – Interior of the FORESTO restaurant.

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:

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- 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.

Website: http://foret-asbl.be/

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EXTRAS

1. Further readings

General documents:

- ✓ What is Climate change? By the United Nations – a nice introduction about the topic of climate change: https://www.un.org/en/climatechange/what-is-climate-change
- ✓ "The State of Food Security and Nutrition in the World 2023" by the Food and Agriculture organization of the United Nations – an update on global progress towards the targets of ending hunger and all forms of malnutrition: https://www.fao.org/3/CC3017EN/online/CC3017EN.html
- ✓ "Man, and the Environment: A General Perspective" by Nico Stehr – An history of the changing relations between human and nature, and man perception of it.
- ✓ "An inconvenient truth" by Davis Guggenheim - a documentary film exposing that sensibilize on pollution and climate change caused by man.
- ✓ "Les algues vertes (The Green Algae)" by Pierre Jolivet – a french film showing the repercussions of industrialized agriculture and pesticides/insecticides in Britanny.
- ✓ "What is Climate Change? | Start Here" by Al Jazeera English, a seven-minute YouTube video explaining the basics of climate change: https://www.youtube.com/watch?v=dcBXmj1nMTQ

Non-profit organizations:

- ✓ Greenpeace: Provide articles on climate change, human damages to the environment. Fight against ecosystems destruction, fossil energies across the world: https://www.greenpeace.org/international/
- ✓ Oxfam International: Produce resources on climate change and disasters and food inequalities. Promote social justice: https://www.oxfam.org/en
- ✓ Friends of the Earth Europe: fighting for social and environmental justice and an equal access to found while preventing ecological disasters: https://friendsoftheearth.eu/
- ✓ Food and Agriculture organization of the United Nations: A specialized agency of the United Nations that leads international efforts to defeat hunger: https://www.fao.org/home/en

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Documentaries:

- ✓ Food Security - a Growing Dilemma (documentary): a 30 min documentary that address the future of an agriculture, food production along with sustainability and sovereignty concerns: https://www.youtube.com/watch?v=wu7PjKawjwI
- ✓ Human Impact on the Environment : A playlist of short videos questioning the consequences of the human activity on our planet: https://www.youtube.com/playlist?list=PLL4ByIaW73wgSuZyfdxJUnhhOjDanFteu

    - Other videos from National Geographic about climate change can be found there: https://education.nationalgeographic.org/resource/resource-library-climate-change/

2. Glossary

FAO: The Food and Agriculture Organization of the United Nations (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger and improve nutrition and food security.

Green Deal: The European Green Deal, approved in 2020, is a set of policy initiatives by the European Commission with the overarching aim of making the European Union (EU) climate neutral in 2050.

HLPE: HLPE stands for the High-Level Panel of Experts on Food Security and Nutrition, which is a scientific panel established by the United Nations to provide guidance and policy recommendations on food security and nutrition issues.

UN: The United Nations (UN) is an intergovernmental organization whose stated purposes are to maintain international peace and security, develop friendly relations among nations, achieve international cooperation, and serve as a center for harmonizing the actions of nations.

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WWF: The Worldwide Fund for Nature (WWF) is a Swiss-based international non-governmental organization founded in 1961 that works in the field of wilderness preservation and the reduction of human impact on the environment.

3. Acknowledgments

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