# THESIS APPROVAL

I, _____Massimo De Marchi_____, as supervisor of the student

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Agroecology: how it can contribute to the fight against climate change and the achievement of a fairer and more just society. A case study on Campi Aperti, a peasant association on the territory of Bologna and Emilia-Romagna___.

Place _Padova_, Date__27/11/2022__

Signature_____

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International Master's Degree in Sustainable Territorial Development

**Master Thesis**

# Agroecology: how it can contribute to the fight against climate change and the achievement of a fairer and more just society. A case study on Campi Aperti, a peasant association on the territory of Bologna and Emilia-Romagna.

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*This work of thesis is dedicated to the environmental activists all around the world, including the Indigenous ones, that lost their lives or mysteriously disappeared because of the cause they were fighting for.*

*Ecology without class struggle is just gardening.*
*Chico Mendes*

This thesis is the result of the International Joint Master's degree in Sustainable Territorial Development (STeDe). This program is offered by a consortium made up of the following universities: Università degli Studi di Padova (UNIPD, Italy), Katholieke Universiteit Leuven (KU Leuven, Belgium), Université Paris 1: Panthéon-Sorbonne (Paris 1, France), Universidade Católica Dom Bosco (UCDB, Brazil), the University of Johannesburg (South Africa) and Université Joseph Ki Zerbo de Ouagadougou (Burkina Faso). This program had a duration of 24 months. The course started at UNIPD in Italy, followed by a semester at KU Leuven in Belgium, another semester at Paris 1 in France, and a semester in Italy to complete the thesis.

## Abstract

As Hoesung Lee, president of the IPCC (Intergovernmental Panel on Climate Change) declared, it is urgent, now more than ever, to address the climate crisis. In this, the global food system, composed by production, distribution, consumption and disposal of food, is the third industry responsible for the global anthropogenic greenhouse gas emissions. Only in 2015 it amounted to 34% of the total GHG emissions (Crippa, et al., 2021).

Since the food system weighs heavily on the precarious ecosystem balance of the planet, it is necessary to invest human energy and economical resources on the alternatives to the traditional agricultural system.

In this sense, the purpose of this work was to show that a transition toward an agroecological system is not only important and necessary for the fight against climate change, but it is also possible. It was possible to realize the analysis through the study of the case of Campi Aperti, an Italian peasant association that operates in the territory of Bologna and Emilia-Romagna. The research questions that raised were "To what extent is Campi Aperti contributing to the agroecological transition in the territory of Bologna and Emilia-Romagna? And in this sense, at what level are producers and co-producers involved?". To realize the work of thesis, a qualitative approach was used, through fieldwork, participant observation and 14 semi-structured interviews. From them, it emerged that an agroecological transition is happening on the territory of Bologna and Emilia-Romagna, especially through a great involvement of the local population.

**Résumé**

Comme l'a déclaré Hoesung Lee, président du GIEC (Groupe d'experts intergouvernemental sur l'évolution du climat), il est urgent, aujourd'hui plus que jamais, de s'attaquer à la crise climatique.

En cela, le système alimentaire mondial, composé de la production, de la distribution, de la consommation et de l'élimination des aliments, est la troisième industrie responsable des émissions mondiales de gaz à effet de serre anthropiques. En 2015 seulement, il représentait 34 % des émissions totales de GES (Crippa, et al., 2021).

Puisque le système alimentaire pèse lourdement sur l'équilibre précaire des écosystèmes de la planète, il est nécessaire d'investir de l'énergie humaine et des ressources économiques sur les alternatives au système agricole traditionnel.

En ce sens, le but de ce travail était de montrer qu'une transition vers un système agroécologique est non seulement importante et nécessaire pour la lutte contre le changement climatique, mais qu'elle est également possible. L'analyse a pu être réalisée à travers l'étude du cas de Campi Aperti, une association de paysans italienne qui opère sur le territoire de Bologna et d'Emilia-Romagna. Les questions de recherche soulevées étaient les suivantes : "Dans quelle mesure Campi Aperti contribue-t-il à la transition agroécologique dans le territoire de Bologna et d'Emilia-Romagna? Et dans ce sens, à quel niveau sont impliqués les producteurs et les co-producteurs?". Pour réaliser le travail de thèse, une approche qualitative a été utilisée, à travers un travail de terrain, une observation participante et 14 entretiens semi-structurés. Il en ressort qu'une transition agroécologique est en train de se produire sur le territoire de Bologna et d'Emilia-Romagna, notamment grâce à une grande implication de la population locale.

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## Introduction

Climate change is undoubtedly one of the most debated topics at the moment. According to scientists, we have entered a new geological era called *Anthropocene*, in which human activities have a strong impact on the functioning of the Earth system, caused by greenhouse gas emissions (Campbell et al., 2017). The impacts of climate change have multiple forms: ice melting, which brings to the rise of the sea-level, effects on wildlife and their habitat, migration of species, heat waves, the increase of extreme events, and many more (National Geographic, 2022). Every five or six years, the Intergovernmental Panel on Climate Change (IPCC) issues a report about the state of climate change around the world (IPCC, 2022). In one of its last reports, the one of 2021, the IPCC has drafted three possible scenarios depending on what we do today and in the next years: at 1.5°C global warming, at 2°C global warming and at 4°C global warming. They built the projections basing the simulations on the 1850-1900 baseline (Seneviratne et al., 2021). It appears that it is very possible that we will meet a global warming of 2°C, which will lead us to more frequent and more extremes heat waves on land and longer warm periods (Seneviratne et al., 2021). The climate crisis is having serious impacts on the food system, since agriculture is showing its high vulnerability. On the other side, our current system of food production is consistently contributing to global warming (The World Bank, 2021). Not only 1/3 of the food produced globally is wasted, but the agricultural sector is contributing between the 19% and the 29% of the total Greenhouse Gas emissions (The World Bank, 2021). In 2015, the United Nations adopted the so-called *Sustainable Development Goals*, 17 objectives to reach within 2030 "to end poverty, to protect the planet and to ensure that by 2030 all people enjoy peace and prosperity" (UNDP, 2022). The second goal is ensuring global food security. That is because of multiple reasons: first of all, too many people still suffer of undernourishment. While in 2019 821 million people were estimated to be undernourished (Mbow, et al., 2019), more than 1 out of 8 adults are estimated to be obese (UNDP, 2022). These data show an imbalance in the way people access food. And still, the global food system is the third industry responsible for the global anthropogenic greenhouse gas emissions (Crippa et al., 2021). In order to satisfy the food demand trying, at the same time, to achieve the goal of zero hunger without keeping destroying the planet, it is necessary to make changes in the food system. In this sense, one of the possible walkable roads is agroecology, which can shortly be defined as the ecology of the food system (HLPE, 2019). The aim of this thesis is to understand what it is, how it works and if it can really help in the transition toward a more sustainable food system. The subject of the investigation was the Italian association of Campi Aperti, composed of around 160 producers on the territory of Bologna and of Emilia-Romagna. Using qualitative research, consisting of 6 interviews to the producers and of 8 to the consumers, I started from the following question: to what extent is Campi Aperti contributing to the agroecological

transition in the territory of Bologna and Emilia-Romagna? And in this sense, at what level are producers and consumers involved?

The thesis is structured in six chapters: the first one introduces the theoretical frame and the literature review. In particular, it will be divided in four paragraphs: the first one investigates the definition and the right to food and its importance for the research, the second one the current global state of nutrition, the third paragraph will analyze the impacts of conventional agriculture, and the last one about the trends and the challenges for the future of agriculture. In the second chapter the topic of agroecology will be introduced, together with the one of food sovereignty. Then, the thirteen elements that compose agroecology will be analyzed and some examples of agroecological practices around the world will be considered. The third chapter will introduce the methodology used for the research. Then, the fourth chapter will focus on the case study, meaning the Italian peasant association of Campi Aperti. In the fifth chapter the results obtained from the used methodology, namely the fieldwork, the participant observation and the qualitative semi-structured interviews, will be analyzed. Finally, the sixth chapter will present the discussion, namely the evaluation of the findings, the explanation and interpretation of the results, the strengths and weaknesses of Campi Aperti in its transition towards an agroecological territory.

## Chapter 1. Theoretical frame and literature review.

This first chapter will start by giving an overview on the right to food and on the concept of food security: what they are, why they are important for the research and what the general literature says about them. The second paragraph, as a consequence of the first one, will describe, with the help of some data and graphs, the current situation of nutrition and of food security in the world. In the following paragraph, there will be a general overview of the impacts of conventional agriculture, not only on the environment but also on the society, two elements that end up generating undernourished women, men and children and in general situations of food insecurity. Finally, the fourth paragraph will describe the trends and the challenges of the future regarding agriculture. This last section will also aim to be a bridge for the second chapter.

### 1.1 The right to food and the concept of food security. Describing what they are and why they are so important for the research.

As seen in the introduction, the second goal of the United Nations system of Sustainable Development Goals is to ensure global food security by 2030 (UNDP, 2022). However, despite the decreasing percentage of undernourishment from 14.8% in 2000 to 10.7% in 2015, in 2016 the number of undernourished people in the world was estimated to have raised to 815 million from the 800 millions of 2015 (Peng & Berry, 2019). Besides, more than one billion people are undernourished, over two billion people have a deficiency of essential vitamins and minerals in their food and almost six million children die every year from malnutrition or related diseases (OHCHR, 2010).

The right to food is defined by the OHCHR agency, the Office for the High Commissioner of Human Rights, in the following way: “All human beings, regardless of their race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status have the right to adequate food and the right to be free from hunger.” (OHCHR, 2010). To arrive at this global definition, there have been some historical developments that will now be analyzed.

The entrance of the right to food on the international scene arrived before the concept of food security, which was then a natural consequence of it. The very first appearance of the right to food as a human right happened in 1948, when the United Nations adopted the Universal Declaration of Human Rights (UDHR) (FAO, 2019). However, the main problem of the UDHR, was that it did not appear as mandatory for governments (Van Esterik, 1999). In 1976, another important document was adopted: the International Covenant on Economic, Social and Cultural Rights (ICESCR), which under

the Article 11 specifies the right to adequate food and the right to freedom against hunger (FAO, 2019). In parallel to the birth of the right to food concept, another one took place: the concept of food security. It is a younger concept, since it was developed in 1970 (Mechlem, 2004). Initially, its aim was the one of ensuring food availability and the price stability of basic food: that is because the 1970s were years of crisis, in which the prices of agricultural commodities were very volatile (Peng & Berry, 2019). At the beginning of its existence, in 1974 at the World Food Conference, food security was defined as the "availability at all times of adequate world food supplies of basic foodstuffs… to sustain a steady expansion of food consumption… and to offset fluctuations in production and prices" (Mechlem, 2004). However, it was not enough. In order to talk about food security, it has to be considered also the context in which the individual is placed, which means especially his or her household. A redefinition of the concept of food security arrived in 1996, thanks to the World Food Summit held in 1996. Here, food security was redefined as achievable "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (Peng & Berry, 2019). Thirteen years later, again at the World Food Summit, another development in the concept of food security was introduced to better elaborate it: the four pillars of food security, i.e., availability, accessibility, utilization and stability (Peng & Berry, 2019). However, depending on the context and the country they are placed in, each one of them takes on a different significance: it means that they are not all on the same level. That is why they stop being pillars and they become pathways that interact with each other (Peng & Berry, 2019). For example, the household plays a very important role: it usually hosts more than one member, especially in developing countries. It means that the household is food secure only when all the people living there have access to healthy and nutritious food, on the level of quality, quantity and cultural accessibility (Van Esterik, 1999). In this sense, States have a big responsibility towards their citizens to ensure the right to food and food security. According to Van Esterik, States have three main obligations. The first one is the obligation to respect. The right of an individual to fulfill basic necessities, such as the desire for food, is unaffected by the state. In order for individuals to be able to grow their own food, it is important to respect their resource base. This includes making sure they have access to land and water as well as money to buy food. States then have an obligation to protect, which means protecting the food resources inside the country and stop externals from violating the individual's right to food. Finally, the obligation to fulfill, meaning that they have to work towards the objective of assuring the right to food for the people of their countries (Van Esterik, 1999). Moreover, States must start from the root, meaning that they have to engage to create an environment where people can use their full potential to procure adequate food to themselves and to their families. If, nevertheless, a person is in a situation where he

or she is not able to feed him or herself because, for example, he or she is in detention or in a situation of a natural disaster or of an armed conflict, the State is forced to provide food directly (OHCHR, 2010). However, States can often be the first protagonists that obstruct people's fulfillment of the right to food (Van Esterik, 1999). That is why, in general, States should adopt a rights-based approach, so that working on ensuring food security, through dignity, rights acknowledgment, transparency, accountability and empowerment, they make sure that people reach their right to food (Mechlem, 2004). Making policies towards this direction is the key: favoring local food systems, creating an environment where consumers are more active and there is a common space where producers, consumers and municipalities are on the same horizontal level (Goris, 2014). Agricultural policies need to become more food policies (Goris, 2014).

Sustainability is the fifth dimension of food security that started to be considered in the last years. The breakthrough happened in 2009, with the reform of the Committee on World Food Security (CFS) that has introduced to the discussion some important topics, such as climate change, biofuels, food losses, waste and investments in small-holder agriculture (Berry et al., 2015). In this sense, sustainability can be considered as a long-term food (fifth) dimension of food security, since the condition of today's food system will affect the food security of future generations (Peng & Berry, 2019).

As already analyzed in this paragraph, the context in which the individual is placed changes the conditions of applicability of the right to food. In this sense, there are four groups defined by the report on the right to food of the Office of the High Commissioner for Human Rights (OHCHR) that are more vulnerable.

The first group is the rural and the urban poor. Poverty is one of the biggest obstacles to the access to adequate food and that is because, logically, they cannot afford to buy it or to grow it themselves. The impediment in the realization of the right to food is evident in the sphere of rural poverty. In fact, according to OHCHR, "about 50% of people suffering from hunger are smallholders and 20% are rural landless people. Another 10 per cent are pastoralists, fisherfolk and forest users. The remaining 20 per cent live in urban areas" (OHCHR, 2010). Having access to resources, such as water, fertilizers and seeds is crucial for the rural poor in the realization of the right to food (FAO, 2019). Besides, if, at the same time, they don't have access to markets where they could sell their products, they do not make profit over the production (OHCHR, 2010). Moreover, rural poor often don't have access to technologies nor to information, so, very often, it happens that even if they are landowners, they remain excluded from the local or global market. One of the cases of denial of access to the land is because of the ruthless competition dictated by the large agribusiness, the extractive industries or the development projects (OHCHR, 2010). The result is rural poor they are excluded from the most

important processes that regard the agricultural system, such as the part of decision making. It also happens that denying access to the land translates in forced evictions.

In urban areas, something similar happens. Having a job is the very center of it. If getting a job is too hard or the wages are too low, not only it becomes hard to access adequate food (in order to eat, urban poor buy cheap and often unhealthy products), but also to afford other basic needs, such as health care, education and housing (OHCHR, 2010). Abuses of the right to food in urban areas are often a consequence of abuse of the right to food in rural areas. In fact, people who don't have access to adequate food in rural areas often seek for better living conditions in urban areas, so they move. Nonetheless, the situation in urban areas is not better and here, the jobs are often not calibrated for rural people, meaning that they are not trained for it (OHCHR, 2010).

The second group is Indigenous people. Them, just like the rural poor, often suffer from eviction and from not accessing resources, something essential for their survival (FAO, 2019). In Guideline 8.1 of the Right to Food Guidelines defined by FAO, Indigenous people are considered, especially for their link with the land and with biodiversity, guardians of the natural world. The very few data available about nutrition of Indigenous people say that hunger and malnutrition are very high among their populations than among non-indigenous populations (FAO, 2019). The right to food of indigenous people is directly linked to the right of living in their ancestral lands. Thanks to that, they feed themselves by growing their own food, fishing, hunting or raising animals, which is something still made with a lot of respect. After the global food price crisis of 2008, the cultivable land has reduced: not only governors were interested in that, but also private investors (Goris, 2014). It brought to the phenomenon called 'land grabbing', for which Indigenous people are often victims. That is why, it is crucial to assign to indigenous people legal rights about the dwelling of ancestral lands. Their cultural heritage is enormously important to preserve the knowledge about plants, seeds and animals, also and especially for those who are not part of the indigenous culture.

The third group is women. Girls and women are more susceptible to malnutrition because they have larger nutritional needs during pregnancy and lactation and may face discrimination in their access to food and healthcare, endure rape, or have early or closely spaced pregnancies (Van Esterik, 1999). According to OHCHR, "girls are twice as likely as boys to die from malnutrition and preventable childhood disease, and it is estimated that almost twice as many women as men suffer from malnutrition" (OHCHR, 2010). They are the main house keepers around the world. They play a significant role in maintaining food production, economic access to available food and nutrition security (Quisumbing et al., 1996). According to Quisumbing et al., in sub-Saharan Africa household food production relies on women from 70% to 80%, in Asia for 65% and 45% in Latin America and the Caribbean (Quisumbing et al., 1996). In this sense, access to land is very unequal (Quisumbing

et al., 1996). After the global food price crisis of 2008 there has been an important inflation in land prices, which makes very difficult for the young generations, the peasants from the global south and women to access lands to cultivate (Goris, 2014). Moreover, women are often considered entitled of human rights just because they are mothers, so they have to be fed for the health of their children; but they have every right to access secure and proper food simply because they are human beings, not because they are mothers (Van Esterik, 1999).

The fourth group is children. According to the data provided by the OHCHR, "Around half the deaths of children under five years of age are caused by undernutrition" (OHCHR, 2010). The undernourishment of children starts when they are still in their mother's belly: if the mother is not well nourished, the children not only risks death, but also mental and physical impairment, chronic illness, weak immune system and weak reproductive health (OHCHR, 2010). Children, for obvious reasons, depend on their families to receive healthy and adequate food. For this reason, the malnutrition of children is often a direct consequence of what said before, such as the condition of poverty of the family, or the impossibility of access to the land (for the case of the rural poor and of indigenous groups). For children's nutrition, to assure a healthy environment is essential. In this sense, it is important to empower families and caregivers. Moreover, if children cannot fulfil the right to food, it often implies social consequences. They become more exposed to child labor, including the worst forms, such as child slavery, child prostitution or recruitment of child soldiers (OHCHR, 2010). Finally, if they are not able to eat properly, they are forced to drop out of school, since they do not have the mental nor physical strength to attend it, or also because they have to work to get food.

## 1.2 Some data about the state of nutrition and food security in the world

Despite there are still eight years to try to reach the seventeen SDGs adopted by the United Nations for a better world, the situation about food insecurity and malnutrition is getting worse, year by year, especially in continents like Asia and Africa. To better understand this aspect and have a clearer picture, some graphs are going to be analyzed.

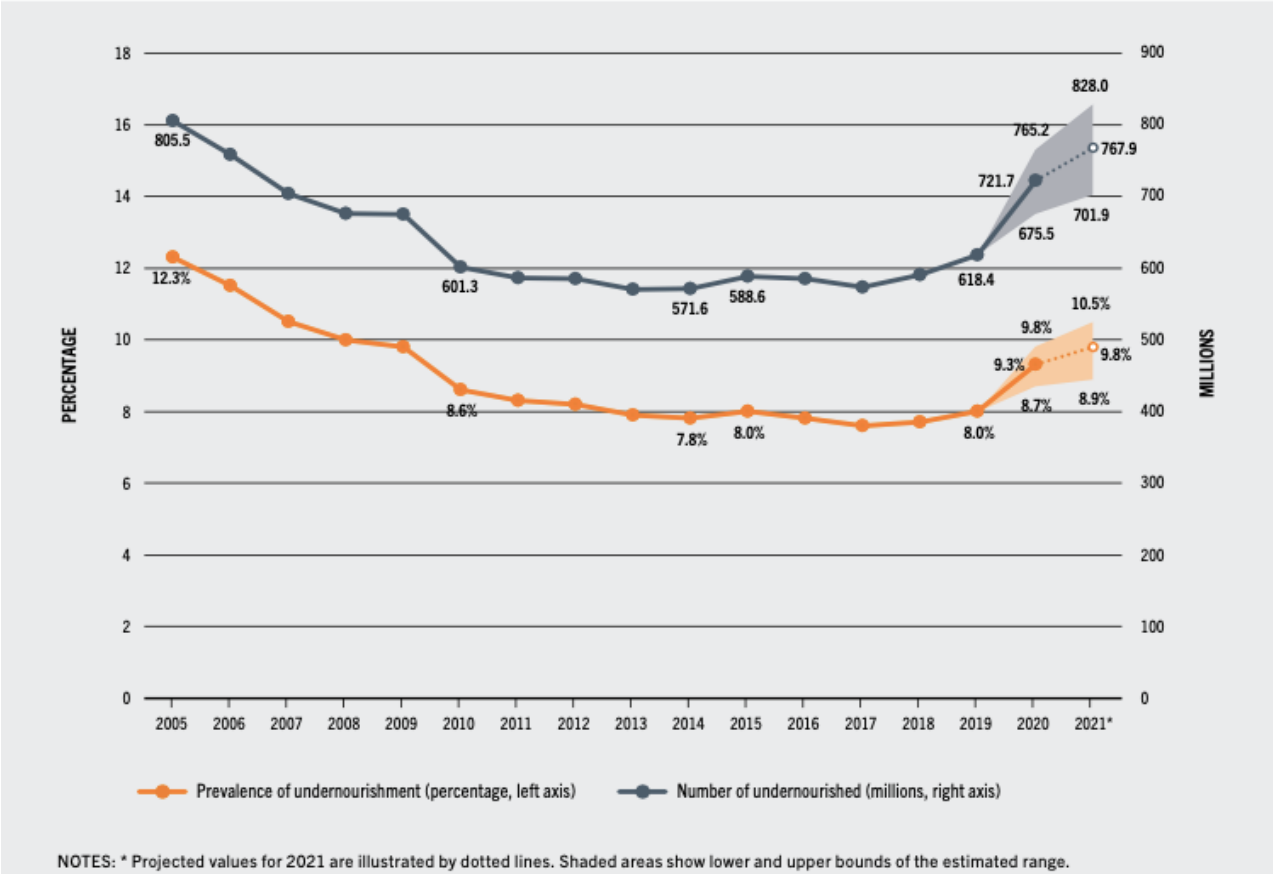


*Figure 1. Graphical performance of undernourished people from 2005 to 2021. Source: FAO, IPAF, UNICEF, WFP and WHO, 2022.*

As shown in *Figure 1*, the Prevalence of Undernourishment (PoU) has increased from 8.0 in 2019 to almost 9.3 per cent in 2020 and continued to rise in 2021 (FAO, IFAD, UNICEF, WFP and WHO, 2022). The pandemic of Covid-19 and its persistence have contributed to amplify the already existing inequalities. According to FAO, "It is estimated that between 702 and 828 million people in the world (corresponding to 8.9 and 10.5% of the world population, respectively) faced hunger in 2021" (FAO, IFAD, UNICEF, WFP and WHO, 2022).

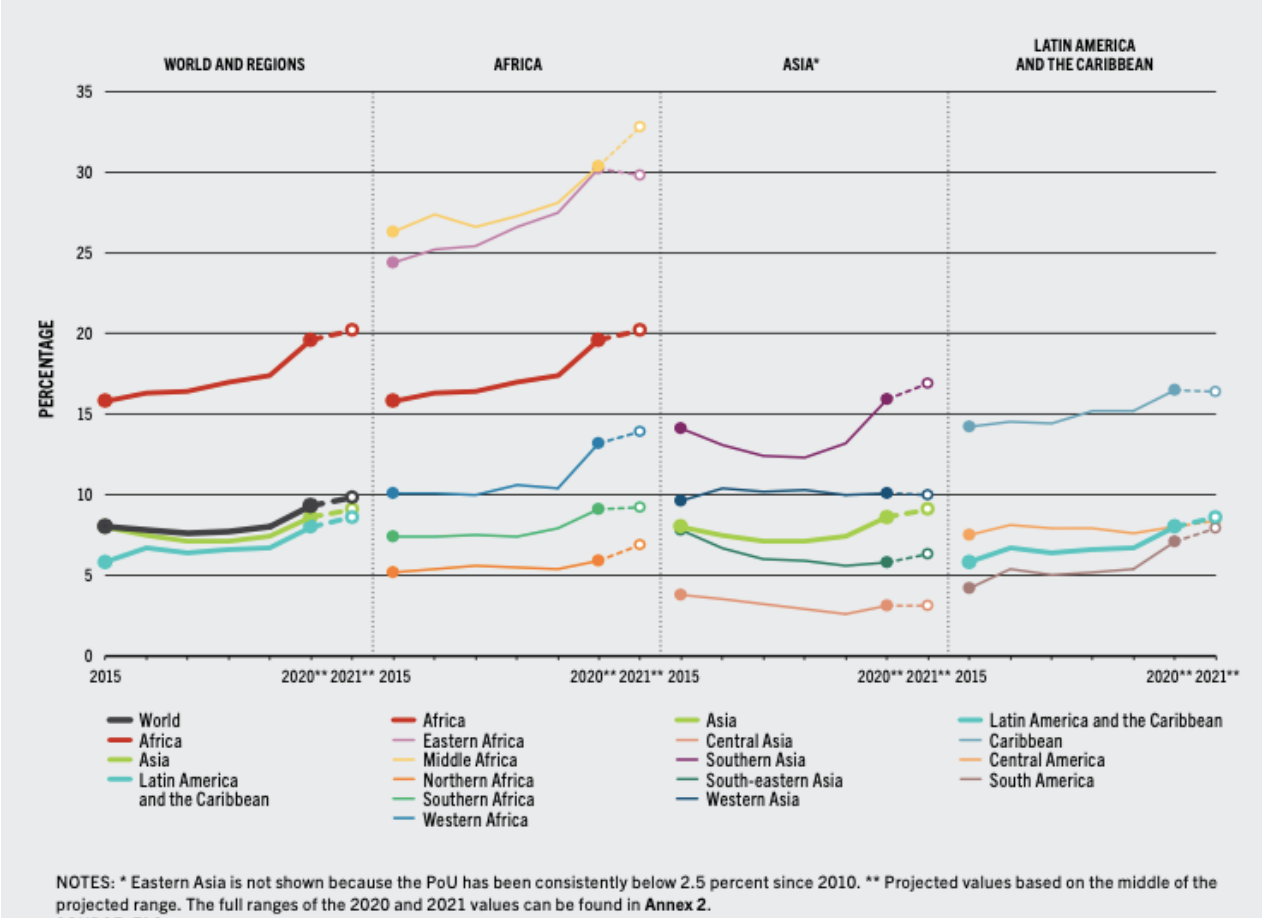


*Figure 2. The increase of the PoU divided by the regions of the world between 2015 and 2021. Source: FAO, IPAF, UNICEF, WFP and WHO, 2022.*

In *Figure 2* it is possible to observe the differences among the various regions of the world. The continent where the most people are suffering of undernourishment is Africa without doubt. FAO states that "one in five people in Africa (20.2% of the population) was facing hunger in 2021, compared to 9.1% in Asia, 8.6% in Latin America and the Caribbean, 5.8% in Oceania, and less than 2.5% in Northern America and Europe" (FAO, IFAD, UNICEF, WFP and WHO, 2022). Besides, Africa is the continent where the percentage of the population affected by hunger has increased the most. Taking a look at the year between 2019 and 2020, the PoU has consistently increased, and this has happened under the shadow of the pandemic of Covid-19.

In *Figure 3* one last graph summarizes the situation described above very clearly.

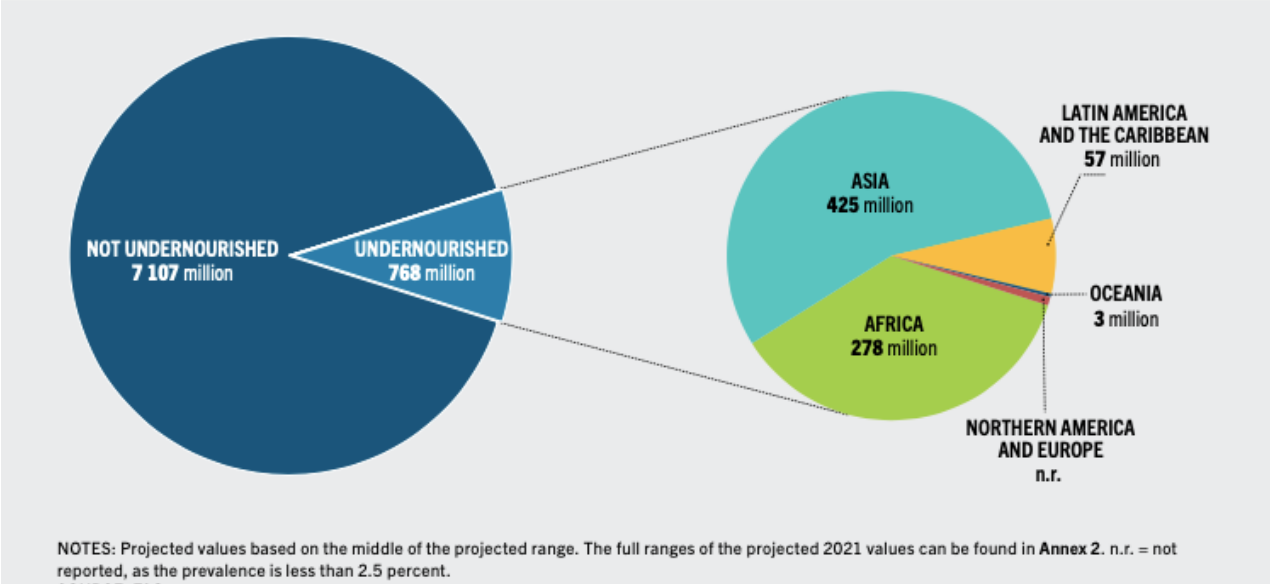


*Figure 3. Some data about the division between the not undernourished and the undernourished and, for this last one, a focus on the continents. Source: FAO, IPAF, UNICEF, WFP and WHO, 2022.*

These data go back up to 2021, when more than a half of the people in the world affected by hunger were in Asia (425 million) and more than one third in Africa (278 million).

It is possible to see a confirmation of what has been investigated by the OHCHR, that women are more exposed to food insecurity, especially because of gender inequality.

Moreover, on the opposite side, globally per capita consumption of calorie-dense meals rises along with the availability of cheap calories from commodity crops. As a consequence, obesity and overweight are becoming more common throughout every part of the globe. Those who are obese now surpass adults who are underweight worldwide. In 2016, there were around 2 billion overweight adults, including 678 million who were obese. All age groups have shown a prevalence of overweight and obesity (IPCC, 2019).

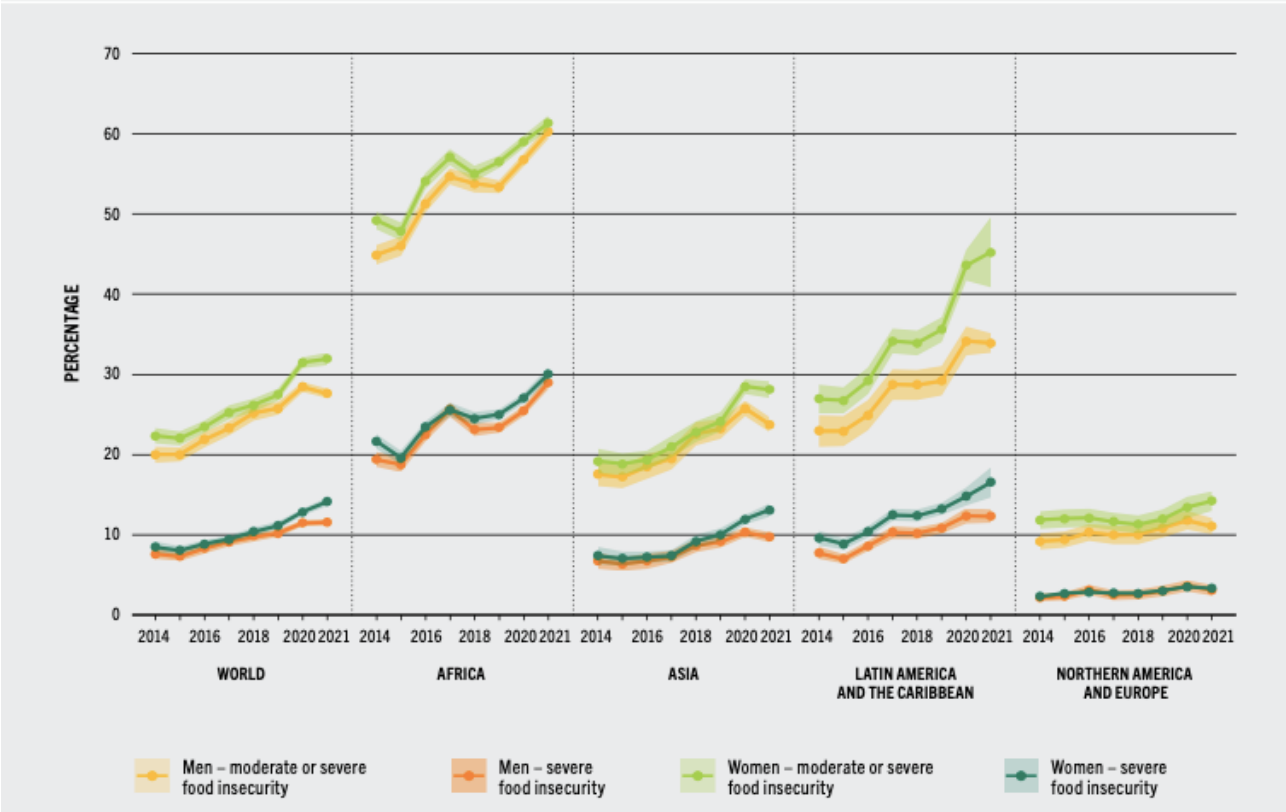


*Figure 4. The distribution of food insecurity among women and men around the world between 2014 and 2021. Source: FAO, IPAF, UNICEF, WFP and WHO, 2022.*

In *Figure 4,* it is possible to observe that in every single region of the world the prevalence of food insecurity is higher among women than men (FAO, IFAD, UNICEF, WFP and WHO, 2022).

## 1.3 The impacts of conventional agriculture.

As already described in the introduction paragraph, climate change is real and, as time goes by, its impacts are more visible in many contexts. The consequences are multiple: it is possible to name a few, the most known, to better understand the following paragraph. First of all, the ice melting (National Geographic, 2022). When talking about climate change and global warming, this is the first effect we think about. However, the melting of glaciers causes what we could call *cascade effect*, since it generates many other events, such as the sea rising. The Intergovernmental Panel on Climate Change, in its last report, observed that the Global Mean Sea Level (GMSL) has risen of 3.6 mm per year over the period 2006-2015, when over the period 1901-1990 it had increased of 1.4 mm per year (IPCC, 2019). Global warming is causing many forest fires which imply the loss of huge portions of natural habitats and thus wildlife. The balance of atmospheric precipitations has been deeply disturbed by climate change: in some areas of the world, it rains more and heavier, something that causes severe floods. In some other areas, however, it rains and snows less, which generates important

droughts, raising the potential wildfires and decreasing the water reserves (National Geographic, 2022). Finally, biodiversity is seriously threatened, especially the insects (Sánchez-Bayo et al., 2019). But what are the causes of climate change and of global warming? As the consequences, also the causes are multiple, all deriving from human activities and thus, greenhouse gases emissions (Kang, 2013). One of the sectors that is causing the most damages on the environment is conventional agriculture. The way the current economic system produces and consumes food is unsustainable, at the point that the totality of the food system accounts for about 20% of total GHG emissions (IPCC, 2019). In 2009, a new concept was introduced by Johan Rockström et al., the one of Planetary Boundaries, revised in 2015 by Steffen et al. PBs are meant to stand in for Earth system processes that, if they are exceeded, may result in extremely drastic changes in the environment that could imperil humankind. So, they contributed to create a space in which is safe to make human activities (Campbell et al., 2017). They are nine:

1. Land-system change;
2. Freshwater use;
3. Biogeochemical flows - nitrogen and phosphorous cycles;
4. Biosphere integrity;
5. Climate change;
6. Ocean acidification;
7. Stratospheric ozone depletion;
8. Atmospheric aerosol loading,
9. Introduction of novel entities.

It is now going to be shown in which way the food system is contributing to the overcoming of the nine PBs.

The connection that agriculture has with the land is fundamental. It is indeed the first mean for the production of food. After the World War II, the conception of the food system has drastically changed, especially with the arrival of the Green Revolution, a wave of technological progress that invested the majority of farmers, but which, at the same time, changed their perception towards the land (IPBES, 2018). What had been a family possession for generations, turned into a barrier for modern agriculture equipment (IPBES, 2018). This way, the approach towards the land became an approach of superiority, that automatically brought to a disconnection in relation to the food humans produce and consume. Monoculture, the improvement of crop varieties, the creation of herbicides and pesticides for crop fertilization and vegetation and insect control generate land-system change (Altieri, 1989). Apparently, land use for agricultural production is the most prevalent land use on the planet: it indeed fills around 40% of land surface (Campbell et al., 2017). Since the entrance of the

Green Revolution, food production has severely intensified over the years, consequently demanding for more land. Below, there are two graphs that show this trend, both for crop production and for meat production.

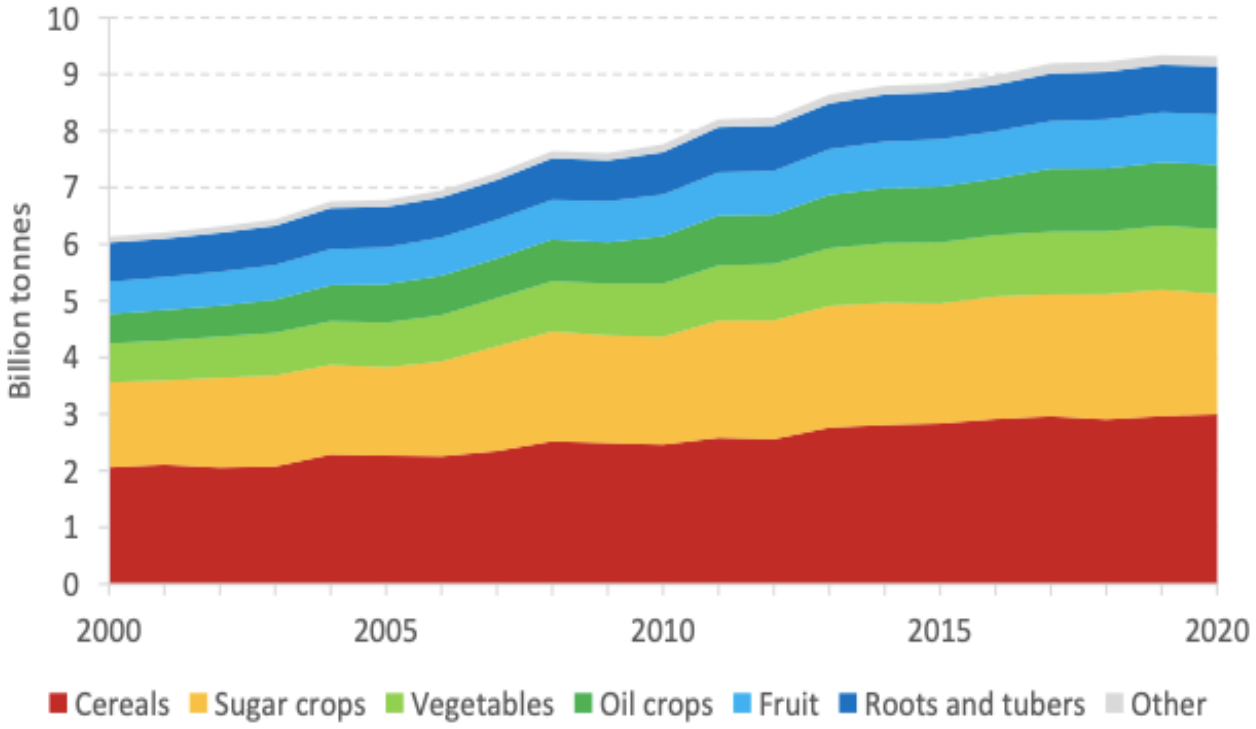


*Figure 5. Global production of crops by commodity group. Source: FAO, 2021.*

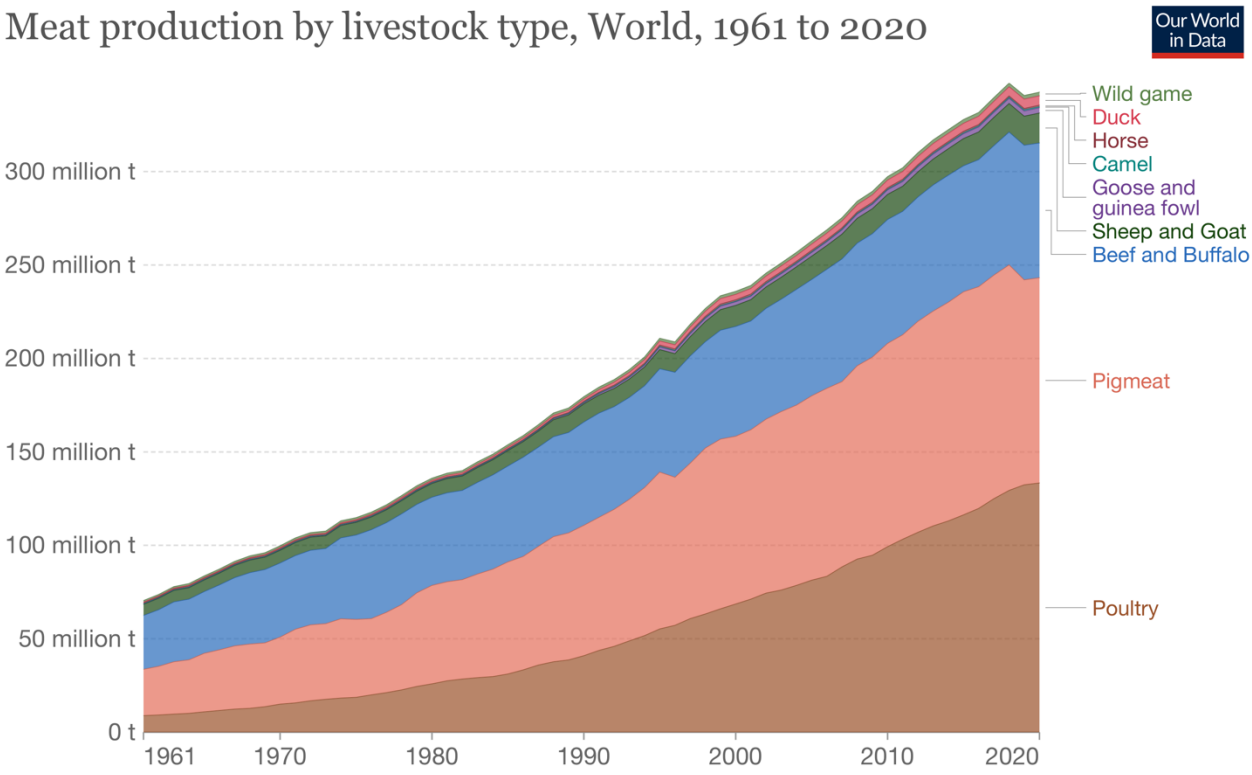


*Figure 6. World's meat production by livestock type, from 1961 to 2020. Source: FAO, 2021.*

The main element that requires large portions of land is the breeding of livestock. Especially beef production, that needs an average of 28 times more land and 11 times more water compared to pigs and poultry production (Dudley & Alexander, 2017). It happens because animals need more space than vegetables for size reasons and they need more water and feeding to survive. Unfortunately, meat consumption is increasing, because incomes around the world are increasing (IPBES, 2018). Especially in Asia, there has been an increase of 3% in meat consumption and of 5% in dairy consumption per year, from 2000 to 2010 (IPBES, 2018). Also poultry industry has grown of 3% every year in the same time period (IPBES, 2018). Meat consumption and incomes are not always moving in parallel: India is the perfect representative of this data, since despite incomes are increasing in general, the country holds the lowest meat consumption per capita, and it happens thanks to cultural reasons (IPBES, 2018). Moreover, cattle contribute to the greatest emissions in the food production system: from 65 to 77%, which is expected to increase since meat demand is increasing (IPCC, 2019).

Land-system change includes the conversion of forests into arable land. It is estimated that in the past 300 years the planet has lost from 7 to 11 million km² (Campbell et al., 2017). So, in general, between 1990 and 2005 agriculture caused 75% of deforestation (Campbell et al., 2017).

With regard to freshwater use, agriculture, and especially crop production, employs the biggest quantity of water: it amounts to 70% of global freshwater withdrawals (Campbell et al., 2017). Moreover, as scientists' projections say, if the impacts of climate change get worse, especially precipitations and droughts, there is a risk that in many farmed lands it will not be possible to cultivate anything anymore (Kang & Banga, 2013).

The current conventional food system has a massive impact on the planet regarding the use of agrochemicals. The third Planetary Boundary refers to the biogeochemical flows, especially in relation to nitrogen and phosphorous cycles, but also methane could be added. 60% of the nitrogen present in the atmosphere comes from the soils (Kang & Banga, 2013). It is estimated that the use of N fertilizers in agriculture has increased by around 800% between 1960 and 2000 (Campbell et al., 2017). According to FAO, only in 2013, 108.4M tones of nitrogen fertilizers were used (IPBES, 2018). Moreover, it is estimated that 90% of global phosphate production is destined to agriculture's fertilizers (Campbell et al., 2017). The costs of this intense pollution are double: environmental and economical. The intensive use of pests causes a severe loss of yields in many crops, reaching in some cases 20% and 30%. Putting so much pressure on monocultures through the use of pesticides means increasing critically the risk of reducing the necessary ecological defenses (Altieri, 1989). Besides, a huge part of chemical fertilizers that doesn't go on the crops ends in surface water or in ground water. Apparently, 25% of the drinking water in the United States contains nitrate levels above the 45 parts

per million safety standard (Altieri, 1989). One of the most devastating effects of the use of pesticides falls on the insect fauna: for example, it is estimated that the population of bumblebees has dramatically been reduced between 1940 and 1960, when intensive agriculture has expanded and so the use of pesticides increased (Sánchez-Bayo et al., 2019). Honeybees as well are among the victims of chemical fertilizers: in particular, neonicotinoids and fipronil have jeopardized the immune system of bees, making them more exposed to infections and to death (Sánchez-Bayo et al., 2019). Other than pesticides, what contributes to the insect decline is also the habitat change, due to urbanization, agriculture and industrialization (Sánchez-Bayo et al., 2019). Here is a graphic that shows the main drivers of insect decline.

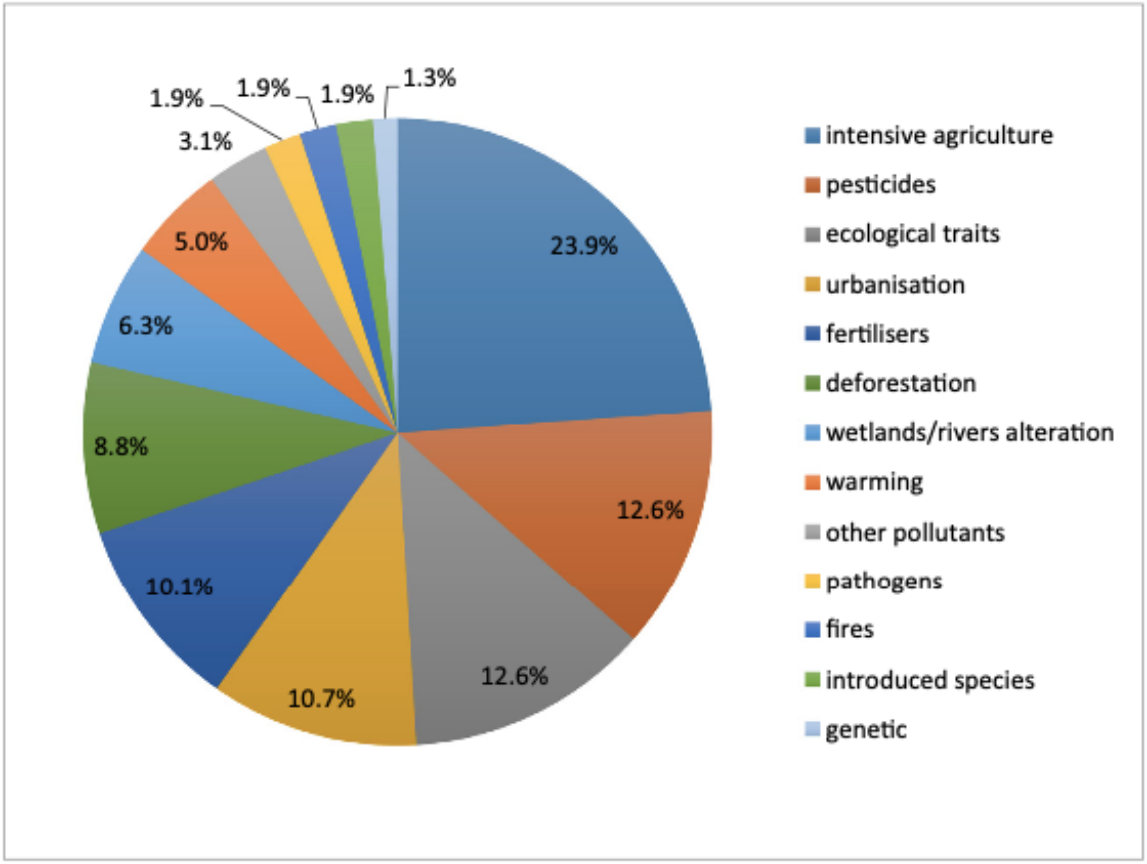


*Figure 7. The main drivers of insect decline. Source: Sànchez-Bayo et al., 2019.*

As said before, the impacts of such pollution are not only environmental but also economical. The global economic value of pollination is measured in years, and it amounts to USD 165 billion (Dudley & Alexander, 2017). There are some areas of China where farmers have to pollinate by hand since there are not enough insect pollinators (Dudley & Alexander, 2017).

So, going back to the Planetary Boundaries, the concept that introduced this paragraph, at the moment humans are in a critical position regarding to three of them: genetic diversity, nitrogen and phosphorous.

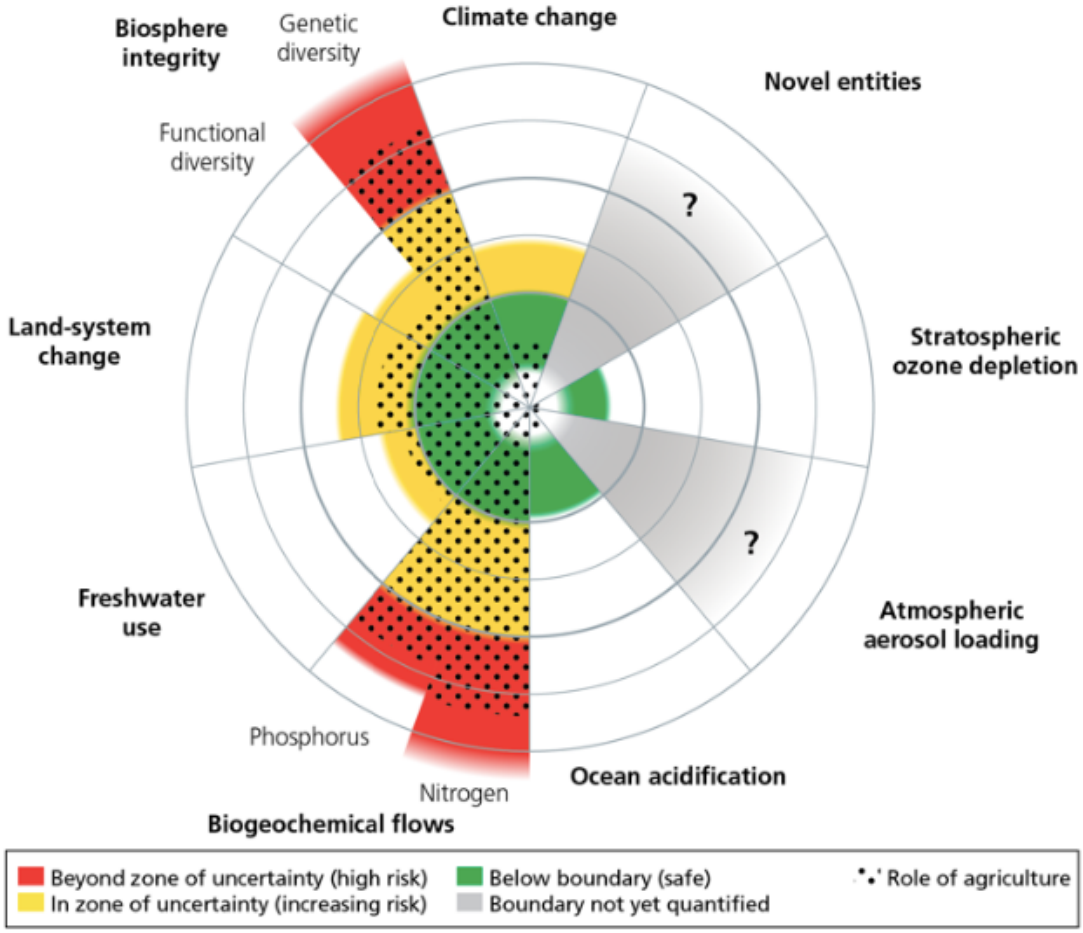


*Figure 8. The Planetary Boundaries (PBs) with the role of agriculture. Source: Campbell et al., 2017.*

In this context, the alarming element is that global food demand is on the rise of 59-98% (IPBES, 2018), which means an increase in the use of pesticides (Altieri, 1989), in meat consumption and in land conversion, especially because the world's population is expected to increase up to 10 billions by 2050 (Vos & Bellù, 2019). Some studies suggest that, based on past trends, one million ha of natural ecosystems could be converted to agriculture by 2050 (IPBES, 2018). Other than shifting to more plant-based diet systems and to more sustainable food systems, reducing food waste is also very important in order to move to the right direction, since it is estimated that one third of all food is wasted, which equates food coming from 1.4 billion hectares, a territory larger than China (Dudley & Alexander, 2017).

## 1.4 Trends and challenges of the future explaining a sustainable and ecological food system.

Understanding the trends and the challenges of the future is crucial to know what to expect and so to adapt our systems accordingly to it. The main focus is related to the food and the agricultural system, since it is the object of discussion of this thesis. Below, some specific trends are going to be analyzed, by describing them and by showing some data: population growth, urbanization, ageing, food waste, competition for natural resources, water scarcity, climate change and price volatility.

Even though the growth rate of world population is decreasing, in some regions of the world population will continue to rise until the next century. The two continents where global population is expected to expand consistently are Africa and Asia.

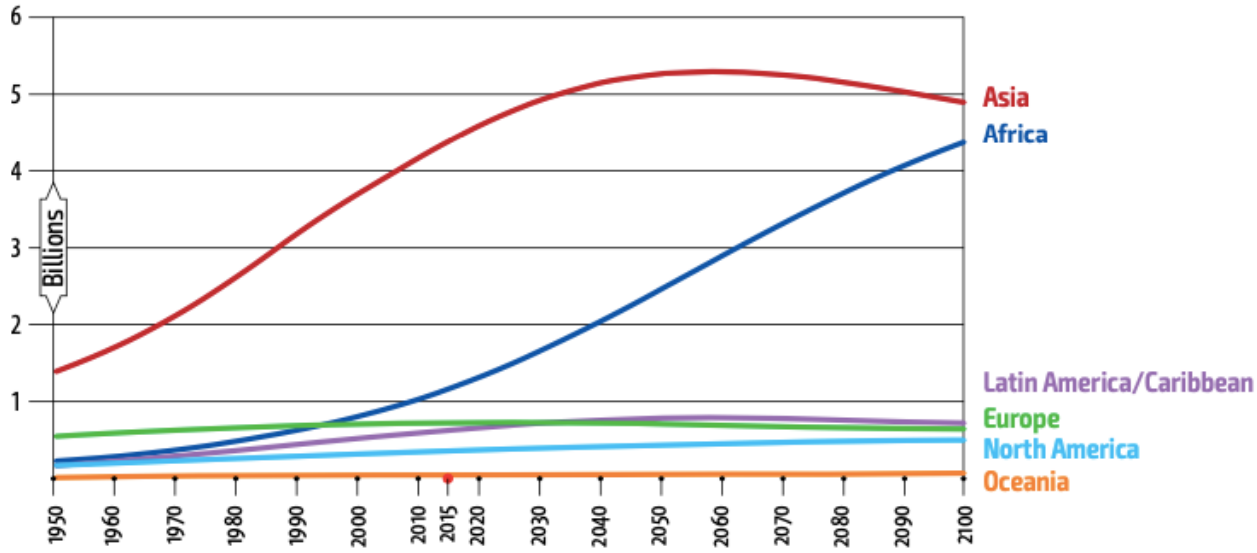


*Figure 9. Trends of world's population growth by region, starting from 1950 and predicting those after 2015. The medium variant is considered. Source: FAO, 2018.*

It is certain, looking at current graphs, that the world's population has increased in the last 70 years. That is why, based on trends up to the present time, scientists' predictions say that the world's population could grow to 10 billion in 2050, as it is possible to see in *Figure 9* (Vos & Bellù, 2019). In particular, the greatest increase of population will happen in sub-Saharan Africa (Vos & Bellù, 2019). If these projections will become true, for some countries it could really compromise their development prospects. That is because these countries rely for a large part on the agricultural system (FAO, 2017). So, in the realistic case scenario, the pressure on the food system would be too much, especially considering that these countries have limited land availability and suffer from water scarcity.

What is changing and growing is also the average income, which implies a demand for shifts in diets. These two elements will bring a greater demand for meat, fish and dairy products (FAO, 2018). Due to the increase in carbon dioxide produced by the conversion of forests into pasture,

intestine methane emissions, and nitrous oxide produced by the production of animal feed, the switch to diets high in milk and meat, especially ruminants, can have a significant negative impact on the environment. If energy and water resources are not managed sustainably, dietary changes toward processed foods could have a significant negative impact on the environment (Calicioglu et al., 2019). At the same time, a changing in diets is observable because of the number of obese adults. The phenomenon of urbanization brings a higher production of processed foods, that are usually high in sugars, fats, energy and salt (Vos & Bellù, 2019). Urbanization is indeed rapidly increasing. Since 1982, in particular, there has been a significant expansion of urban areas: today more than half of the global population (54%) lives in the cities (FAO, 2017). So, if the pace of growth will remain the same, it means that by 2050 more than two-thirds of all people will be living in urban areas. In industrialized countries, in the period between 1980 and 2014 the number of obese adults has more than doubled to over 600 million (Bayer AG, 2015). Only in the US, it is estimated that a third of the adult population is obese and, paradoxically, at the same time, 15% of the US population is food insecure (Giovannucci et al., 2012). So, all of these data indicate that population expansion and altered diets brought on by higher wages will put pressure on agriculture and food systems (Calicioglu et al., 2019).

The trends described by scientists say that, not only the world's population will grow in the next decades, but it will also become demographically older. Let's take a look at some data that could confirm the prediction. From 1950 to 2015, the share of children below the age of five declined from 13.4% to 9.1%, and the proportion of older (65+) people rose from 5.1% to 8.3% (FAO, 2017). Besides, according to FAO, this development is expected to accelerate. Normally, ageing is considered as a success for the development of the society. If people live longer and usually healthier, it means that nutrition has improved, that public health services got better and that there have been important medical advances. It is sure that societies have worked hard to go in the direction of assuring pensions and health care for older people and education for the young. However, the data show that these trends may now be involved in a process of change. Having an older society means that the economic growth potential of the economy slows, social security systems become unsustainable, and the health-care burdens increase significantly (FAO, 2017).

What is also on the rise is food waste, as food becomes relatively cheaper (FAO, 2018). Depending on the country, the loss of food happens in a different moment of the food chain: in industrialized countries, it usually happens during the consumption process, whereas in poorer regions, food is mainly lost during the production and storage process, as it is possible to see in *Figure 10* (Rezaei et al., 2017).

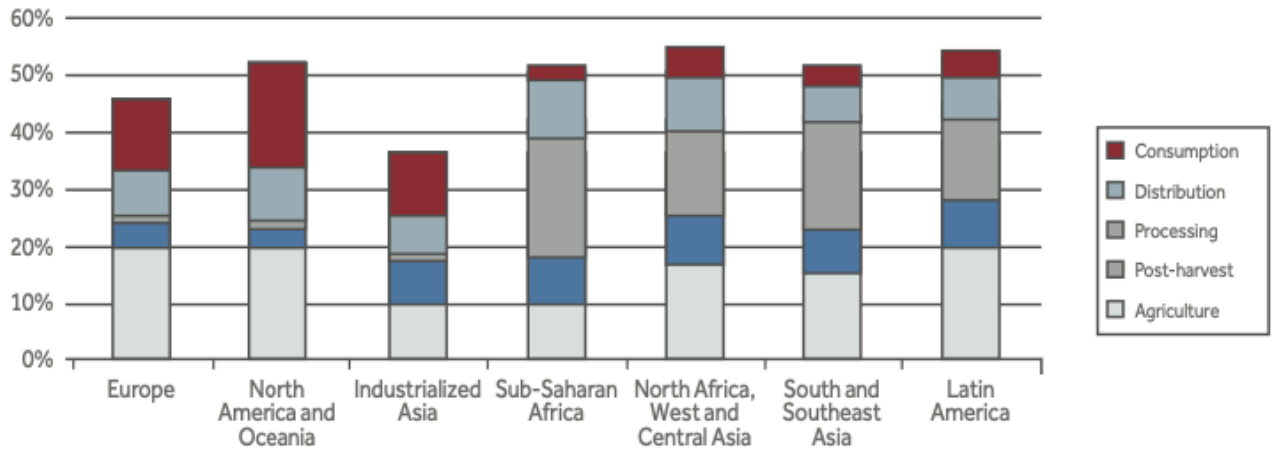


*Figure 10. The wasting process. Source: Rezaei & Liu, 2017.*

So, it is estimated that 30% of food produced for human consumption globally is lost or wasted somewhere along the food supply chain (Rezaei et al., 2017). The typical amount of food wasted before it arrives on people's tables is between 30 and 40% (Giovannucci et al., 2012).

Another observable trend that is putting more and more pressure on the agricultural system is climate change. This phenomenon will force rural workers to grow the competition for natural resources, since there will be a growing scarcity of them (Vos & Bellù, 2019). The consequences of climate change on agriculture are mostly land degradation, water scarcity and a change in the dynamics of pest population (Vos & Bellù, 2019). If, apparently, in the short period climate change will bring an increase in the crop yields, because the higher temperatures will benefit on plant growth, in the long term the negative impacts will intensify, such as floods and droughts making the loss even heavier (Calcioglu et al., 2019). 2.9 million km² of yields are exposed to a high risk of desertification (Giovannucci et al., 2012).

It is given that with climate change there will be an increase in the happening of extreme events such as droughts and also floods. They are both likely to reduce yields in general. Besides, if higher temperatures exceed a certain crop specific level, crop yields are expected to significantly decline. Below, in *Figure 11*, it is possible to observe a graph that describes the projected changes in crop yields due to climate change.

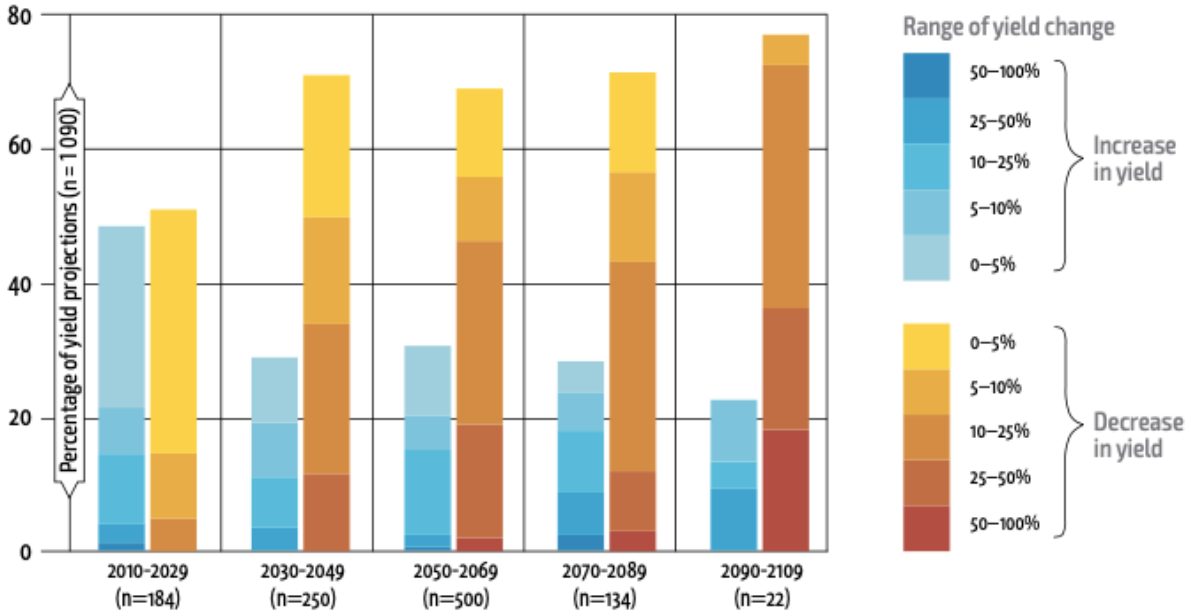


*Figure 11. Projected changes in crop yields owing to climate change. Source: FAO, 2018.*

It is possible to see that for every twenty years, starting from 2010 until 2019, the decrease in yield is higher than the increase in yield and the distance between the two gets worse every twenty years.

Another natural resource that is experiencing a lot of pressure in the competition for it is water. Agriculture relies on freshwater use for 90% globally (Harrington, 2009). It is estimated that, if current use patterns continue, environmental deterioration might cost us up to 25% of our future food output (Giovannucci et al., 2012). Because of changing diets and especially of an increasing demand for animal source-based food, the pressure on water will be always higher (Harrington, 2009). A country can be considered facing water scarcity when more than 60% is pulled out, and it faces severe physical water scarcity when more than 75% is withdrawn (FAO, 2017). In some of low rainfall areas such as Middle East, China, India and Central Asia, about 80 to 90% of the water is used for agricultural purposes (FAO, 2017). Even though water for agricultural uses is decelerating thanks to the improved performances of irrigation systems, due to rapid urbanization, the demand for water is becoming more and more spatially concentrated (FAO, 2017). Moreover, the situation does not seem to improve also because of changes in climate: droughts will happen more frequently, because of the rising variability of rainfalls and of temperatures (FAO, 2017).

What has dramatically driven deforestations in these past 20 years was the global expansion of agricultural land (FAO, 2017). According to FAO, "Agriculture is estimated to be the proximate driver for around 80% of deforestation worldwide" (FAO, 2017). The loss of forestland is a serious problem for the entire planet. So, if the Amazon Forest is being reduced, even the Europeans will feel

the difference during the following years: there will be less absorption of GHG by the forests, that will then remain in the atmosphere causing a warming of the entire planet.

Deforestation means a serious loss of plant and animal biodiversity, which, in the long term, will have repercussions on global food security, because it limits the options of selecting new crops and plant varieties that could allow food systems to better adapt to climate change (FAO, 2017). At the same time, deforestation is a major source of Green House Gas emissions, and the burning of trees establishes what is called in science a *feedback loop*, since it causes more global warming and then more forest fires. Fortunately, there are many ways to prepare the woods to prevention of fires, but these methods should be explored at a higher pace. The rhythm of forest fires is expected to grow in the next years, due especially to the trends predicted by scientists, some of which we have already analyzed: urbanization, population growth that will bring changes in the ways of consumption, greater prosperity, expanding commodity markets and climate change adaptation (FAO, 2017).

With the future trends and challenges, there won't be only a rising pressure on natural resources, but also on food prices. Even without climate change, food prices are expected to increase by 2050. In particular, rice by 25%, maize by 48% and wheat by 75% (Giovannucci et al., 2012). The drivers of this phenomenon are multiple: competition for natural resources, loss of valuable farmland, the expansion of biofuels production and the increasing demand for livestock products in developing countries (Giovannucci et al., 2012). It is also possible that, thanks to the technological progress that contributes to closing the yield gap and thanks to public and private investments in agriculture and rural development, an increase in food prices will not take place (Pinstrup-Andersen, 2013).

In the first paragraph the right to food and the concept of food security have been described and, in this sense, the second paragraph provided some data and graphic representations about the state of nutrition and of food security in the world. Then, in the third paragraph, the impacts of conventional agriculture on the environment were presented and the direct and indirect consequences they cause on other spheres of society. Lastly, in the fourth paragraph, a general view on the trends and challenges that humanity will have to face in the future was presented and how all of them will affect the food system. Because of what has been described, it is crucial, now more than ever, to start a transition towards sustainable food systems that could have a smaller and weaker ecological footprint on the planet, in order to create a situation where it will still be possible to live in the world without suffering too much. One of these systems is agroecology, that will be analyzed in the next chapters. According to FAO, "Agroecology represents a shift from 'ready-to-use' to 'custom-made' production systems" (FAO, 2017). It is, indeed, a sustainable way to practice agriculture, by reintroducing biological complexity, by increasing plant diversity, perennial cover and the presence

of trees (FAO, 2017). The objective of climate-smart agricultures is increasing food security and incomes, and adapting and building resilience to climate change, trying to capture the potential mitigation co-benefits (FAO, 2017).

## Chapter 2. The concept of agroecology.

In this second chapter, the topic of agroecology is being introduced. First, through the investigation of its origin, in particular, in the first paragraph, agroecology as a science and as a practice and in the second paragraph agroecology as a movement and thus food sovereignty. Then, in the third paragraph, the thirteen principles of agroecology will be taken into consideration and explained and, finally, in the fourth paragraph, some examples of agroecology around the world will be analyzed and exposed.

### 2.1 Introduction to agroecology: context, history and current situation.

The concept of agroecology is very wide. To provide a unique definition of it, it is possible to use the one pointed out by Miguel Ángel Altieri, one of the greatest experts of the topic. According to him, agroecology is "the application of ecological concepts and principles to the design and management of sustainable agroecosystems" (Altieri, 1995). Agroecology seems a new concept, but it actually takes inspiration from traditional agroecosystems, in particular from the indigenous ones (Francis et al., 2003). In fact, the first one to define "agroecosystems as the interaction among ecological, technological and socio-economic factors" was Efraim Hernandez X, a Mexican ethnobotanist who studied the potential of indigenous systems (Francis et al., 2003). So, basically, agroecosystems are known as ecological systems that have been altered by humans to generate food, fiber, or other agricultural goods (Conway, 1987), hence an agroecosystem is a way to imitate the natural functioning of the ecosystem to produce food sustainably while maintain the natural balance at the same time.

However, agroecology has more definitions since it is a wide concept. To better understand it we should picture it as a building that has three pillars at the base.

The first one, is agroecology as a scientific discipline. The word *agroecology* made its first appearance in the 1930s, in the scientific literature. The very first person who used it was Basil Bensin, a Russian agronomist who titled one of his works *Agroecological characteristics description and classification of the local corn varieties chorotypes* (Wezel et al., 2009). It was then proposed by German zoologists and American crop physiologists as a synonym for the application of ecological principles to agriculture (Dalgaard et al., 2003). So, at the beginning, agroecology investigated the different components of ecosystems (plants, animals, soils and climate) and the biological interactions between them and single crops (HLPE, 2019). After 1960 and 1970, ecology started to be applied more and more to agriculture, partially in response to the Green Revolution, which was an important

intensification of agriculture that arrived with the introduction of pesticides, chemical fertilizers and new high-yielding cultivars as an answer to the rising demand for food (Dalgaard, 2003). More and more, agroecology became a way to protect natural resources and to design and manage sustainable agroecosystems (Wezel et al., 2009). In the end, the scientific component of agroecology derives the design and management principles for sustainable agroecosystems using contemporary ecological knowledge and techniques (Gliessman, 2018). Besides, recently, agroecology as a scientific discipline stopped to be only a subcomponent of agronomic research and became a science of its own, focused on environmental sustainability (Silici, 2014).

Agroecology as a set of practices came in 1980, when the scientific discipline had become more prescriptive and practically oriented (Silici, 2014). In order to transition from the *industrial agriculture model*, which is characterized by large, specialized farms that heavily rely on fossil fuel and on the outside artificial inputs, a set of agroecological practices has been developed. These practices maximize the use of biological processes and ecosystem functions in agricultural systems (Sinclair et al., 2019). In practice, the approach that is adopted is the one that Miguel Ángel Altieri described, namely by "assembling crops, animals, trees, soils and other factors in spatially and temporally diversified schemes, favor natural processes and biological interactions that optimize synergies so that diversified farms are able to sponsor their own soil fertility, crop protection and productivity" (Altieri, 2002). There isn't a fixed list of procedures designated as agroecological. If practices are equitable, ecologically sustainable, locally adapted and owned, and integrated within a systems approach rather than focusing on single measures, it is easier to talk about them as being more or less agroecological. This is because practices can be more or less agroecological depending on how much they use ecological processes as opposed to external inputs. However, in general, it is possible to say that diversification, mixed farming, intercropping, cultivar mixtures, habitat management strategies for crop-associated biodiversity, biological pest control, enhancement of soil structure and health, biological nitrogen fixation, and recycling of nutrients, energy, and "waste" as inputs to the production process are all key components of agroecological farming (Sinclair et al., 2019). While some of these strategies have been created more recently with only a small amount of adoption to date, others have been used to differing degrees in various regions of the world for decades (Sinclair et al., 2019). In general, agroecology as a set of practices aims for sustainable agricultural systems that optimize and stabilize yields (Silici, 2014). To really provide some examples of agroecological practices it is possible to cite water conservation, nutrient cycling, biological pest control, etc. (HLPE, 2019).

Most of all, it is essential nowadays to have effective and innovative agricultural practices that can satisfy our food demand and at the same time not being too invasive on the environment and on

the ecosystems. So, in practice, what agroecology does is to enhance the local, the concrete and the indigenous knowledge of the farmers by sharing it, through participated methods and activities (Gliessman, 2018).

The third pillar will be analyzed in the next paragraph.

## 2.2 Agroecology as a movement and the concept of food sovereignty.

The last definition is agroecology as a movement. The concept of agroecology had already made its entrance as a scientific discipline and as a set of practices, so it just had to be transposed as a movement as well. It happened around 1960, when the consequences of the Green Revolution started to be visible (Wezel, 2009). However, the term agroecology began to describe a movement for the first time in the 1990s, especially in the USA and in Latin America (Wezel, 2009), when, thanks to Indigenous knowledge and family farms, the need for the society to have a different relationship with food and agriculture raised. So, in general, the link between humans and food, the economic and social structures that control food distribution, and the ways that food mediates power relations across populations, classes, and nations all require major adjustments as a result of the current situation (Gliessman, 2018).

The movement most often referred to when speaking of agroecology as a movement is La Via Campesina, founded in 1993 (Wezel et al., 2018). It is the main institutionalized example of an alternative to the globalization of the industrial and neo-liberal model of agriculture (Wittman et al., 2010), formed by peasants and based in Brazil (Jarosz, 2014). The movement of La Via Campesina introduced the concept of food sovereignty for the first time in 1996, at the World Food Summit in Rome and defined it as “the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity. We have the right to produce our own food in our own territory. Food sovereignty is a precondition to genuine food security” (La Via Campesina, 1996). Then, in 2007 the Civil Society Organizations reunited in Nyéléni, Mali, and provided an updated version of the definition of food sovereignty as “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” (Nyéléni, 2007). Today, La Via Campesina represents millions of peasants, indigenous people, youth, women, men, migrants, family farmers, agricultural workers and landless from 81 countries in Africa, Asia, Europe and the Americas (La Via Campesina, 2022). So, according to them, agroecology is a way to obtain food sovereignty, since it isn’t “a narrow set of technologies” but especially a political struggle, asking people to “challenge and transform structures of power in society” with a view to “generate local knowledge,

promote social justice, nurture identity and culture, and strengthen the economic viability of rural areas" (HLPE, 2019). One important aspect of food sovereignty is that it considers food and agriculture, ecosystems and cultures as deeply linked: it means that if one system collapses another one will collapse very likely too (European Coordination Via Campesina, 2018). Food sovereignty is a wide concept, that includes many spheres of the society, such as power, freedom, democracy, equality, justice, sustainability and culture (European Coordination Via Campesina, 2018). One thing that is really valued by food sovereignty is the local production, which includes local autonomy, local markets and local production-consumption cycles (Altieri & Toledo, 2011). Besides, it is a concept that, as the movement that encompasses it, La Via Campesina, starts from the bottom, enhancing the farmer-to-farmer (campesino-a-campesino) networks that promote agroecological innovations and ideas (Altieri & Toledo, 2011). Local production also means knowing where the food comes from and how it is produced, so it passes from being called "food from nowhere", as said by the French activist-farmer José Bové, to "food from somewhere" (Wittman, 2011).

Food sovereignty is different from food security. As analyzed in the previous chapter, food security exists when "all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (Wittman, 2011). However, this definition, implies the maximization of food production reinforcing food access opportunities (Wittman et al., 2010). Food sovereignty takes a step forward putting particular attention to how, by whom and where food is produced (Wittman et al., 2010). In this sense, according to La Via Campesina, what needs to be done is to outsource the natural resources (water, land, seeds, etc.) directly in the hands of those who produce food rather than in the hands of governments or, in general, of hierarchical structures that start their policies from above applying them to the rural workers below them (Wittman et al., 2010).

Food sovereignty places itself strongly against World Trade Organization (WTO), the symbol of neoliberal economic policies, that gave transnational businesses more power and control over the commerce, distribution, and production of food (European Coordination Via Campesina, 2018). The idea of WTO is the one of producing and trading as much food as possible where the prices are the lowest (European Coordination La Via Campesina, 2018). La Via Campesina places itself and the concept of food sovereignty strongly against it: as long as those policies do not harm third countries, as has happened when major agroexport powers dump food products in the markets of other countries at costs below the price of production, driving local farmers out of business, every country and people are considered to have the right to establish their own policies regarding their food and agriculture system (Rossett, 2008).

Food sovereignty relies on a set of seven principles that include: i) food as a basic human right; (ii) the need for agrarian reform; (iii) protection of natural resources; (iv) reorganization of food trade to support local food production; (v) reduction of multinational concentration of power; (vi) fostering of peace; and (vii) increasing democratic control of the food system (HLPE, 2019).

Food sovereignty can really represent an alternative to the conventional farming system, thanks to its agroecological methods and ecological principles: most of all, ecological farming systems have been shown to be more productive, more able to withstand drought and other effects of climate change, and more economically sustainable since they require less fossil fuel (Rossett, 2008). With pesticides and genetically modified organisms (GMOs), the industrial monoculture production style used to produce these foods undermines the soil's ability to produce in the future, causing the food system to no longer afford the luxury of such food (Rossett, 2008). Moreover, some scientific researches have been conducted after Hurricane Mitch in Central America and it turned out that farmers who employ sustainable techniques like cover crops, intercropping, and agroforestry fared better than their competitors using conventional farming in terms of damage (Altieri, 2002). In comparison to their conventional neighbors, sustainable plots had 20–40% more sediment, more soil humidity, reduced erosion, and experienced fewer financial damage (Altieri, 2002).

In order to make a real agroecological transition, it is very important that all the parties are involved: institutions, producers and consumers. The consumers' attitudes are essential, since through their choices they have a lot of power. One way to directly draw the consumer's attention is lever their personal health since it is connected to the food they eat and how it is produced. Students and the wider public do relate to health-related topics like the advantages of fiber from fruits and vegetables or the link between chemical fertilizers and cancer. Once educated, they are receptive to learning about local food systems, such as wetlands for clean water, windbreaks for clean air, intact soil that doesn't erode, organic products, and community supported agriculture, as well as more complex ecosystem functions and services like oxygen produced by green plants (Francis et al., 2003). Consumers' education includes the ecological alternatives that can be used in the farming system and that produce healthy food (Francis et al., 2003).

So, at what point is food sovereignty in European legislation? What rules the agricultural system in Europe is the so-called CAP, the Common Agricultural Policy. It was first introduced in 1962 and, since then, it has strongly supported the traditional farming and the industrial production, especially through farm units that are often owned by private companies and investors (European Coordination Via Campesina, 2018). It is important to say that Europe is the larger importer and exporter of food in the world, an aspect that underlines how relevant is the agricultural system in the western continent (Sinclair et al., 2019). The economical support towards the industrialized

agricultural production has come with a cost: according to the European coordination of La Via Campesina, “one third of farms have disappeared in Europe in the last ten years” (European Coordination Via Campesina, 2018). What is causing the most problems is the production of meat and dairy, which is almost entirely dependent on imported animal feeds, mostly GM soya from Latin America and the US (European Coordination Via Campesina, 2018). Larger cultivations also mean a more intense use of chemical products that have a dramatic impact on the ecosystems and on human health.

Around the world, some countries put food sovereignty in their constitutions, which means that they have adopted it in their political framework. The very first country to do so was Ecuador in 2008. After it, Senegal, Mali, Bolivia, Nepal, Venezuela and Egypt have followed. In the European continent, for now, only Switzerland is undertaking a process to have food sovereignty in its national constitution (European Coordination Via Campesina, 2018).

## 2.3 The principles of agroecology.

Agroecology as a science, a set of practices and a movement has at its basis, a set of principles that constitute its modern structure. They have been defined by different scientists during the years and recently also by civil society networks, such as Nyéléni and CIDSE (Coopération Internationale pour le Développement et la Solidarité). They include indications for agricultural and ecological management of agri-food systems, together with elements of socio-economy, culture and politics (HLPE, 2019).

After the initial definition of the principles that constitute agroecology, FAO, in 2018, re-elaborated the different principles present in the literature, delineating specifically ten elements that can mainly help policy makers towards an agroecological transition. They are: diversity, co-creation and sharing of knowledge, synergy, efficiency, recycling, resilience, human and social values, culture and food traditions, responsible governance, circular and solidarity economy (FAO, 2018). One year after FAO’s work, in 2019, the High Level Panel of Experts (HLPE) combined the principles defined by the scientific literature, by the civil society networks and by FAO and reformulated them. In order to be useful and clear, they had to be fully explicit, not to leave space for any doubt nor ambiguity (Sinclair et al., 2019). They are thirteen and they can be resumed in the following table created by HLPE.

| Principle | FAO's ten elements | Scale application* |
|---|---|---|
| Improve resource efficiency | | |
| 1. *Recycling*. Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass. | Recycling. | FI, FA |
| 2. *Input reduction*. Reduce or eliminate dependency on purchased inputs and increase self-sufficiency. | Efficiency. | FA, FO |
| Strengthen resilience | | |
| 3. *Soil health*. Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity. | | FI |
| 4. *Animal health*. Ensure animal health and welfare. | | FI, FA |
| 5. *Biodiversity*. Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales. | Part of diversity. | FI, FA |
| 6. *Synergy*. Enhance positive ecological interaction, synergy, integration and complementarity among the elements of agroecosystems (animals, crops, trees, soil and water). | Synergy. | FI, FA |
| 7. *Economic diversification*. Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers. | Part of diversity. | FA, FO |
| Secure social equity/responsibility | | |
| 8. *Co-creation of knowledge*. Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange. | Co-creation and sharing of knowledge. | FA, FO |
| 9. *Social values and diets*. Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets. | Parts of human and social values and culture and food traditions. | FA, FO |
| 10. *Fairness*. Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights. | | FA, FO |
| 11. *Connectivity*. Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies. | Circular and solidarity economy. | FA |
| 12. *Land and natural resource governance*. Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources. | Responsible governance. | FA, FO |
| 13. *Participation*. Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems. | | FO |

*Table 1. Consolidated set of 13 agroecological principles. Source: HLPE, 2019.*

** Scale application: FI= field; FA= farm, agroecosystem; FO= food system.*

All of the agroecological principles are interlinked and interdependent among them. One of the most important is the co-creation of knowledge (Principle 8), since it establishes the legitimacy

of agroecology emerging in various forms in various locales as an outcome of local knowledge and firsthand experience, in keeping with the cultural and ecological particularities connected to various people and places (Sinclair et al., 2019). Moreover, the concept of co-creation generates a context of horizontality among the farmers, the policymakers, the consumers and the researchers.

## 2.4 Examples of agroecological practices around the world.

This chapter took an in-depth look at the concept of agroecology, its origin and the various definitions that comprise it. It was also mentioned how different agroecological practices if applied in the right way and when paralleled with land policies, can truly be an alternative to conventional agriculture. In this section and its subsections, different examples of agroecological practices around the world will be analyzed.

### 2.4.1 The case of Cuba: a country that turned economic isolation into an opportunity for agroecological transition.

The situation of Cuba between the 60s and the 90s was the one of a country with a highly mechanized agriculture. It had, in fact, more tractors per person and per hectare than any other Latin American country (IPES-Food, 2018). The main method of cultivation was the one of monocultures with a high import of chemicals and fertilizers (HLPE, 2019). The imports of the chemical pesticides were among the highest: 94% of chemical fertilizers, 97% of herbicides and 98% of feed concentrate (IPES-Food, 2018). Basically, Cuba was a perfect representative of the Green Revolution. This model had, of course, brought a lot of environmental consequences, such as degraded soils.
When the USSR fell, Cuban food production and its supply network collapsed, a situation that was aggravated by the embargo imposed by the United States: Cuba lost 85% of its trade flows (IPES-Food, 2018). Because of the situation, the country started going through a food and farming crisis. The rural workers of Cuba were forced to find an alternative to the external inputs, since they were majorly depending on imports (HLPE, 2019). The first ones to ask for a transition and to start it were the farmers themselves. In parallel, the government helped this process by completely reorganizing the agricultural sector through the decentralization of the state farm sector (IPES-Food, 2018).

Initially the farmers simply substituted the chemical fertilizers with organic inputs, but then they also experienced other types of agroecological approaches, such as agroforestry, intercropping, biological pest control, and more (HLPE, 2019).

The methods that were crucial for this transition were: horizontal exchanges between the farmers, such as the *campesino-a-campesino* practice; the empowerment of farmers, which meant making them the experts of agroecology, then putting an accent on learning resilience and adaption to the local conditions; and finally, building cooperation between stakeholders in the process (IPES-Food, 2018).

The farmer-to-farmer knowledge exchanges also allowed changes in knowledge generation and dissemination, since some of the farmers became promoters and shared positive farming experiences and practices of successful innovation with other farmers (IPES-Food, 2018). Listening to an expert was crucial for the other farmers to believe the effective practice and to then decide to apply it. Linked to this, there is a Cuban saying that says *"cuando el campesino ve, hace fe"*, which means *"seeing is believing"* (IPES-Food, 2018).

The methods were really successful: studies say that the agroecological practices are applied on 46-72% of small-scale farms (HLPE, 2019) and that farmers applying agroecology in 1999 were 200, while in 2009 were approximately 110.000, representing one third of the small-scale farmers in the whole Cuban country (IPES-Food, 2018). Besides, it is estimated that urban agriculture, which frequently employs agroecological techniques, contributes up to 70% of fresh vegetables in Cuba's largest cities (HLPE, 2019).

Unfortunately, since a few years, the government seems to be wanting to return to practices of conventional agriculture. In fact, in recent years, the influxes of oil, fertilizers and other industrialized materials have increased. Besides, the social situation is changing since the US took off the embargo: a flux of tourists caused a surge in the demand for food, which brought a spike in food prices. This, together with political and economic changes, is exacerbating poverty and causing problems to the quality and availability of social services, resulting in serious implications for food security and access to food (IPES-Food, 2018).

### 2.4.2 The concept of bio-districts and the example of Cilento.

A bio-district is a place where farmers, locals, tourist's workers, associations, and public authorities come to an agreement for the sustainable administration of local assets using organic principles and practices, with the goal of realizing the economic and sociocultural potential of the area (IN.N.E.R., n.d.). In the bioregion, the promotion of organic products is inextricably linked to the promotion of the territory and its specificities in order to fully develop its economic, social and cultural potential. In essence, natural, productive and cultural resources are interconnected and promoted through local actions to preserve the environment, biodiversity, traditions and local

knowledge (AIAB, 2014). The strategic objectives of the Biological District are a permanent and systematic social dialogue between the different actors (public and private) of territorial development, so that the needs of each are integrated into common, sustainable and effective actions. These actions aim to improve the quality of life of residents and increase the quality of work and competitiveness of enterprises in the fields of agriculture, food, tourism, services and the green economy, considering the environment and sustainability criteria. All aim to actively protect the natural, social and cultural heritage and to reduce and optimize the consumption of natural resources and energy (AIAB, 2014). The very first bio-district was born in Campania, a South-Italy region, inside the National Park of Cilento, Vallo di Diano and Alburni (IN.N.E.R., n.d.). It includes 37 municipalities and 400 organic farms. In total, it covers an area of 2,300 hectares (IN.N.E.R., n.d.). UNESCO has designated the Cilento biodistrict area as a World Heritage Biosphere Reserve (IN.N.E.R., n.d.). The agricultural area of the biodistrict is broken down as follows: 32% tree crops, 22% arable land/crops, 46% pastures and meadows. The main tree crops are olives, vines, fruit trees in general and figs in particular (AIAB, 2014). The majority of the farms is family-managed, and they are small-sized (mainly 5 ha), and they offer multiple services, e.g., gastronomy, education, accommodation, etc. One of the advantages of the bio-district is its short value chain. Producers sell their products directly to consumers or through farmer associations, along with related processed goods. 75% of the economic flow inside the bio-district comes from direct marketing, which includes on-farm sales, farmer's markets, buy groups, and online shopping (IN.N.E.R., n.d.). Cilento's bio-district had major positive impacts on the territory, of an economic, political and social nature. In this sense, the events, the workshops, the general participation created spaces for the different communities to bond among each other, in particular the communities of the coast with the inland communities, the farmers with the consumers and the rural communities inhabiting the territories with the institutions (IN.N.E.R., n.d.).

### 2.4.3 Examples of projects against food loss and waste.

As exposed in the previous paragraph 1.4., one big problem caused by the current food system is food waste, lost either in the production process, in the storage process or in the consumption process, mostly depending on the country. In particular, in underdeveloped nations, Food Loss and Waste (FLW) makes up about 40% of the post-harvest and processing levels, but in industrialized nations, more than 40% happens at the retail and consumer phase (De Paula e Silva, 2016). For this reason, there are some examples around the world of strategies for food loss and waste prevention.
One of these projects takes place in Medellín, in Colombia, where it was created a food bank called SACIAR Foundation. With the help of the volunteers and the permanent workers, the foundation collects food from the food industry, the farmers, the supermarkets and the wholesale markets (De

Paula e Silva, 2016). They have two programs: one called REAGRO in which they recover and redistribute food through food banks to be used by humans, the second one called NUTRIAMOR in which resources are transformed into powder and directed especially to children, pregnant and breastfeeding women, and the old people, who are nutritiously vulnerable (De Paula e Silva, 2016).

The second case is located in Linköping, in Sweden. Here, in 1995, Linköping Biogas AB was funded, thanks to the cooperation between the municipality, the local abattoir (Swedish Meats AB) and the farmers' association (Lantbrukets Ekonomi AB). Together, they created a plant that transforms organic waste from agriculture and slaughterhouses to product biogas that directly goes into the tanks of the city's public transport system (De Paula e Silva, 2016). It is a project that contributes to the mitigation of food waste, to the decrease of CO2 emissions and to the sustainable agriculture development (De Paula e Silva, 2016).

The three examples that have just been described, represent the fact that there is an alternative to the conventional food system. In this sense, the Western countries have a lot to learn from the developing countries and from the ancient cultures, such as the indigenous ones.

With this chapter, the theoretical part comes to an end. In the next chapter, the methodological and research part is going to be discussed, focusing on the case of Campi Aperti, an association that acts on the territory of Bologna and Emilia-Romagna and in particular how it is contributing to an agroecological transition in these areas.

## Chapter 3. Methodology.

This study explores the concept of agroecology and its role in the fight against climate change. In particular, it uses the case of Campi Aperti, an Italian peasant association that operated in the territory of Bologna and Emilia-Romagna.

This chapter details the research approach applied to answer the research questions "To what extent is Campi Aperti contributing to the agroecological transition in the territory of Bologna and Emilia-Romagna? And in this sense, at what level are producers and co-producers involved?" and fulfill the objectives. Finally, it justifies why qualitative research with a case study approach is the preferred method of investigation.

### 3.1 Qualitative research.

The main objective of this research is to study the association of Campi Aperti, and, in particular, to what extent it contributes to an agroecological transition and, so, understand how the various actors involved in this process interact with each other. Some elements of the outcomes and impacts could be studied quantitatively, but for this research project, the intersection between the presence of producers on the territory through their activities, the involvement of co-producers and the role that Campi Aperti plays in the picture was the focus. Therefore, qualitative research was preferred. While quantitative research seeks to validate a theory by conducting an experiment and analyzing the results numerically, qualitative research seeks to arrive at a theory that explains the behavior observed (Lowhorn, 2007). Using a qualitative approach, the analysis of data happened through inductive methods (Lowhorn, 2007). Additionally, qualitative research allowed for the inclusion of different data collection and analysis methods.

### 3.2 Data collection methods.

Qualitative research is an attempt to explain the researched behavior by taking a subjective look at life as it is being lived (Lowhorn, 2007). In addition, the foundation of qualitative research is the vast collection of data from multiple sources. For this study, I used indeed different forms of data collection, that include fieldwork, participant observation and semi-structured interviews. The advantage was to have multiple points of view that could later converge in this thesis work.

### 3.2.1 Fieldwork.

The fieldwork took place between the end of March of 2022 and the beginning of June 2022. I worked at one of the production realities[1] of Campi Aperti, called Il Granaro. Il Granaro produces two types of wine, a red one (Barbera) and a white one (Pignoletto), both oak-aged, in 8 ha of field in Ciano di Zocca, a small village in Valsamoggia, a valley in Emilia-Romagna between the provinces of Modena and Bologna. Alessandro, the owner of Il Granaro, opened the activity in 2014 and, over the years, several people have passed through it, sticking around for a long or short time, but making significant contributions. The majority of those who passed through Il Granaro are woofers, people, mostly young, from all over the world, who, in exchange for a work in the field receive room and board. Today, since 2019, Davide is a permanent resident who thus became a close associate of Alessandro.

The fieldwork allowed me, when I was at the production site, to observe and participate in agroecological methods, which include principles of biodynamics and permaculture, involvement of co-producers on the field and respect for the rhythms of the seasons. Moreover, twice a week we participated at the peasant markets in Bologna, where I had the chance of meeting directly both the community of people who orbit around Il Granaro and the co-producers, who pass through the markets to buy the wine and consume it either directly on the spot, taking the opportunity to chat with other co-producers, or take it away. During this time, I also observed the dynamics of the local markets, and I met the other producers, two elements that helped me with the other data collection methods.

### 3.2.2 Participant observation.

Participant observation is a qualitative research methodology where the researcher observes and engages in the activities of the group being studied (Danahay, 2017). I had the possibility of realizing it in two different times, during the fieldwork and after finishing it, in the month of October 2022. For the participant observation of Campi Aperti's markets, I took part in Monday's market, Tuesday and Thursday markets, during both the fieldwork period and outside it, and Saturday's market. With me, I brought a notebook, in which I took notes of what I observed, meaning the typology of the people participating in the markets, the dynamics that were established both between producers and co-producers, among co-producers and among producers. I also observed the assemblies that once a month happen in one of the markets.

[1] This is the expression used by Campi Aperti to define the small enterprises part of the association (ed.).

### 3.2.3 Semi-structured interviews.

Together with the fieldwork and with the participant observation, I also conducted 14 semi-structured interviews, 6 to producers and 8 to co-producers. To realize them, I built two different questionnaires with the aim of understanding the interviewees relationship with Campi Aperti and with agroecology. The questionnaires were structured as follows: one for producers, consisting of 21 questions, most of which were open-ended, and one for co-producers, consisting of 16 open questions with the exception of 6 questions that regarded socio-demographic information. In fact, for both the questionnaires, questions from 1 to 6 aimed to collect the participants' personal information, namely their name, surname, age, gender, profession, their place of living and if it's the same of the job. The second part, for the producers' questionnaire, namely for questions from 7 to 21, is related to their experience in the association of Campi Aperti, the importance of it for their work and the impact they have, or they think they have on the territory of Bologna and Emilia-Romagna (for specific reference to the questionnaires, see the annexes). With regard to the co-producers, the questions from 7 to 16 refer to the relationship they have with Campi Aperti and to the way they make choices about their grocery shopping. The questionnaires were both built with the help of personal experience and knowledge.

In total, 6 producers were interviewed, two women and four men, whereas for the co-producers 8 persons were interviewed, four women and four men. The interviewees were reached mostly through my personal contacts in the association and also through friends. All the interviews were conducted face-to-face, and they were all carried out in Italian. The interviews have all been recorded with the informed consent of the participants and, with the producers they normally lasted between 20 and 30 minutes and with the co-producers they normally lasted between 5 and 15 minutes for a total of around 3 hours.

The analysis of the qualitative semi-structured interviews was divided into two parts. In the first part, two tables were created: one for the producers and one for the co-producers. The objective was to collect some categorical data (i.e., data that can be grouped into various categories) from the interviewees, such as gender, age, and for the producers, which agroecological practices they use, how much Campi Aperti contributes to their work and in the agroecological transition they are making on the territory, etc. For the co-producers, categorical data, such as gender and age, as for the producers, and additionally how much is Campi Aperti present in their lives, why they choose to grocery shop in Campi Aperti, etc.

In the second part, a descriptive analysis was carried out, with the objective of answering the main research questions.

## 3.3 Limitations.

Other than the short timeframe, another element didn't allow the realization of a bigger number of interviews. The markets were the only place where it was possible meeting both the producers and the co-producers. However, for the first group it is a moment of work, so they did not have much time to dedicate me, as for the second group, the markets are a moment of leisure, which means that some of them were reluctant to dedicate time to being interviewed.

Nevertheless, the interviews' answers were quite exhaustive for the research questions, since they were similar inside the two groups.

## Chapter 4. Study area – Campi Aperti and its context.

The main aim of the research was to understand the existing linkage between the activities of the Italian association Campi Aperti and the agroecological transition on the territory and on the people of Bologna and Emilia-Romagna.

After carefully explaining the methodology used for the research purposes, it is important to introduce the association, its history and the principles which it is based on.

Campi Aperti is an Italian association that works for food sovereignty and operates in the territory of the northern Italian region of Emilia Romagna. Campi Aperti was founded around the late 1990s under the name Coordinamento per la Sovranità Alimentare (Coordination for Food Sovereignty), thanks to a meeting between a group of organic farmers and some responsible consumers. What drove and inspired people to come together was the idea of creating a real, authentic and local alternative to industrial agriculture. In fact, one of the most important elements was to give farmers and consumers the opportunity to meet and have a direct contact. In 2001, a very important event took place: the XM24 community center in Bologna made its own space available. The acronym XM24 stands for *ex market 24*, since in via Fioravanti 24 in Bologna, where the social center was, there used to be a wholesale fruit and vegetable market, before Campi Aperti. Here, the Gruppo Contadini Biologici della Valsamoggia (Organic Farmers Group of Valsamoggia), a valley between the provinces of Modena and Bologna, together with the Kontroverso (student collective of the Faculty of Agriculture) and Capsicum (a mixed collective present in the city of Bologna) agreed to start a market in the Bologna area (Teleimmagini, 2009). Thus, the first Thursday farmers' market of the Coordination for Food Sovereignty was born. It was so successful that in 2006, another community center in Bologna, called Vag61, opened its own space to host another farmers' market, giving birth to the Tuesday market. The acronym Vag61 corresponds to the first address of the social center (via Azzo Gardino 61), from which, after some time, they had to move (Vag61, 2022). In this grassroot process, 2007 represented the breakthrough year. Not only for the creation of the Friday market in the Savena District of Bologna (thanks to the collaboration of the district itself and the School of Peace), but also for the formal constitution of the Coordination for Food Sovereignty under the name of the Campi Aperti (Open Fields) Association. In addition to providing a presence at three weekly markets in the city of Bologna, the association organized initiatives, provided information, collaborated with other associations, groups, and institutions to promote peasant and organic agriculture, and ensured direct encounters between producers and consumers (Campi Aperti, 2022). In this sense, according to the association, the producers themselves have to be present at the markets, to avoid intermediaries in order to consolidate the relationship with the customers.

The association of Campi Aperti is based on a charter of eight principles, that will now be analyzed.

1. *Relationship economy*. This is an alternative economy to the market economy, since it values the relationship between people who are part of the peasant reality, establishing forms of concrete solidarity, mutual aid and support, in the direction of pursuing what are common goals, such as health, the environment and the dignity of labor (Campi Aperti, 2022). This principle is very important, as it describes the founding pillar of the association. The concept of relationship economy is an innovative concept, fundamental in agroecology, that places the people and the social sphere at the very center of every activity of the association. In this context, the concept of co-creation takes place, the eighth element of agroecology (see the table in paragraph 2.3). In fact, the people who buy products of Campi Aperti's markets are not called consumers or clients anymore, but *co-producers*, as they contribute to create something for the life of the association. They become active subjects of change (Campi Aperti, 2022). Indeed, what is created is a relationship with the producers and with the other people participating in the markets, originating an environment of general well-being and mutual trust that, in the end, attracts more and more people each time.
   That is why, in this work of thesis, the "clients" of the markets will only be called with the term *co-producers*.
2. *Short supply chain*. This one is the only possible way to enhance local, km 0 products, thus stimulating the production of quality food and protecting both labor and local products. Part of the short supply chain is direct sales: this enhances environmental stewardship by local producers, allows for the containment of product prices, and places increasing importance on knowledge between co-producers and producers (Campi Aperti, 2022). This is clearly an alternative to the conventional food chain, as it shortens the distances between producers and consumers. This way, the co-producer acquires a different consciousness about food, by understanding how it is produced and by who produces it. Also, co-producer gains knowledge about seasonality of some types of products, such as the vegetables, without expecting the natural world to adapt to him or her, but instead adapting him or herself to the natural world.
3. *Organic farming*. It is recognized as the only agricultural production technique that preserves the environment and the health not only of those who consume the products, but also of those who work to produce the products (Campi Aperti, 2022). As presented in the previous chapters, organic farming is fundamental in agroecology, for the respect of the surrounding environment and of the people that are part of it. Organic farming does not promote the use

of chemical fertilizers, which are one of the worse causes of environmental pollution and degradation. That is why organic farming is so important and through practices like Integrated Pest Management (IPM), it is possible to eliminate only the pest bacteria using natural methods, such as natural predators.

4. *Participatory Guarantee*. It is an important method that in the selection and control of members allows the involvement of everyone, even co-producers (Campi Aperti, 2022). This gives the idea that Campi Aperti is not a hierarchical (top-down) association, where decisions are made from above and imposed on everyone else. On the contrary, it is a horizontal, participatory association in which everyone is on the same level, regardless of their role. Checkups to new producers' activities who apply to join Campi Aperti and any inspections of farms already part of the association take place in the following way: creating a group, open to all members (producers and co-producers) in which there is at least one producer of the same type of production as the farm to be visited.. Here, knowledge of production techniques and personal skills are shared, and, if wage-earners are present, the fairness of the labor relationship are explored. After that, when the new producer joins the association, he or she is asked to actively participate in the life of the association in its forms of assembly and to accept the Rules of the Markets (Campi Aperti, 2022). Participation is key to agroecological development, in order to involve everyone, educating and informing, being as transparent as possible towards the producers and the co-producers.
5. *Environmental sustainability*. The verification of it is done throughout the life cycle of the goods, from the use of certain raw materials to the disposal of product waste after its consumption (Campi Aperti, 2022). This principle is one of the foundations of agroecology, as we saw in the first two chapters. The sustainability of a product goes from its birth till its death, because even when it is thrown, often its life doesn't end. In Campi Aperti's market, walking around, it is very difficult to find plastic products being used. Even if it's the case, they are often returned so that they can be used again. The waste that is generated is mainly organic, in the case of vegetables and fruit. When it isn't, it's often paper or glass, that is, for most of the time, recycled and certainly reused.
6. *Peasant agriculture*. It is the real alternative to industrial agriculture. Human labor is placed at the center, which is, in this way, valued and allows for a decent income for the various agricultural producers (Campi Aperti, 2022). Everything in the association revolves around peasant agriculture. Other than being the only alternative to industrial agriculture, it is also a form of protest, being a form of agriculture that goes against the grain of the capitalist system**,** without adapting to the conventional rules. Peasant agriculture is not an easy practice,

especially when the legislation of the country and of the continent goes against it. However, it represents everything that the conventional agriculture isn't, reconnecting with the balance of the natural world.

7. *Fair and transparent pricing*. It is an element that underlies the solidarity relationship between producers and co-producers (Campi Aperti, 2022). In this sense, it is established by an agreement among them: for example, if the majority of co-producers are in difficulty with the purchase of a product, it is permissible for them to share the following need and consequently to come to an agreement that meets everyone's needs. Of course, the price cannot be too low, since it could mean that the work behind the product is not fairly remunerated. For this reason, it would be important to review the money system of our society: we are pushed to spend as less as possible for the material products, which means lowering the quality and not remunerating the workers the right amount. Wages in general should probably be higher and products should cost a fair price, that corresponds to the quality of it. If we compare a tomato bought at the supermarket with one bought at a local market, the difference of price is major. But the tomato of the local market will be of higher quality, where and how this tomato was grown can be traced and our money will go to support the producers fair work and their sustainable practices through use of ecological methods. It is important that realities like Campi Aperti shed some light on critical consumption: it pushes the consumer to make rightful choices, respectful for the environment and with a view to social sustainability.
8. *Economic Solidarity Networks*. One of the goals of the association is in fact to create, thanks to the relationships established over time around the reality of Campi Aperti, networks of dialogue together. Thanks to the relationships established over time around the realization of Campi Aperti, it has helped in fulfilling this goal by providing a platform to join multiple forces (Campi Aperti, 2022). Now more than ever, it is important to push on the creation of networks that create dialogues and debates about the agricultural situation and innovation, to go in a direction of change.

Other than a charter of eight principles by which the association is inspired, there is also an internal regulation that, as the name says, regulates the relationships inside of the association, so the duties and the rights that the members have towards the association itself. The eight articles of the internal regulation system of Campi Aperti were approved by the general assembly on the 21st of July of 2019. To know them, it is possible to refer to the annexes.

## 4.1 The markets.

Today, Campi Aperti counts around 160 producers, also called production realities. A description of the markets will follow, through a table, a map, pictures and some comments related to them.

| | Weekday | Place | Timetable | Number of production realities | Types of products |
|---|---|---|---|---|---|
| Market of via Piave | Monday | Via Piave | 17h-20h wintertime 17h30-20h30 summertime | 14 | Vegetables, fruit, cheese, honey, olive oil, cereals, flours, pasta, legumes, pasta, wine, canned goods, eggs, herbal products, juices, baked goods. |
| Market of Piazza Verdi | Monday | Piazza Verdi | 17h-21h | 16 | Vegetables, fruit, honey, baked goods, wine, olive oil, nuts, beer, canned goods, mushrooms, vinegar, eggs, cold cuts, pasta, cereals, flours, legumes, herbal products, soap. |
| Market of via Paolo Fabbri | Tuesday | Via Paolo Fabbri 112 | 17h-21h30 wintertime 17h30-22h30 summertime | 32 | Fruit, vegetables, fresh pasta, baked goods, mushrooms, canned goods, olive oil, honey, eggs, vinegar, herbal products, cheese, wine, beer, flours, soap, street food. |
| Market of Piazza Lucio Dalla | Thursday | Piazza Lucio Dalla | 17h-21h wintertime 17h30-21h30 summertime | 32 | Fruit, vegetables, honey, cheese, street food, baked goods, fair trade products, wine, beer, citruses, mushroom, vegan food and street food, meat, olive oil, pasta, cereals, |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | legumes, flours, eggs, cold cuts, yogurt, milk, herbal products, chestnuts, flowers. |
| Market of Savena's neighbourhood | Friday | Via Pieve di Cadore 3 | 16h30-20h wintertime 17h-20h30 summertime | 18 | Honey, fruit, vegetables, pasta, legumes, flours, canned goods, olive oil, nuts, mushrooms, wine, herbal products, baked goods, cereals, yogurt, milk. |
| Market of Casalecchio | Friday | Piazza del Municipio (Casalecchio di Reno) | 16h30-20h wintertime 17-20h30 summertime | 18 | Flowers, fruit, vegetables, fresh pasta, baked goods, mushrooms, canned goods, olive oil, honey, eggs, vinegar, herbal products, cheese, wine, beer, flours, soap. |
| Market of via del Pratello | Saturday | Via del Pratello, in Piazzetta di San Rocco | 9h-14h | 21 | Fruit, vegetables, bread, baked goods, herbal products, cheese, yogurt, olive oil, flours, wine, honey, saffron, herbal products, avocados, citruses, fresh pasta, soap, canned products. |

*Table 2. A summary of the weekly peasants markets. Source: author.*

Campi Aperti is, to this day, very present on the territory of Bologna, involving a lot of people in their weekly assemblies, markets and events. As can be seen in the table, today Campi Aperti has arrived to be present in seven markets: two on Monday, one on Tuesday (still the original one at Vag61), one on Thursday, two on Friday and one on Saturday. They are in different points of the city of Bologna, including one on Friday just outside of town. Below is a map thanks to which the localization of the different markets can be visualized.

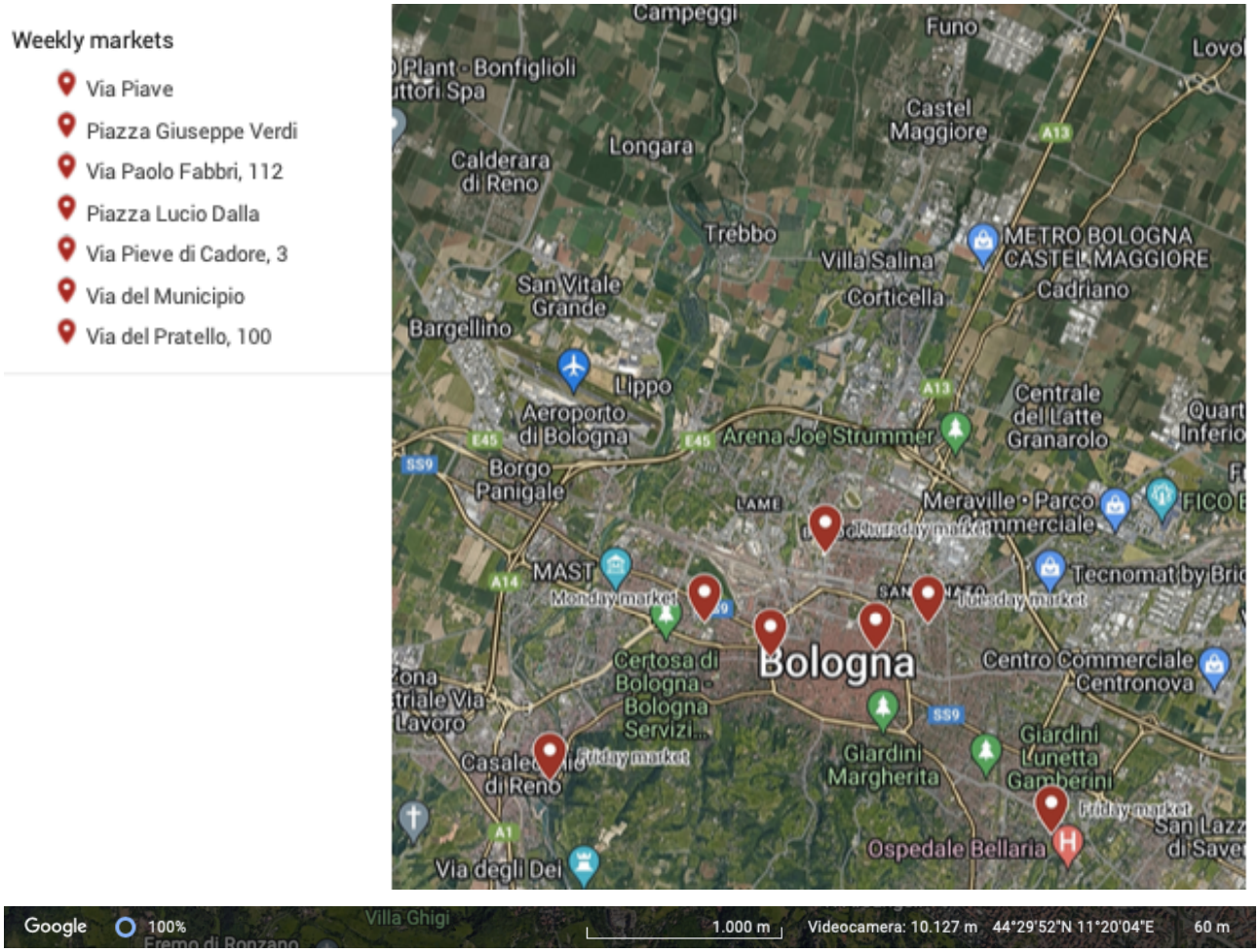


*Figure 12. A map of the weekly peasant markets. Source: author.*

Every market has a certain number of stalls that sell different things, mainly fruits and vegetables but also other types of products, either food type, such as eggs, honey, bread, citruses, wine, …, either personal care products, e.g., herbal products, soap, either different objects, like tote bags, puppets, flowers, books, etc. Every market is in the afternoon, except for the one on Saturday which is in the morning. At the markets, it is possible to shop different products, but also to sit at a table and eat or drink something, while talking with other people. Different kinds of activities are often organized, in most cases live music, but also book presentations or, more rarely, activities to participate in, such as baking cookies. It is impossible to quantify the number of co-producers who orbit around Campi Aperti, it also depends a lot on the season: those in which more people participate and decide to stop are spring and fall. The shopping by co-producers, however, continues throughout the year. The people who participate in the markets are of all kinds: old people, grandparents with children, young people mostly university-age, Erasmus students, working-age adults, immigrants, etc.

Below are some pictures that visually describe the peasant markets.

*Figure 13. Different stalls at the Tuesday market. Source: Campi Aperti.*

*Figure 14. Meeting between a co-producer and a producer at Tuesday market. Source Campi Aperti.*


*Figure 15. Vegan street food. Source: Campi Aperti.*

*Figure 16. Fresh vegetables. Source: Campi Aperti.*

*Figure 17. A moment of conviviality among co-producers. Source: Campi Aperti.*

*Figure 18. A producer selling citruses. Source: Campi Aperti.*

*Figure 19. A moment of conviviality among co-producers. Source: Campi Aperti.*

*Figure 20. Stalls at the Tuesday market. Source: Campi Aperti.*

*Figure 21. Stalls at the old Thursday market. Source: Campi Aperti.*

*Figure 22. Inauguration of the new venue hosting the Thursday market, just a few steps away from the previous one. Source: Campi Aperti.*

The market of Thursday recently moved in a new place, after making an agreement with the municipality of Bologna. As it is possible to see in *Figure 21*, now Thursday market is located under a canopy.

In general, the producers all place their activities spread across the region of Emilia-Romagna and only a few elements outside the region. However, they reunite at the peasant markets in the city; and there was possible to interview them.

## Chapter 5. Results and findings.

In this paragraph the results of the qualitative research are going to be analyzed in two ways: the first way, through a categorical part, with two tables, one for the producers and one for the co-producers, that are going to help visualize the results and transpose them into categories that allow their analysis; the second way, through a descriptive part, where the results of the interviews, of the fieldwork and of the participant observation will be described and investigated.

| | Category | Number of respondents |
|---|---|---|
| Age | > 50 | 1 |
| | 50-65 | 4 |
| | < 65 | 1 |
| Gender | Female | 2 |
| | Male | 4 |
| Lives in the same place of work | Yes | 6 |
| | No | 0 |
| Sales products | Processed products | 3 |
| | Non-processed products | 0 |
| | Both | 3 |
| They consider themselves present and bonded to the territory of Bologna and Emilia-Romagna | Yes | 6 |
| | No | 0 |
| When they became part of Campi Aperti | < 10 years ago | 4 |
| | > 10 years ago | 2 |
| Their products are sold only through Campi Aperti's markets | Yes | 2 |
| | No | 4 |
| They produce only through organic practices, and they don't use any chemical fertilizer | Yes | 6 |
| | No | 0 |
| Their self-evaluation about the impact they have on the territory and on the people of Bologna and Emilia-Romagna from 1 (= no impact at all) to 6 (= a major impact) | 6 | 5 |
| | 5 | 1 |
| When cultivating and choosing to be part of CA, having a positive impact on the territory of Bologna and ER is one of their objectives | Yes | 6 |
| | No | 0 |
| Based on the amount of products sold, they claim to have many co-producers buying from them | Yes | 6 |
| | No | 0 |
| They care increasing the co-producers who buy their products | Yes | 1 |
| | No | 5 |
| Their self-evaluation about the importance of Campi Aperti for their job from 1 (= not important at all) to 6 (= very important) | 6 | 5 |
| | 5 | 1 |

*Table 3. Representation of categorical data from producers' semi-structured interviews. Source: author.*

| | Category | Number of respondents |
|---|---|---|
| Age | 20-40 | 3 |
| | 40-60 | 5 |
| Gender | Female | 4 |
| | Male | 4 |
| Profession | Employee | 3 |
| | Student | 2 |
| | Masseuse | 1 |
| | Psychologist | 2 |
| Lives in the same place of work | Yes | 4 |
| | No | 4 |
| The way they learned about the existence of Campi Aperti | Because of friends | 4 |
| | Because of living in the same area of one of the markets | 1 |
| | Because they attended xm24 as a social center | 3 |
| Their self-evaluation about how much Campi Aperti is present in their life from 1 (= not present at all) to 6 (= very present) | 6 | 6 |
| | 5 | 2 |
| What they like about Campi Aperti | The quality of products | 7 |
| | The direct contact with the producers | 3 |
| | The environment created with respect to sociality | 5 |
| How many markets they attend | 1/2 | 2 |
| | 2/3 | 5 |
| | < 3 | 1 |
| Why they come to the markets | For grocery shopping | |
| | For the context that is created | |
| | Both | 8 |
| Who grocery shops inside your household | Me | 6 |
| | Me and someone else | 2 |
| At Campi Aperti, it is an occasional or constant shopping | Occasional | 1 |
| | Constant | 7 |

*Table 4. Representation of categorical data from co-producers' semi-structured interviews. Source: author.*

In *Table 3* and *4*, the results obtained from the qualitative semi-structured interviews carried out with producers and co-producers are summarized. In the following paragraph, the participant observation, the fieldwork together with the interviews are going to be described and analyzed in three different sections, adding also deep answers that couldn't be schematized in the tables above. For the producers these three sections are going to be personal information, their experience with Campi Aperti and their relationship with the territory, and for the co-producers' these are going to be personal information, their relationship with Campi Aperti and the choices they make as consumers.

### 5.1 The producers.

*Producers' Personal Information*

Between September and October 2022, six producers were interviewed. The average time they normally took to answer their interviews was about 25 minutes. Sometimes they took 30 minutes and sometimes they took between 15 and 20 minutes.

In total, two thirds of the respondents were aged between 50 and 65, whereas one of the respondents was aged less than 50 and another respondent was aged more than 65.

As for gender, four of the respondents were male and two were female.

Besides, six out of six live in the same place where they work, meaning where it is placed their production reality.

Three of the respondents sell only processed products, in particular one makes fresh pasta, baked goods and pies, one makes two types of wine, one red and one white and another one makes cheese and ricotta. The three other respondents sell both processed products and non-processed products, specifically one goes to the markets with the food truck and sells vegan vacuum-packed products, e.g., vegan burgers and vegan sausages, which vary according to the fruits and vegetables in season, vegan street food, such as sandwiches, nuggets, etc. and lastly fresh vegetables, which are a plus, not the main product. Another producer sells both non-processed products, such as chestnuts, foxglove pears, jujubes, what he calls "*forgotten fruits"* and processed products, in particular chestnut flour. The third one sells mainly non-processed products, namely vegetables and some fruit, but also processed products, mainly honey.

*Producers' Experience with Campi Aperti*

When it came to the question "When did you join Campi Aperti?", it emerges that four of them have been part of the association for more than ten years, whereas two of them for less than ten years. Campi Aperti is not the only way thanks to which they sell their products: four of the respondents out of six affirmed they participate also into other peasant markets. One of them participates also in another Bologna's market, whereas another producer participates in another market in Bologna and also another outside of the city. Similarly, the other two producers also participate in other markets outside of the city besides Campi Aperti's markets in Bologna.

Campi Aperti represents, for all of them, a very important reality for their job and for their life. In fact, when asked "How much is Campi Aperti important for you and your job?" five producers out of six affirm that, in a scale from 1 to 6, where 1 is not important at all and 6 is very important, it is 6, meaning very important. Only one respondent answered 5. In this sense, almost all of them answered that without Campi Aperti, peasant activities like theirs couldn't exist. It is very important because it represents the way through which they can have a contact with the people, with the co-

producers who buy their products and, in general, the relationships they create with them. The producer of the *"forgotten fruits"* says Campi Aperti, by giving him the possibility of participating in the markets, creates the opportunity of making people appreciate him for what he does and what he sells. In this perspective, Campi Aperti is not only an association that creates a business for the small producers: it creates especially a political context, and a set of values and principles producers can choose to share or not. For example, organic farming, environmental sustainability, peasant agriculture, the valorization of biodiversity, the maintenance of forgotten fruits, etc.

One woman producer out of six said that she chose Campi Aperti not only because as a small-scale producer she could finally sell her products somewhere and directly to the people, but also because she finally found an entity with which she can share the values she believes in. Another respondent said that he chose Campi Aperti because it represents a way to create community and to arrive directly to the people, letting them know his values and the ones of the association. Creating a community has been his objective since the beginning of his job as a peasant.

At the same time, during the interview also the critical points of being part of Campi Aperti were discussed. It was openly asked "Which critical issues do you find?". Two of the respondents agreed on having troubles in participating actively to the life of the association, especially when it comes to the assemblies, due to two main reasons. The first one is not feeling involved in the political matters, mainly those that relate to the regulations and to the market's strategies: in their opinion, they are very difficult to understand not having a strong technical understanding on the matter. This way, according to them, it is hard to keep up. The second one relates strictly to the physical issue, meaning that producers are often too far from the place of the assemblies, so it becomes too difficult taking part in them. Another shared answer regarding the critical issues of the association, is the overly strict regulations: it is not a problem that directly originates from Campi Aperti, but it becomes a part of it. Four out of six producers said that this matter limits production too much, especially when it comes to the transformational process[2]. There are two consequences deriving from this element: one, as stated by one of the interviewees, is that the markets become very uniform, since, within them, will be found only fruit and vegetable and not, for example, cookies, which will be bought, in the end, at the supermarket. The second consequence, as it was answered by one of the producers, is that small productive realities like these end up being crushed, because they can't produce certain types of goods.

Another point that was criticized about Campi Aperti by two producers and that is a direct consequence of the previous critique, is that often too many producers consider themselves too much

[2] As a matter of fact, in order to sell a product that has the *organic product* certification, all the raw materials used in its production must be certified organic too (ed.).

as enterprises and too little as productive realities. It translates in the fact that, as one of the respondents says, that too much business is created.

One of the questions that were asked was "What do you think the future of Campi Aperti will be?". One of the respondents answered a future with more young people. She thinks that the participation of young people in peasants' associations like Campi Aperti is already growing and it is destined to grow more. On the opposite, two of the producers said that there is not enough generational turnover inside Campi Aperti, especially regarding the peasants' job in itself.

Another answer to the questions "What do you think the future of Campi Aperti will be?" and "What would you like it to be?" that emerged from one person was the one of increasing the number of markets of Campi Aperti, but, regarding the same topic, another producer answered that the association does not have enough energy to open new markets, especially outside the city of Bologna. Lastly, from the question "What would you like the future of Campi Aperti to be?", two main answers emerged. The first one is about opening more as an association, involving more people, more co-producers, especially the young, also in the management of the association or, in general, in internal matters. In this sense, one producer says it is important the association doesn't close in itself, lacking dialogue with the institutions. The second one is a common hope to continue to be an alternative to the large-scale distribution and a wish for the markets to increase in number, also outside of the city.

*Producers' Relationship with the Territory of Bologna and Emilia-Romagna*

As showed in *Table 3*, all of the respondents consider themselves present and bonded to the territory of Bologna and Emilia-Romagna.

All of them cultivate only with organic practices and that, in general, are not invasive for the environment around them. This is a prerogative to be part of Campi Aperti. When asked "Which agroecological practices do you use in your work? And, in this sense, which relationship is there between the production of food and the natural world/the landscape?" they all answered they use machinery as little as possible. Some of them also use practices of biodynamics and permaculture. The materials that are used in the field are organic and compostable. They all respect the seasonality of the cultivations, and they try to reuse as much material as possible. For example, the producer of cheese and ricotta reuses the manure of the ewes inside his activity, another one uses the water of a near creek and another peasant uses the water of a surface water table inside her property. The grass cutting is also generally kept to a minimum: in the vineyard of one of the producers, he cuts following an alternating pattern, so that the insects and the biodiversity living there can maintain its habitat; he also performs mulching, reusing the grass freshly torn to maintain the humidity of the soil. The producer of honey only cuts her shrubs when the flowers do not blossom anymore (all the more reason

having the bees); the peasant who makes only processed products doesn't cut the grass in his vegetable garden so that the soil retains moisture. In general, all of them live their practices on the soil as a compromise between them and the natural world around them.

They were then asked "How much impact does your job have on the territory of Bologna? Meaning, how much do you contribute, or do you think you contribute to the agroecological transition on the territory of Bologna and Emilia-Romagna?". So, in a scale from 1 to 6, where 1 is no impact at all and 6 is a major impact, five of them replied 6 and only one replied 5. In this sense, many of them realize the impact they have through the sales. In fact, as shown in *Table 3*, they all claim to have many co-producers buying their products, which is something that generates the direct live interaction between the co-producers and the person who cultivated the product they are going to consume. When asked "How many co-producers use your products more or less?" they all had troubles in replying, but they based their answers on the quantity of products they sell. They all sell almost everything they bring at the markets. The one who makes only processed products said she sometimes sells 70 kilos of bread every week and she only participates in one market per week. In this sense, they are proud to offer an alternative to the conventional consumption chain. However, when asked "Do you care increasing the co-producers who buy your products?" they all, except for one, answered no, because they say they already reached the maximum of production and, especially, of their possibilities of production.

The impact they have on the territory and on the people, does not only regard the purchase of a peasant product that comes from a small reality, but also regards the social aspect. In fact, when asked if having an impact on the territory of Bologna and Emilia-Romagna is one of their objectives when choosing about being part of Campi Aperti, 6 out of 6 answered yes. Not only they affirm to have created an alternative to the conventional agriculture and so the conventional way of eating, but also a place where people meet: this way, the producers contribute to the social aspect.

### 5.2 The co-producers.

The analysis of the results of the qualitative semi-structured interviews of the co-producers is going to be divided in three parts: the co-producers' personal information, their relationship with Campi Aperti and the choices they make as consumers.

*Co-producers' personal information*

Between September and October 2022, eight co-producers were interviewed. The average time they normally took to answer they interviews was of about 10 minutes. Sometimes they took 12 minutes and sometimes they took between 3 and 7 minutes.

Of the eight co-producers that were interviewed, one third was aged between 20 and 40, whereas two thirds were aged between 40 and 60.

As for gender, four of the respondents were female and the other four respondents were male.

Of the eight interviewees, when asked about their profession, two answered they were psychologists, two were students, one was masseuse and three were employees in different entities both public and private type. Among them, four live in the same place of their job, whereas four don't, some of which even work outside of the city.

*Co-producer's Relationship with Campi Aperti*

In the second part of the interviews, the relationship that the co-producers have with the association Campi Aperti was investigated, through some indicators that relate to different aspects, some of which had been raised during the interviews with the producers.

First of all, it was important to understand the way they met the reality of Campi Aperti. Based on what they answered, it is possible to categorize the answers into three groups: those who knew about it through friends, in particular four of the respondents, then those who knew about it because they were living in the same area of one of the markets, one chose this answer, and those who learnt of it because they were already attending XM24, the community center that offered to host the first-ever Campi Aperti farmers' market (see paragraph 3.1).

It is possible to categorize the answers to the question "How much is Campi Aperti present in your life?" through assigning a numerical value based on the response received. In this sense, a range from 1 to 6 was used, where 1 is not present at all and 6 is very present. So, it turns out that 6 of the co-producers answered 6 and two of them answered 5. How is this answer motivated? Some co-producers say that all of the food they eat comes from Campi Aperti, meaning mainly vegetables, fruit and cheese; some others say that they participate in more than one market every week, not only for the grocery shopping. One woman, in particular, said that she follows the association activities, that include, among other things, the assemblies and what is called *peasant school*, some days when peasant learning workshops are held at the sites of production entities and often involve children and families.

The co-producers were then asked, "What do you like about Campi Aperti?". Because of the similarities in their answers, it is possible to create three groups and each co-producer used one or more answers. Seven of the respondents said that what they like about Campi Aperti is the quality of

the products, three of them said that they like the fact that there is a direct contact with the producers and, finally, five of them said they like the environment that is created with respect to the sociality. With reference to the products, what is liked, other than the high quality, is the variety, the seasonality, the genuineness and the fact that they all are organically certified. Whereas, on the other hand, with reference to the environment that is created with respect to the sociality, the co-producers say that what they like is having the possibility to participate in a place where to build sociality, in which they routinely gather with friends.

The interviewees were also asked what they don't like about Campi Aperti[3]. Three out of eight were not able to answer the question. The other five answered in different ways. One raised a thought with respect to affordability: she thinks that Campi Aperti is not an option addressed to everyone, especially to those belonging to the low-income brackets and she is afraid that, this way, Campi Aperti is in danger of remaining a niche discourse. Two of the respondents said they would like to see more markets of Campi Aperti in the city and one of the two also added that the already existing markets should be more organized and more accessible in terms of spaces. It was also raised by one of the interviewees the issue of the rigidity of the regulations and by another one the fact that there should be more support from the institutions towards the association.

Finally, the co-producers were asked "What do you think the future of Campi Aperti could be?". Leaving it as an open question was made on purpose by the author: in fact, they answered partly on what they think it will be and partly on what they would like it to be. The hope, shared by more than one respondent, is that more markets are open by the association and also that the municipality and administration of Bologna will show a growing support and cooperation.

*Co-producers' choices they make as consumers*

To compile this section, a number of responses were grouped according to the individual choice that is made each time a co-producer decides to buy something at the Campi Aperti markets. This paragraph is inevitably intrinsic with the previous one.

First of all, the co-producers were asked "How many Campi Aperti's markets do you attend?". Two people answered between 1 and 2, five people answered between 2 and 3 and one person answered more than 3. In general, the data depend on the availability of time of the co-producers, if they are close to one of the markets because that day they had classes or work near, etc., but the average is the one showed in *Table 4*.

[3] It was not possible to summarize this answer in the table, that is why it is going to be exposed in this part (ed.).

To the question “Who does the grocery shopping inside your household?” six answered “only me”, whereas two replied “me and someone else in the family”. The latter claim that even the members of their families that do the grocery shopping go at Campi Aperti’s markets. Besides, seven of them affirm that they do grocery shopping at Campi Aperti on regular basis, and one says they do it occasionally.

After asking these questions, it was asked “Why do you go grocery shopping here at Campi Aperti and not anywhere else?”. Partly, the answer to this question can be found already in the other answers, but something can be added. In general, it is possible to say that all of the co-producers, other than for the quality of the products, choose Campi Aperti also for the political environment that revolves around it. In this sense, as one of the respondents said, there is not only the consuming, but also a contour of values, such as directly meeting the producers, support the small production realities, choosing something produced transparently and organically rather than something coming from the large distribution chain and, in addition, the social situation that takes place.

The co-producers were then asked which criteria they choose for their power supply, something that brings, as a consequence, doing grocery shopping at Campi Aperti. The answers that emerged were similar among them, referring especially to seasonality, healthy products, local and fresh products, a high quality, organic products of which you know the origin and, lastly, few packaged things.

## Chapter 6. Discussion.

After analyzing the results that emerged mainly from the semi-structured qualitative interviews, this section will go on to discuss and explain the analysis of the results, also of the field work and the participant observation, in order to answer the research questions posed at the beginning of the study. A single discussion will be made, with the aim of integrating research results concerning both producers and co-producers.

First of all, in order to try in answering the problem statements that brought to the research, it is important to fully understand what is meant by the words *agroecological transition*. As deeply described in chapter two, agroecology takes on three meanings, other than the main one of "ecology of the food system" (Francis et al., 2003). These three meanings are: agroecology as a scientific discipline, agroecology as a set of practices and agroecology as a movement for food sovereignty (Gliessman, 2018). So, an agroecological transition is a process that involves different spheres, the economic one, the scientific one, the practical one, the production one and the social one. In this sense, the following discussion aims to investigate at what level Campi Aperti is realizing this transition, based on the results obtained from the research.

The results suggest that Campi Aperti is strengthening the agroecological transition of the city of Bologna, in particular in terms of increasing the population's closeness to the peasant culture. This can be seen through different elements.

Firstly, because the peasants are putting a lot of commitment and passion in the realization of their work and of the ideals they believe in. It is visible thanks to some aspects that emerged in the results: for example, from the number of clients, difficult for them to define, but that still seems high based on the quantity of products sold at every market. And despite the number of sells, only one among them aims at increasing the clients: the others all said that they reached the maximum of production, especially for their physical capability. This not only is an indicator of great success for the formula that is proposed, but it also shows a mindset that is not merely profit-oriented.

Among the producers, four of them have been part of Campi Aperti for more than ten years, three of them from the very beginning. This aspect shows that Campi Aperti is a reality that attracts peasant businesses and doesn't make them leave. Besides, between the two producers that have been part of Campi Aperti for less than ten years, one says that he joined the association because he shared the political message and the principles, the other one said that before he started selling his products he looked for an association that could reflect all of his beliefs. So, they were worshipping the policies of Campi Aperti so much, that they became part of it, even if it meant waiting some time to be able to sell their product.

It is possible to say that all the effort and dedication on the part of producers is received by co-producers, who in fact choose to participate in the markets for a number of related reasons. First and foremost is the quality of the product. In fact, the quality of a product can be recognized by the work behind it, and that of Campi Aperti is the perfect example. In this sense, there is a clear correspondence between the work of producers and the perception of co-producers. The interviews show that all the co-producers except one go to the markets for the quality of the products: it is the most frequently expressed reason. In fact, people that eat organic food are usually convinced that it is healthier and tastes better (Artmann et al., 2020). This is a concrete way to reconnect people to the food they eat and nature that provides it (Artmann et al., 2020): if they want to keep eating healthy and good, the environment that offers the food must be treated well.

Another reason why the co-producers participate at the markets is represented by the will of supporting the "*small realities*", economically, socially and politically. It is a clear choice, that, in this case, overcomes economic, social and political barriers.

For the producers it is very important that their work is respectful of the environment. It is possible to understand it through the practices they use in their fields: everything is organic, the mechanization is at a minimum, mowing is at the minimum. To use the words of one of the producers, "it is like a compromise between me and the environment". This aspect outlines the willingness of farmers to contribute to the agroecological transition, despite the fact that it might seem that such care requires more effort than intensive practices, such as, for example, the use of chemical fertilizers. This element as well is received by co-producers, that understand the meaning of organic agriculture and choose it, both as a matter of health and as a matter of environmental ethics.

In addition to the sphere that purely concerns the production and purchase of farmers' products, there is also a sphere that takes on great importance within Campi Aperti, namely the social sphere.

Producers clearly have an impact on the territory regarding the social part. This aspect emerges from the interview results, as 5 out of 6 producers think they have a major impact on the area and only one thinks he has more than significant impact. One of them, for example, said that between June, July and August she missed, and a lot of people were calling her to ask her where she was. Another one said almost the same thing: when he misses, people ask him where he went. Another peasant affirmed that some people go to the markets because she is there: some co-producers have been the same for years. As suggested by one of the producers in his interview, it is a change that started from the bottom. It is probably going slow, but it is something that has a major impact, if only for the fact that there is direct contact between the producer and the consumer, or even for the fact that when the co-producer chooses that farmer's product at the same time he is not choosing that of

the large-scale retailer. Besides, only by being in the markets' context, the producers become a point of reference for the people with respect to the social question, so that they decide to meet there. It may seem trivial, but it is an element that contributes greatly to the social engine among people, especially in times when going out is very expensive and when, after the Covid-19 pandemic, we have become accustomed to spending a lot of time indoors. Certainly, the co-producers greatly perceive that sociality is one of the main objectives of the association and of those who are part of it as producers. In fact, the majority of co-producers, at the question "What do you like about Campi Aperti?" responded the social environment that is created, and most of the respondents also affirmed to participate in between two and three markets per week. All these elements outline that markets are not just places to buy and sell. They give an extra input, to society and to the people who orbit around them: it is a political and social project of the association that was born with these same premises. That is why it is intrinsic in its very existence. The people met at the markets is at the very core of the whole matter, whether they are the producers or the co-producers. Besides, going to the markets very often as co-producers means that you end up meeting always the same people and that is how a community is created. That is what happened during my internship: participating in two markets every week meant meeting the same people, so even if I did not know them and they did not know me, I soon became part of the community. It was one of the best parts of the internship. The hospitable environment in which agroecology thrives is comprised of families, communities, collectives, organizations, and movements. Agroecology can be scaled up, local food systems can be built, and corporate dominance of our food system can be challenged through collective self-organization and action. Solidarity is a key component for bridging the gap between rural and urban populations (Nyéléni, 2007). Food sovereignty conceptualization, practice and research goes through a core driven by community, that allows the transformation of knowledge and ways of knowing in new and important ways (Wittman, 2011). An example is the exchange of knowledge, through the *campesino-a-campesino* strategy, but also the direct contact that takes place between peasants and co-producers. This is exactly the meaning of the word *co-producer*: the person that participates in the markets as a consumer contributes to the creation of a certain type of environment. This way producers and co-producers become co-creators of what has been described until now with regard to the peculiarities of Campi Aperti's markets. Becoming part of a community starting with the markets, then pushes the people to find the time to participate in the production process, visiting the places in the countryside where the peasants work, and everything has its origin. This leads to a rapprochement of the population to the production process, to the culture of cultivation, of self-production, of slowness, as the main mode of Campi Aperti, of respect for the natural rhythms and seasonality for the supply of a product by nature. In this sense, it is possible to relate back to the tacit man-nature compromise

made by most farmers. All of this goes in an alternative direction compared to the capitalist one, that is, traditional agriculture and food production. It happens because, thanks to Campi Aperti, you know the origin of the product, you learn about everything behind a food, which does not reach your plate directly, but meets intermediate stages and you help to create it. Thus, a context of parity between those who consume it, those who produce it and the product itself is built. It could be said that the approach of superiority towards the product and towards the environment that offers it to you disappears: in this way, one is no longer inclined to waste it, nor to do with nature what one wants for the obtaining of that product and the consequent profit, which becomes the ultimate goal of everything. This is a clear example of agroecological transition, that goes in the opposite direction of the capitalist system, which instead relies on the distance between the producer and the consumer, focuses on quantity over quality with the goal of making profit and of accumulating economic capital.

Of course, in all this there is no shortage of negative aspects of Campi Aperti, but these do not originate within the association, but inevitably become part of it since they come mainly from institutions. One of the main complaints from producers lies in the lack of support from administrations, which is mainly translated through the rigidity of regulations and the absence of some basic elements for the smooth operation of markets. One example is electricity, which is needed for some producers' tools, and in some cases not being provided by the municipality forces Campi Aperti to make do. Another example is permits for vehicles to enter certain restricted areas of the city: it often occurs that since they do not have extended permits, the peasants have to procure them on their own, paying a price each time at their own expense. There is a lack of dialogue between the association and the municipality of Bologna, which does not particularly contribute to favoring farmers' markets. They seem, in many cases, to be inconvenient. Co-producers also realize this, since they perceive the lack of some basic services, such as toilets or garbage cans. Certainly, in this Campi Aperti also plays its part perhaps by not promoting dialogue. This element is blamed by one of the producers, who when asked "What would you like the future of Campi Aperti to be?" answered that of opening up more, because there is a risk of self-referral and falling into the dynamics into which large trade associations often fall. With respect to the rigidity of the regulations that was analyzed in the results chapter, one solution might be what was proposed by one of the producers in the interviews: by being part of a community it is automatic that producers are self-tracked for transparency, so, according to this view, a large amount of certification would not be necessary. As stated by the Declaration of Nyéléni, agroecology's independence leads to community self-governance and displaces the dominance of international markets. It implies that the people inside the community use purchased inputs from outside sources as little as possible. It necessitates reshaping markets to be founded on the ethics of responsible production and consumption as well as

the tenets of a solidarity economy. It encourages quick, equitable, and direct distribution channels. It is built on the solidarity of shared risks and gains and suggests a transparent interaction between producers and consumers (Nyéléni, 2007). In this case, however, some questions arise: is this really the case? Would this be enough? Is it right to value the relationship of trust that is created between producers and co-producers, or is something else needed? Or both? This is probably a topic that could be debated in another thesis work. However, it is possible to say that Campi Aperti relies heavily on the relationship of trust that is created between producers and co-producers, so perhaps more leverage could be placed on this aspect.

However, in general, Campi Aperti has a positive impact on the territory and on the people, at the point that the wish of the majority of co-producers is that it can open more markets in the future in the city and outside, spreading as widely as possible.

It is interesting to discuss an issue raised by one of the co-producers during her interview, namely that of affordability. It is true that Campi Aperti has above-average prices, and the reason is that for a high quality of a product and especially to fairly remunerate those involved in the production process, it is logical and natural that prices increase. It should also be reiterated that the seventh principle of the Campi Aperti charter is about a fair and transparent price, which is agreed upon between producers and co-producers. Nonetheless, it still remains a price that is not affordable by everyone, especially by the poorer sections of the population, who perhaps would be the ones who need such realities the most.

This shows how important it is to make a national plan, so if such realities are to be supported and favored, an increase in salaries is needed in parallel. This would go in the direction of a change in the food system and food production, which leads to bringing people closer to the food they eat, to the people who produce it with care for perhaps a long time, and to an increase in social occasions. The point of Campi Aperti is precisely to start from the bottom, to bring people together and to restore to food a value and meaning forgotten by the majority of people who eat through large-scale organized distribution. It is for this reason that it is very important that it does not become a reality that is homologated to others or that caters only to certain segments of the population. Change can and must start from realities like these. At the same time, for internal developments within the association that lead to external changes, it is very important to involve the population, making Campi Aperti known as a farming and social reality. This is a point that was raised in the interviews by one of the producers, who, when asked, "What future would you like Campi Aperti to have?" he replied that in his opinion the future is to be helped by people, so more and more involvement of co-producers is needed in order to create increasing horizontality and direct participation of the population. This

means nurturing a social and economic project that stands as an alternative to the industrial food production system, creating more and more co-producers and less and less mere consumers.

## Conclusion

The aim of this work of thesis was to understand which role agroecology plays in the fights against climate change through a study on the Italian association of Campi Aperti. In this sense, the research started with the questions "To what extent the Italian association of Campi Aperti is contributing to the agroecological transition on the territory of Bologna and Emilia-Romagna?" and "And in this sense, on what level producers and co-producers are involved in this process?". Within this frame it was very important to define the meaning of the word *co-producer*, for which the person who buys a product at one of the markets of Campi Aperti contributes to the creation of something and, this way, stops being a mere consumer. The eighth principle of agroecology (see Paragraph 2.3) outlines the concept of co-creation and knowledge, that happens the moment there is an exchange between people. In the case of Campi Aperti, it happens between producers and co-producers, but also among co-producers themselves. It is clear, as the results and the discussion show (Chapters 5 and 6), that Campi Aperti is making a substantial contribution to the agroecological transition on the territory of Bologna and Emilia-Romagna, especially by largely involving the population. This is clear from the enthusiasm that both producers and co-producers expressed in the interviews conducted.

In order to arrive at the following conclusions, first of all a part was analyzed that would give an overview of the current situation of food production and consumption, which, for both cases, in some circumstances goes beyond certain limits, while in others is not sufficient. After that, the second chapter delved into the concept of agroecology, its history and development, and why it is so important, not only as an alternative to industrial agriculture, but also because it is not limited to just following the organic regime. After describing some examples of it around the world, the third chapter moved on with the actual research. First, the qualitative methodology used for the analysis of the case study was presented, namely the fieldwork, the participant observation and the semi-structured interviews. Then, the presentation of the case study provided insight into a real example of agroecology and food sovereignty. The research showed that the Italian association of Campi Aperti, thanks to its credibility and constancy, has created an alternative to the large organized retail chain. This initiative involves all spheres, so it is not a transition that concerns only the economic and/or environmental sphere: it also involves the social and political spheres. Together they represent four spheres that fully define the concept of agroecology, as was analyzed, precisely, in the first two chapters. This happens for various reasons, most of which, it can be said, learned in the course of the research work. First and foremost, it emerges because of the way the producers live this experience, the fact that they feel present and connected to the territory and are convinced that they have a strong positive impact on it. Also, for the way they choose to cultivate and produce, sustainable in the true

sense of the word, both with respect to the environment and to the people who work and those who consume the products. And then for the fact that they are sought after so much when they are absent. Meanwhile, when they are there, they sell their products in large quantities, to such an extent that they are almost all unable to increase production. Second, it is understood that the transition is happening because of how the Campi Aperti experience is perceived by the population, specifically by co-producers. When interviewed, they were enthusiastic and fond of talking about the association. This can be deduced from the fact that each of them attends more than one market a week, and there are many reasons that bring them back: the quality of the products, the social fabric that is created by attending on regular basis and in which they are immersed each time they participate in the markets, the direct encounter with the producers, and the values and political project behind the association. All of this allows those who become Campi Aperti co-producers to deal critically with their own food, even by contributing, in some cases, to its production. The research results just listed make clear the importance of realities like this and that, at least in the Bologna area, a change is taking place from below. The question of how to spread the reality of Campi Aperti so that it does not remain a niche discourse, attended by the same people and, above all, by those who can afford it, remains important. Probably the answer lies in increasing involvement of the population by the association. At the same time, it would be interesting if institutions worked in the direction of involving other parties, such as schools or businesses. However, the risk that would probably be incurred if Campi Aperti were to become very large would be that of falling into business, profit oriented model, focusing more and more on quantity over quality, an aspect typical of the capitalist system. This is certainly a very delicate balance, which would perhaps be possible to maintain by increasing the presence in the territory through increased markets, but which cannot always be held by the same ones, for a question of availability and also of horizontality and equity. New producers would therefore need to be involved. With respect to this, co-producers would remain protected with respect to dealing with production realities that reflect and respect the values and principles of Campi Aperti thanks to the Participatory Guarantee system, a democratic method of selecting producers by other producers who cultivate similar things. At the base, the production realities that get interested in entering the association must, above all, comply with the principles of the association in terms of production, cultivation and participation in markets.

It might be interesting to be able to continue the research through new interviews to touch on these points.

In general, in this research work the real possibility of agroecological transition was demonstrated, on an urban territory such as the city of Bologna. The time has come to change the way we eat and buy food, for ourselves, for the planet, and for the future. First and foremost, starting

with individual choices as consumers, as we have great decision-making power in our hands, which goes to putting pressure on institutions for changes that affect the whole society. Now more than ever it is necessary to counter the climate crisis through a system-wide change of approach, because, as Greta Thunberg said at COP26 in Glasgow last year, at the end of a protest of the movement Fridays For Future, “it should be obvious that we cannot solve a crisis with the same methods that got us into it in the first place”.

29 November 2022

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## Annexes

Annex 1

Question Interview for Producers

1. Name.
2. Surname.
3. Age.
4. Gender.
5. Profession.
6. What area do you live/work in? Do they correspond? If the answer is no, do you travel to work from afar?
7. Are you present and bonded to the territory or not?
8. What is the name of your business?
9. What do you produce?
10. When did you join Campi Aperti?
11. Do you sell your products only through Campi Aperti or also in other markets?
12. What agroecological practices do you use in your work? In this sense, what is the relationship between food production and nature/landscape?
13. How much impact does your work have on Bologna? That is, how much do you contribute or think you contribute to the agroecological transition on the territory of Bologna and Emilia-Romagna?
14. Is that one of your goals in choosing to cultivate and be part of CA?
15. How many co-producers use your products more or less?
16. Do you worry about increasing your customers? If yes, how?
17. How important is Campi Aperti to your work?
18. On the other hand, what critical issues do you find with respect to Campi Aperti?
19. What do you think might be the future of Campi Aperti?
20. Which one would you like it to be?
21. Would you like to add something that you think is important but was not raised in the questionnaire?

Question Interview for Co-Producers

1. Name.
2. Surname.
3. Age.

4. Gender.
5. Profession.
6. What area do you live/work in?
7. How did you get to know Campi Aperti?
8. How much is Campi Aperti present in your life?
9. What do you like about Campi Aperti? What do you dislike about Campi Aperti?
10. How many and what markets do you frequent? Why?
11. In your household, who does the grocery shopping?
12. Is it an occasional or a constant grocery shopping at Campi Aperti?
13. Why do you shop here and not anywhere else?
14. What criteria have you chosen for your nutrition?
15. What do you think might be the future of Campi Aperti?
16. Would you like to add something that you think is important but was not raised in the questionnaire?

Annex 2

Internal Regulation of Campi Aperti

*Document approved by the general assembly on 21/07/2019*

These bylaws detail the internal relations of the association, as well as the rights and duties of members toward the association.

*Art. 1 - Entry Covenant*

Campi Aperti for Food Sovereignty is a nonpartisan association that develops political actions for Food Sovereignty, that is, "the right of peoples to nutritious and culturally adequate food that is accessible, produced in a sustainable and ecological form, and the right to be able to decide their own food and production system" (Nyéléni Declaration of 2007).

Becoming a member of Campi Aperti means being part of a community that gives rise to an alliance between the countryside and the city, between producers and co-producers; as well as an alliance between producers, with a view to cooperation, non-competition and mutuality.

Small peasant farming realities that subscribe to the values outlined in the association's bylaws, charter of principles and internal regulations by becoming members work to protect their own existence by protecting similar realities in an act of mutual support. The citizen co-producers who become members likewise subscribe to the values of the association, and represent the other fundamental link in a unique political and social struggle toward food sovereignty.

Giving a sustainable outlet at a direct sales market to Campi Aperti's small-scale peasant farmers within the framework of a solidarity and alternative economy, created together with co-producers, means fighting to resist the dominant agro-industrial and economic models, which we consider environmentally and humanly unsustainable.
The association in all its activities, primarily the creation and management of direct sales markets, is based on self-management and participation, so involvement in the form of even a minimal operational assignment is required of all members, beyond setting up their own weekly stall.

*Art. 2 - Decision-making self-management*
Campi Aperti is an association that practices self-management in every sphere of associational life, which is why it eschews any principle of decision-making delegation. That is, every strategic decision pertains to the members' assembly which, from time to time may delegate to groups or individuals within the assembly itself functions of representing the decisions made, mediating with third parties, or developing proposals.

*Art. 3 - Rights of members*
Members - producers and co-producers, have all the same rights and duties towards the association. In particular, it is the responsibility of each member to support the association, including financial support in the forms decided by the assembly. It is the right/duty of each member to participate in the assemblies and to assume an operational role agreed upon in the ways, times and objectives with the association.
Finally, it is the responsibility of each member to implement what has been agreed upon by the assemblies.
Any member may serve in any role within the association. Co-producer members are admitted to the association upon signing the membership application form, these bylaws and payment of the annual membership fee.
Producer members are also admitted as 'Campi Aperti producers'.
following the procedures for verifying that they meet the requirements of their organic agricultural and food production, according to the Participatory Guarantee (GP) System codified by the association itself. Producer member farms are the only ones allowed to sell at the markets managed by the association, except for occasional participation of related realities decided by the market assembly, and must abide by all the association's specific regulations related to markets and productions.

An integral part of these Internal Rules and Regulations is the membership application form, which must contain, in addition to everything defined in the Bylaws, the email contact address and explicit consent to the processing of personal data in accordance with Legislative Decree 196/2003 "Code for the Protection of Personal Data" and according to the information provided by the Association.

*Article 4 - Loss of membership requirements*

The membership requirement is lost by forfeiture (in case of unjustified failure to pay the annual dues), expulsion (in case the assembly decides to expel the member due to misconduct or detrimental to the association), withdrawal (in case of voluntary resignation).

If, through the GP procedures codified by the association, it is shown that the products for sale at the market and/or the agricultural and food production of a producer member no longer meet the requirements defined by the association, the producer member and his or her company may be removed from the markets for a specified time and until the condition of admission is restored, or be permanently expelled by the assembly.

*Article 5 - Functioning of the assemblies.*

The ordinary assembly is convened once a year to discuss the final balance sheet and approve the budget estimate. The general meeting is convened as often as deemed necessary (usually every two months) to discuss the agenda proposed in the convocation, which can also be sent by email, using the address provided when joining the association.

The meeting decides using preferably the consensus method, in order to integrate in the final decision, all the positions expressed in the debate.

*Art.6 Articulation of the association*

Campi Aperti, in order to facilitate the involvement of as many people as possible, is articulated both territorially and functionally as follows.

General/Membership Assembly (decides on the general policies of the association, decides on the acceptance of producer members and the expulsion of members in general, the opening of new markets or the closing of existing ones, approves and modifies the regulations of the association).

Market Assembly (decides on the organization of the individual market, both in terms of companies present, subject to different indications in this regard from the AG, and in terms of the arrangement of stalls, animations and cultural initiatives, etc... elects two market referees and two referees of the participatory market guarantee).

Permanent tables (with an investigative or support function for the association, e.g.: training, participatory guarantee, logistics, etc... Each table appoints a contact person)
Working groups on specific issues, established and appointed by the assembly.
Bioregional groups (established on a territorial basis, they have the function of studying and proposing on the topics under discussion in the general assembly and promoting in their territory the themes and practices of Campi Aperti and the campaigns decided by the assembly. They can propose and organize new markets in their areas in agreement with the general assembly).
BOD Working Group (composed mainly of the market and permanent table referents elaborates and proposes the assembly's odg)
Facilitation group: is a permanent working group that takes care of the preparation and implementation of the assemblies in terms of the processes and relationships among members within the consensus method
Strategic Working Group: is an extraordinary assembly open to all members that is convened to discuss, within the known strategic directions of the association, contingent and urgent problems that need answers quickly.
Executive Council (deals mainly with performing bureaucratic-administrative tasks that do not require decision-making). It is convened by the president (elected from among its members), via e-mail to the personal address of the CD members themselves.

*Art. 7 - Amendments to these Regulations*

These Rules and Regulations are approved and may be amended upon reasoned proposal by the General Assembly.

*Article 8 - Final Provisions*

For all matters not made explicit herein, please refer to the Articles of Association, the provisions of the Civil Code, and applicable laws.

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