SOCIAL ECOLOGY WORKING PAPER 190

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ISSN 1726-3816

October 2020

Elena Louisa, Alter (2020):

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Social Ecology Working Paper 190
Vienna, October 2020

ISSN 1726-3816

Social Ecology Working Papers
Editorial Board: Christoph Görg, Barbara Smetschka, Helmut Haberl
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More water, more prosperity? Land Concentration Processes in Irrigated Areas and its Implications for Food Sovereignty

A Qualitative Case Study from Rural Catalonia*

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*Masterarbeit verfasst am Institut für Soziale Ökologie, Studium der Sozial- und Humanökologie. Diese Arbeit wurde von Dr. Anke Schaffartzik betreut. (Die vorliegende Fassung ist eine geringfügig überarbeitete Version der Masterarbeit.)

Abstract

European agriculture witnesses a change in land holding structures, a process known as land concentration. Research has shown that the number of small-scale family farms in Europe is declining and new actors such as agribusinesses are increasingly interested in investing in agricultural land. Social movements advocating for food sovereignty have raised their concerns regarding the adverse implications of land concentration for small-scale farmers and the rural economy. In the light of these political struggles, however, the place specific conditions that favour land concentration and the effects for rural societies in Western Europe are not yet well understood. This study aims to determine how land concentration processes unfold in irrigated areas in rural Catalonia (Spain). Building on existing work on land concentration in Europe and food sovereignty theory, it asks: (1) What are the conditions that favour land concentration in the hands of agribusinesses and (2) how are farmers' and rural community members' – their livelihoods, work and the landscape in which they live – affected by land concentration processes?

Qualitative semi-structured interviews with actors involved in or affected by land concentration processes were carried out in the Segarra-Garrigues irrigation canal area and were supplemented by direct and participant observation.

Analysis of the gathered material demonstrates that agribusinesses benefit from the installation of irrigation infrastructures and have the financial means to expand their cultivation areas. Meanwhile, small-scale farmers are overwhelmed by the costs, required know-how and changing agricultural production methods related to the implementation of irrigation, increasing the likelihood that they give up their land. Negative socio-ecological implications range from rising land prices and a restricted access to land especially for young farmers to the destruction of a landscape mosaic and its specific cultural, ecological and economic values and functions. The results suggest that food sovereignty practices carried out in the territory are a way to oppose land concentration processes with concrete alternatives. Further research is needed to identify how such alternative practices can be spread and how these practices can inspire public policies that support small-scale farming structure.

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List of abbreviations

EU	European Union
EC	European Community
EEC	European Economic Community
CAP	Common Agricultural Policy
ha	hectare

1. Introduction

> *We are standing on a little hill in the middle of an almond plantation. A natural observation point from where we overlook the landscape that surrounds us. Lines of trees planted with the exact same distance in-between each other. Hectares of hectares of trees almost touching the horizon. Still hibernating, bald branches drawing against the light blue sky. It's the first time I visit this little piece of the earth somewhere close to the city of Lleida, in the inner land of Catalonia. It is winter, a splendid day with sun but still cold making it hard to imagine that temperatures rise up to 40 degrees Celsius in summer. We are told that without irrigation this land would be dry, too dry to grow almonds intensively in the way we can observe it in front of us. Here, irrigation would be the key to prosperity*.
> (Fieldnote, around the city of Lleida, 14th February 2019)

European agriculture is traditionally structured by small to mid-size farms and is still highly family labour oriented (Kay, 2016; van der Ploeg et al., 2015a). This farming structure is perceived as a backbone of European agriculture as it gives stability to rural areas and secures local food provision (Kay, 2016).

Yet, throughout the last decade social movements, local research, media stories and political reports have suggested that these traditional small structures are gradually eroding meanwhile large-scale industrial farms are increasing their cultivation areas (EU (European Union), 2012; EUROSTAT, 2018; Kay, 2016; Popovici et al., 2018; van der Ploeg et al., 2015b).

Current literature on land issues (such as large-scale land deals) largely focused on the context of the Global South, however, emerging political struggles related to changing land holding structures has turned the spotlight on land issues in Europe (Borras et al., 2013).

In European terms, changes to agricultural holding structures is known as 'land concentration'. It is defined as a process in which smaller tracts of agricultural land are converted (through selling or leasing) into larger holdings, that are then owned and used by fewer large-scale landowners, agribusinesses or other corporate entities (van der Ploeg et al., 2015a).

In 2012, a political debate on land concentration processes was initiated by social movements advocating for food sovereignty. They pointed to the statistical evidence that only 3% of European farms control 50% of the land used for farming purposes in Europe, and stressed that if land concentration further accelerates, the positive social, economic and ecological gains of small-scale agricultural structures will be at stake (EU (European Union), 2012; European Coordination Via Campesina, 2017).

What followed was a growing scientific interest in issues related to land concentration and land grabbing in Europe. Eastern European countries in particular became the centre of attention as they were especially targeted by large-scale land deals (including land leases) in the aftermath of the political and economic shifts related to the end of the Socialist era (early 1990s). (see: Bouniol, 2013; Constantin et al., 2017; Fidrich, 2013; Medarov, 2013; Nolte et al., 2016; Petrescu-Mag et al., 2017). In Western Europe, land concentration processes are tied to gradual structural adjustments of the agricultural sector and an increasingly globalised and export-oriented agricultural market. In other words, European agricultural policies fostered the adaptation of agriculture to the intensification and internationalisation of the market for agricultural products, so that small-scale farms had to vanish in favour of more

competitive large-scale industrial farms (EU (European Union), 2012; EUROSTAT, 2018; Kay, 2016; van der Ploeg et al., 2015a).
Spain has undergone this process of adaptation to intensive production and internationalisation of markets, and mirrors similar trends of agricultural holding structures as the rest of Europe – around five percent of Spanish farms possess over fifty percent of agricultural land in Spain. Although structural changes in the agricultural system also affected Catalonia, the Autonomous Community still maintains a small to mid-size family farming model (Soronellas Masdeu and Casal Fité, 2018). The traditional Catalan inheritance custom, where the eldest daughter or son inherits the family land, has contributed to the stability of social structures in the Catalan countryside and helped to prevent land fragmentation (Soronellas Masdeu, 2012). It gives reason to the fact that small-scale land holding structures prevail in the Catalan agriculture panorama, where 77,6% of the holding are smaller than 20 ha until the present days (Soronellas Masdeu and Casal Fité, 2018). Despite the fact that land concentration processes in Catalonia are not as urgent as in other regions of Spain, literature pointed to the role of hydraulic infrastructures in pushing land concentration in Catalonia (Soler and Fernández, 2015). While irrigation infrastructures in Spain are officially implemented as a measure to promote family agriculture and improve livelihood conditions in rural areas, Soler and Fernández (2015) argue that irrigation promotes an intensification of agricultural production for international markets and thus, incentivises the increase of agricultural holdings and land concentration.
The above fieldnote reflects on my first field visit to one such irrigated agricultural region in Catalonia. A direct contact allowed me to get in touch with an agribusiness that started a project on intensive almond cultivation. Their plantations are located in the area close to the city of Lleida that was connected to the Segarra-Garrigues irrigation canal a few years ago. Access to irrigation, as I learned this day, was a critical condition for their project.
Agribusinesses are one of the new actors who are interested in investing in agriculture and expand their scope by buying or leasing land from local farmers (Borras et al., 2013). An increasing presence of agribusinesses in irrigated areas, however, seem to contradict with the idea to enhance livelihood conditions of small farmers through irrigation.
In this thesis I delve into the dynamics that create favourable conditions for agribusinesses to invest in intensive agricultural production and explore the role that irrigation (in Lleida) plays within these dynamics.

1.1. Objective of the study and research questions

The main objective of this research is to investigate how land concentration processes unfold on a local level in Spain. At the centre is the complex interrelationship between land concentration processes, the expansion of agribusinesses and the socio-ecological implications they evoke for farmers and the rural community. To this end, I carry out a qualitative case study and explore the memories and perceptions of actors who are involved and/or are affected by land concentration processes in the study region.
To understand local conditions and the implications of land concentration processes, I draw my attention to the viewpoints and experiences of farmers, rural community members, cooperatives and an agribusiness from the region of the Segarra-Garrigues irrigation canal. I investigate the socio-ecological conditions that underly land concentration processes by taking into consideration interviewee's experiences of regional agricultural changes in the past. Likewise, I want to draw my attention to the construction of the Segarra-Garrigues canal and how interviewees link this irrigation infrastructure to land concentration processes. I also want to learn about the socio-ecological implications of land concentration processes that

food sovereignty advocates critically declared on the European level. In that regard, I examine how farmers and rural community members are affected (or might be affected in the future) by changing agricultural holding structures. The following questions guide my research:

- What are the socio-ecological conditions that underlie land concentration processes in rural Catalonia?
- How does the installation of the Segarra-Garrigues irrigation canal contribute to land concentration processes and favour agribusiness expansion?
- How are farmers' and rural community members' – their livelihoods, work and the landscape in which they live – affected by land concentration processes and what are the implications on food sovereignty in the Lleida region?

1.2. Structure of thesis

This thesis is divided into the following: **Chapter 2** entails the theoretical considerations for this thesis. In section 2.1, I formulate a conception of land concentration. Based on this conception, in section 2.2 I turn to the drivers and socio-ecological implications of land concentration in Europe (with a focus on Spain). In section 2.3 I draw a theory of food sovereignty, that also serves as a theoretical lens through which I discuss the results of my field research.
In **chapter 3** I shortly describe the field site (3.1) and introduce myself, my personal and academic interests as well as experiences that motivated this research (3.2). I consider that my background had a bearing on the focus of the research and its process. This is followed by a detailed delineation of research methods and a reflection on the research process and collected data (3.3 - 3.8)
In **chapter 4**, I aim to contextualise land concentration in irrigated areas by looking at the history of irrigation in Spain (4.1). A short description of the Segarra-Garrigues irrigation canal provides a basis to comprehend the lines of conflict around the project and the territory where I carried out my research.
In **chapter 5** I present my results where I (5.1) delve into the conditions that underly land concentration processes in Lleida, (5.2) analyse the role of the Segarra-Garrigues irrigation canal in pushing changes in land holding structures in the study region, (5.3) reveal socio-ecological implication of land concentration processes along the five food sovereignty principals. In an outlook (5.4), I describe the food sovereignty alternatives practiced by farmers and cooperatives I came across throughout my research.
In **chapter 6** I discuss my findings in light of my theoretical considerations from chapter two and draw conclusions and an outlook in **chapter 7.**

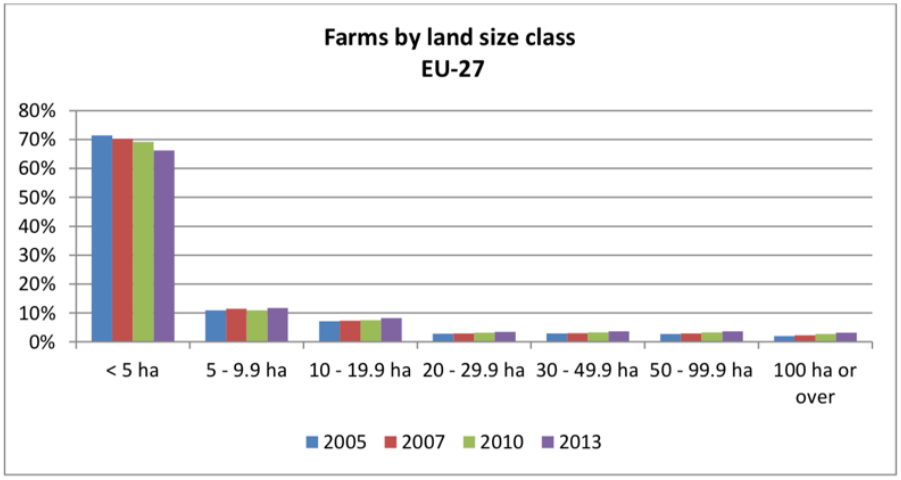
2. Literature Review and Theory

The following literature review situates my case study from Catalonia (Spain) with already existing knowledge on land concentration processes in Europe.
In section 2.1, I formulate a conception of land concentration and distinguish it from the term 'land grabbing'. Building on this conception, in section 2.2 I turn to the drivers and socio-ecological implications of land concentration in Europe (with a focus on Spain); essential for understanding the socio-economic and political context in which land concentration occurs in Europe and to identify the contributions I want to make with my thesis.
In section 2.3, I draw a theory of food sovereignty that also serves as a theoretical lens through which I strive to discuss the results of my field research.
In this sub-chapter, I describe the origins of the term as well as concepts from social ecology and critical agrarian studies (social metabolism/metabolic rift; colonisation of nature & food regimes) that render intelligible the specific society-nature relations that triggered the emergence of the social movement for food sovereignty. The concepts of social metabolism, colonisation of nature and food regimes lead to discussion on socio-economic conditions, and in particular, the changing biophysical exchange relationship between society and nature that underpins land concentration processes. I further outline five principals of food sovereignty, which provides a comprehensive frame to analyse the socio-ecological implications of land concentration processes for farmers, the rural community and the environment they live in. In drawing a theory of food sovereignty, I aim to provide a basis to understand how uneven power relations are historically weaved into the global agricultural system, where peasant agriculture is systematically displaced by an industrial, corporate-owned agricultural model, and how resistance against these changes was formed. Finally, this enables me to discuss the role and relations of actors involved in land concentration processes as well as the alternative practices farmers live and/or propose to strengthen peasant farming.

2.1. Conceptualising land concentration in Europe

Not only local research and social movements have drawn attention to land concentration processes in Europe, but also statistical evidence raised the awareness for this issue. Statistics show that the number of small-scale farms is diminishing, while large-scale industrial farms are increasing their cultivation areas (EU (European Union), 2012; EUROSTAT, 2018; Kay, 2016; Popovici et al., 2018; van der Ploeg et al., 2015b). According to EUROSTAT (2018), large-scale industrial farms made up only 3.3 % of all European farms in 2016, but they controlled 52.7% of the total utilised agricultural area (UAA)[1] within the EU. In turn, 77.7% of farms below 10 ha only controlled 11.2% of the UAA. Slow but constant changes of land holding structures in Europe have been observed throughout the last two decades (see Figure 1).

[1] According to EUROSTAT (2019) utilised agricultural area "is the total area taken up by arable land, permanent grassland, permanent crops and kitchen gardens used by the holding, regardless of the type of tenure or of whether it is used as a part of common land."



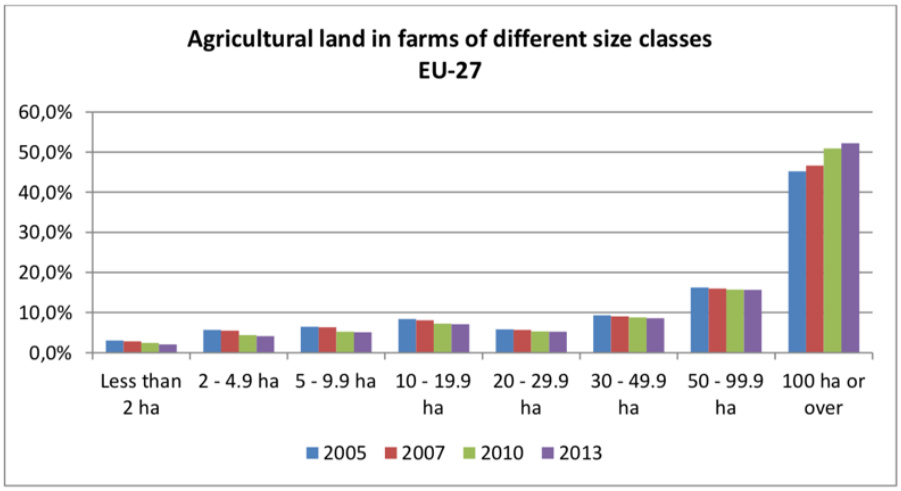


Figure 1. Changes of Land Holding Structures within the EU[2]

These changes are discussed under the term land concentration; a process in which smaller tracts of agricultural land are converted (through selling or leasing) into ever bigger holdings, which are then owned/leased and used by fewer large-scale landowners, agribusinesses or other corporate entities (van der Ploeg et al., 2015b). In this thesis, I focus on land concentration in the hands of agribusinesses which I define as corporate-owned, "large agricultural operations that are run like an industry", devoted to very large production and the further processing and/or distribution of food and often managed by "administrators and accountants rather than farmers […]" (cited in (van Fleet, 2016, p. 2 & 3)

Distinctions between small-scale family farms and large-scale industrial farms are made in quantitative as well as qualitative terms; and these are important to understand as they bring to light the motives behind the political struggles against land concentration. According to EUROSTAT (2018), large-scale farms have cultivation areas of 100 ha or above, whereas everything below 100 ha is categorised as mid-sized (20-100 ha) or small farms (1-20 ha).

In qualitative terms, literature considers that small-scale family farms or peasant farms[3] support rural employment, contribute to territorial development, provide specialist local products and support social, cultural and environmental services. Furthermore, small-scale

[2] Source: European Commission (2015): EU farms and farmers in 2013: an Update. Available: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/agri-farm-economics-brief-09_en.pdf (last access: 12.03.2020)

[3] In the context of this thesis small-scale farmers and peasants are used as a synonym.

family farmers or peasants are characterised by their deep commitment to place and attachment to a particular piece of land embedded in the socio-cultural context of its surroundings (Bunkus and Theesfeld, 2018; Edelman, 2003; Desmarais, 2008; Altieri et al., 2008).

Large-scale industrial farms and agribusinesses, in contrast, are characterised by the attributes of agricultural industrialisation, namely, mechanisation, specialisation and intensification of production, including the application of agro-chemicals and inorganic fertilisers. In addition, agricultural trade often goes beyond regional/national markets with little benefits for the local economy (EUROSTAT, 2018; Kay et al., 2015; McMichael, 2009; Popovici et al., 2018; Soronellas Masdeu and Casal Fité, 2018).

Whilst the struggles against changing land holding structures were pushed by civil society organisations and social movements, scientific interest in the issue of land concentration has increased in the last decade. Literature on land concentration is closely linked to the issue of land grabbing, which raises the question of how both terms can be conceptually distinguished from one another.

Land grabbing refers to an increasing commercial interest of agribusinesses, investment funds and government agencies in acquiring long-term rights over large areas of farmland and land-based resources (Akram-Lodhi, 2015; Borras Jr and Franco, 2012; Cotula, 2012). McCarthy et al. (2012) points to the issue that "behind a façade of land acquisition for a stated purpose, there lies an agenda to appropriate subsidies, obtain loans using land permits as collateral, or speculate on future increases in land values" (p. 523). The acquisition of land does not solely refer to the exchange of land ownership but also covers long term leasing contracts. Both, the new land owner or leaser are considered to capture decision-making power over the land and control and benefit from land-based resources (Alonso-Fradejas et al., 2013). Changes in control over land are associated with overriding the "existing meanings, uses and systems of management of the land that are rooted in local communities" (Alonso-Fradejas et al., 2013, p. 3). Land grabbing is further characterised as "being non-transparent, non-consultative and fraught with corruption involving national and local governments", often leading to "dispossession when 'local communities' do not have formal, legal, and clear property rights over the contested lands" (Borras Jr and Franco, 2012, p. 38). Until now, land grabbing research has focused mainly on countries of the Global South, since "Europe is held up as a showcase for good land governance, where well-regulated land markets and sound land investments are assumed to prevail" (Kay, 2016, p. 3). Van der Ploeg et al. (2015) explore that non-transparent land deals, a capturing of control over large tracts of land (in part by foreign investors) and a deeper rupture with traditional family farming are currently limited to Eastern European EU member states. The drastic shift in land holding structures that would point to land grabbing is still seen as an exception in Western Europe. This is underlined by data from the Land Matrix on large-scale acquisitions (sells and leases) of agricultural land which only includes Eastern Europe in their global ranking of top targeted regions[4] (Nolte et al., 2016). Kay (2016), however, emphasises that land concentration, being a more subtle and ongoing process with different drivers, is likely to have negative long-term implications for the structure of European agriculture and the power of democratic decision-making over land.

[4] According to Land Matrix data (2016), "Africa remains by far the most targeted continent, with 422 concluded agricultural deals involving a total area of almost ten million hectares. Asia has the second largest number of deals, with 305 deals involving 4.9 million hectares. Eastern Europe has only 96 deals but in terms of total size accounts for more than 5 million hectares." (p.16).

2.2. Drivers and implications of land concentration in Europe & the case of Spain

A literature review of case study based scientific papers and reports was carried out to understand the drivers and implications of land concentration in Europe, and in particular, the drivers and implications relevant to the context of Spain (and the region of Catalonia). For the case of Spain, Soler and Fernández (2015) issued a comprehensive study, using agricultural census data (from 1999 and 2009) and qualitative sources from case studies within Spain amongst other sources (p. 10/11). Spain mirrors a similar scenario to the rest of Europe, as Spanish large-scale farms over 100 ha only represent 5.17% of the total number of farms in Spain but yet possess 55.11% of the UAA.[5]

Amongst the identified drivers for land concentration are the ***European Agricultural and Land Use Policies***. The EU's Common Agricultural Policy (CAP) and its subsidy system has influenced land concentration in Europe (Soler & Fernández, 2015).

The CAP is the EU's central regulatory framework on agriculture and was established with the objective to increase the market orientation of EU agriculture, provide income support and safe prices for agricultural products, improve environmental measures as well as support rural development (Kay et al., 2015). The CAP subsidy system is built on two core principles. The first consists of direct payments to enhance the viability, productivity and competitiveness of farms; the second is an aid, training, advisory, innovation and risk-management program to foster rural development and social and environmental sustainability (Aparicio et al., 2013; European Commission, 2020; Heinrich Böll Foundation et al., 2019; Kay et al., 2015).

The largest share (75%) of the CAP subsidy budget is spent on direct payments per hectare of farmland, instead of subsidy payments based on the actual production of a farm. While the de-coupling of payments from production was in response to the issue of subsidisation of overproduction, the new regulation creates a situation in which subsidies are paid without any obligation to produce food, raising the danger that land is only worked to receive more subsidies (Kay et al., 2015; Soler and Fernández, 2015). In this regard, large holdings capture most of the subsidies, whereas small-scale farms receive much less support such that farms with less than 1 hectare are excluded from the subsidies (Kay et al., 2015; van der Ploeg et al., 2015b). Per-hectare payments encourage large-scale farm owners to buy up more land to be able to claim more subsidies (Glass et al., 2019; Kay, 2016; van der Ploeg et al., 2015b).

The EU's CAP subsidy system thus contributes to a vicious cycle in which large-scale farms accumulate capital and are more able to compete in the market while small-scale farms are economically weakened and often forced to give up their business (van der Ploeg et al., 2015). Other elements of the CAP policy such as the system of protected prices and subsidies for farm modernisation measures or new machinery, further created a favourable environment for agricultural entrepreneurs engaged in farm expansion (van der Ploeg et al., 2015).

In Spain, 77% of all agricultural subsidies in 2013 were granted to 19% of the recipients, amongst them members of the Spanish aristocracy, the food industry and distributors (Aparicio et al., 2013; Soler and Fernández, 2015; van der Ploeg et al., 2015).

[5] Their quantitative analysis for the years between 1999 and 2009 demonstrates that in Spain the average size of farms increased by 18% (particularly mid-size and large-scale farms over 70 ha increased their properties), while the total number of farms diminished by 23,2% (mainly small-scale farms disappeared). The study however shows that regional differences within Spain are substantial, with the highest unequal land property structures in the Autonomous Community of Extremadura and Madrid and more equal sizes of properties in Catalonia, Basque Country and Galicia (see calculations on the Gini-coefficient in more detail in: Soler & Fernández (2015), page 32-36).

Furthermore, the organisation and structure of the EU food market and the supply chains indirectly have an effect on how land is used and distributed. Food prices of different commodities are influenced by the food market members (agricultural sector, food processing industry and the distribution sector) and are variable along complex commodity chains (from agricultural commodity prices, to producer food prices and consumer food prices) (Kay et al., 2015). In Europe, where only ten food retailers dominate the food market, there is a high danger that they abuse their buyer power to drive down the prices of agricultural commodities and undercut farmers' revenues (Mooney, 2017).

For instance, in Spain, five supermarket chains dominate the retail market (Aparicio et al., 2013). The livelihoods of small-scale farms can be affected directly when prices for their produce are squeezed while large-scale farms are more likely to have more bargaining power. On-farm processing and direct commercialisation as an alternative sales channel for small farmers is often restricted by the rigid EU hygiene standards (Medarov, 2013). The food market and especially large retailers can stimulate land concentration in cases where small-scale farmers have to give up farming and their land when they cannot make a living out of it (Kay et al., 2015).

Furthermore, land concentration is related to ***rising land prices, speculation and privatisation***. Especially in the last two decades, factors such as population growth, rising meat consumption, biofuel policies and climate change have led to an increased awareness of the scarce, finite and valuable character of land (Cotula, 2012; European Economic and Social Commitee, 2015; Fairbairn, 2014; Magnan, 2015; Sippel et al., 2017).

Statistics show that the variation of prices between different EU Member States is substantial, ranging from on average €1,958/ha in Romania (2016) to approximately €63,000/ha in the Netherlands (2016) (EUROSTAT, 2018; Kay et al., 2015). Between 1997 and 2008 in Spain, land prices rose by 208% with an average price of €10,974/ha in 2008. After the economic crisis in 2008, the prices declined slightly reaching a level of €9,705/ha in 2012 (Soler and Fernández, 2015). However, a general rise in land prices between 2011 and 2016 can be observed in Spain as well as in the rest of the EU (EUROSTAT, 2018)[6]. Rising land prices are in part a result of insufficient regulation of land markets in several European countries (Swinnen et al., 2016).

In Europe, individuals, companies and institutions (e.g. pension funds, life insurance companies and banks) invest in farmland. They do so, to diversify their investment portfolio, hedge against inflation or get relatively fast returns from their investments as food and land prices are rising and agricultural productivity increases constantly (Akram-Lodhi, 2015; Fairbairn, 2014; Magnan, 2015; Soler and Fernández, 2015; van der Ploeg et al., 2015). Investments in land for wealth preservation are mostly made in so-called "low-risk, low-return" locations in Europe, North America and Australia (Cotula, 2012; White et al., 2012). According to estimations, there are around 30 funds in Spain investing in the food and agricultural sector (Soler and Fernández, 2015). As Sippel (2015) shows with her case study research outside of Europe, financial investments in farmland are also made by nation states in other countries to guarantee the food security for their citizens. The process through which farmland is transformed into an investment category is captured by the term 'financialisation of agriculture' (Lawrence et al., 2015). One such example from Spain is the alfalfa production sector, which is controlled by the United Arab Emirates, the largest purchaser of Spanish alfalfa for the Emirati camel herd back home (Soler and Fernández, 2015)[7].

[6] Available data show that between 2011 and 2016 the strongest growth in land prices was in France (nearly a four-fold increase), the Czech Republic and Lithuania (a three-fold increase) and Estonia, Latvia and Hungary (between a two-fold and three-fold increase) (Eurostat, 2018).

[7] For more detail see Soler & Fernández (2015), page 218 -220.

Apart from the rising financial interest in land, agricultural land is increasingly being transformed for urban sprawl, real estate and other infrastructure projects (Sroka et al., 2019; White et al., 2012). Land use changes are motivated by the massive added value which is created through transforming agricultural land into urban land. Ody (2013) demonstrates that farmland value of €5000/ha can increase a hundred-fold when converted for non-agricultural use, providing an incentive to buy agricultural land.
Shifts in land holding structures, such as the privatisation of public and/or collectively used land, can also be linked to the political circumstances within a nation state. Since the economic crisis in 2008 in Spain, the privatisation of public land has been promoted as a measure to guarantee liquidity and to pay off public debt (Soler and Fernández, 2015). While Soler & Fernández (2015) point to the long history of collective land management in Spain, they see public owned land threatened by the establishment of several new laws (e.g., *Ley Montoro, Ley de Montes)* that enable its privatisation. The data shows that between 1999 and 2009, land owned by public entities decreased by 32% (-846,580 ha UAA) whereas land owned by trading companies increased by 21% (467,163 ha UAA) (Soler and Fernández, 2015).
The literature demonstrates that investors acquire land under different political circumstances (e.g., indebtedness of nation states during the economic crisis which started in 2008) and for different purposes such as large-scale agricultural exploitations, mining projects and urban as well as tourism development (Anderson, 2013; Bouniol, 2013; Hadjimichalis, 2014; Pieper, 2013; Soler and Fernández, 2015).

A third complex of drivers is related to ***land abandonment and lack of generational replacement***.
Land abandonment refers to land formerly used for agricultural activities (crop or pasture/grazing production) that no longer has farming functions and has not been converted into forest or urbanised areas (Perpiña Castillo et al., 2018). Land concentration is intensified when abandoned farmland is taken over by currently active farms, making the active farms more profitable and competitive in the market (Lasanta et al., 2017).
Several factors contribute to land abandonment: locational factors, namely distance from other settlements, lack of connection to roads, and declining rural services. While peripheral land is more prone to abandonment, it has also been observed that farmland in the outskirts of cities becomes abandoned as urban areas offer better paid off-farm jobs (Rey Benayas, 2007a; Sroka et al., 2019; Terres et al., 2015; Vidal-Macua et al., 2018). Furthermore, less favourable natural environmental features regarding soil fertility and erosion, climate and climate change, relief (e.g., slopes, curvature) and water accessibility increase the risk of agricultural land abandonment (Lasanta et al., 2017; Soler and Fernández, 2015; Ustaoglu and Collier, 2018; Vidal-Macua et al., 2018). Another factor is institutional frameworks, such as specific agrarian policies that influence land abandonment. To diminish the surplus production and associated costs for food storing in Europe, the CAP subsidised farmers for temporal (set-aside) or permanent (land retirement) abandonment of farmland between 1988 and 2008 (Lasanta et al., 2017; Ustaoglu and Collier, 2018). However, it is also argued that financial support of the CAP has generated additional income for farms, limiting the socio-economic factors of land abandonment (Sroka et al., 2019). In fact, socio-economic constraints, such as low profitability, too small farms with fragmented land and highly competitive agrarian markets combined with a rural-urban migration notably pushed land abandonment (Lasanta et al., 2017; Rey Benayas, 2007b; Terres et al., 2015). In particular, rural depopulation, also

known as rural exodus[8], was caused by the ageing of rural society and the lack of generational replacement (Soler and Fernández, 2015). Fuelled by so-called "push" (poor economic remuneration for hard work, limited social opportunities) and "pull" (urban lifestyle, with a wider range of job opportunities and services (schools, daycare)) factors, there is a lack of continuity of farming activities followed by farmland abandonment (Borras et al., 2013)

Against the backdrop of land abandonment, particularly in Spanish dryland areas, the construction of irrigation infrastructure has been promoted as a solution to foster rural development and maintain population in the territory. Soler & Fernández (2015) argue that this proclaimed goal is not always reached. Since new irrigation infrastructure projects tend to be very cost intensive, they are often financed through a public-private partnership which means that water – at least in parts – become privatised. To amortise the investment, the prices for installing irrigation systems on fields as well as for water are set higher than they otherwise would be. Thus, farmers are either forced to intensify and expand their fields to remunerate their investment in irrigation or decide against it as they cannot afford the costs (Broekman, 2013; Soler and Fernández, 2015). In particular, old farmers, who constitute the majority in rural Spain[9], have limited capacity and interest to engage in the creation of new agricultural production systems and invest in irrigation (García-Martínez et al., 2008; Lasanta et al., 2017; Soler and Fernández, 2015).

Rural Europe is confronted with a situation in which an ageing agricultural sector lacks succession, and abandoned farms are being taken over by neighbouring farms seeking to enlarge their holdings or by investors and large agribusinesses (Borras et al., 2013; Soler and Fernández, 2015). Those small farms that would like to enlarge their own land are often hampered by unaffordable land prices, while on-going land concentration fosters "ever diminishing land available to young people" (van der Ploeg et al., 2015, p. 157).

In fact, one of the identified socio-ecological implications of land concentration is the ***burden of access to land and the marginalisation of small-scale agriculture.*** This is particularly reflected in the difficulties faced by young people to enter the farming sector, especially those without a farming background or inheritance of agricultural land (Borras et al., 2013; Glass et al., 2019; Kay et al., 2015; Soler and Fernández, 2015; White, 2012). They are not only challenged by rising land prices, but also by a competitive food market in which farm gate prices are driven down by a few large and powerful food retailers (Aparicio et al., 2013; Borras et al., 2013; Kay et al., 2015; Ody, 2013).

As an alternative, small farms and newcomers in farming are using short food supply chains to sell their products on a local level, yet these are limited and often not enough to make a living (Monllor i Rico and Fuller, 2016).

In addition, finding available land and getting in touch with owners willing to lease or sale their land is hampered by a lack of transparency of land markets, as potentially available land is often not tendered on the official market (Ody, 2013; Williams, 2015). As Monllor (2014) states for the case of Catalonia (Spain), farm succession and land deals are usually made on the base of personal contacts. As "most property in rural areas has a strong emotional value

[8] Rural exodus describes a process in which the migration of young and trained people to urban areas resulted in a loss of services and infrastructure in rural areas while the average age of rural inhabitants increased (see: Lasanta et al. 2017)

[9] In line with European trends, in 2009, sixty-one percent of the land holdings in Spain were run by farmers over the age of 55 while only 6,2 % of the farms were managed by people under the age of 35 (Soler & Fernández, 2015). The data signals the social concerns regarding the continuation of family farming livelihoods (Claros, 2013).

for families and communities, the preference is to rent it to neighbours and local people, or even to leave it under-used, rather than sell it to newcomers." (p. 3).
Increase of capital requirements for agricultural production, including the very common need to employ people from outside the family to farm the land, is a further obstacle that contributes to the marginalisation of small-scale agriculture (Levesque, 2019; Milne and Butler, 2014; Monllor i Rico and Fuller, 2016; Popovici et al., 2018).
The decline in family farming in Europe goes hand-in-hand with the emergence of large-scale industrial agriculture owned by agribusinesses, often promoted and justified by its greater productive efficiency. Where land is transformed into large holdings, usually the patterns of land management change and standardised production processes are applied to make the land manageable (Soler and Fernández, 2015; van der Ploeg et al., 2015).
Weis (2010) states that "industrial economies of scale depend upon the standardisation of production, the breaking down of work into smaller, more regular tasks, and the substitution of labour with technology wherever possible" (p. 318). Consequently, land concentration processes have implications for rural employment rates which are rather low on large-scale agriculture due to high levels of mechanisation (Kay et al., 2015). According to a study by Friends of the Earth Europe in 2014, 4.8 million full-time jobs disappeared from EU agriculture between 2000 and 2012 (Sánchez Carpio, 2014).
Reports (European Economic and Social Commitee, 2015; Kay et al., 2015) and case study research (Bouniol, 2013; Constantin et al., 2017; Popovici et al., 2018) indicates that standardisation of agriculture is also linked to an increase of intensive monoculture plantations and animal breeding, as well as a growing use of agrochemicals, pointing to the ***environmental degradation and land use changes*** that land concentration brings (Altieri, 1998; Kimbrell, 2002; Popovici et al., 2018; van der Ploeg, 2010; van der Ploeg et al., 2015; Weis, 2010).
A wide range of authors analysed the adverse environmental effects of industrial, intensive agriculture. These include the contamination of groundwater and surface drainage of fertilisers and pesticide residues (Horrigan et al., 2002; Liu et al., 2008; Tilman, 1999), the reduction of species and genetic biodiversity and ecosystem services of agricultural systems (Karp et al., 2012; Tilman, 1999; Tsiafouli et al., 2015), high rates of carbon emissions due to petroleum consumption as fuel or in fertilisers (Reay et al., 2012; Robertson, 2000), and the destruction of soil structure, fertility and its carbon stocks (Montgomery, 2007; Pagliai et al., 2004).
Taken together, human induced environmental and land degradation through industrial farming undermines the biophysical foundations necessary for agricultural production (Weis, 2010). Woodhouse (2010) resumes:

> *"In addition to these environmental concerns, the capital investment required to purchase inputs of machinery and agrochemicals means that industrial agriculture has been identified as favouring an increasing scale of farming, resulting in concentration of control of land and increasing landlessness among rural populations, with negative effects on agrarian societies."(p. 439)*

Woodhouse hints at the link between land concentration processes, industrial farming and its ***socio-cultural implications***.
In fact, farmland concentration combined with the expansion of industrial agriculture can have a disruptive effect on local cultures, the social evolution of communities and the long-standing local economies (Constantin et al., 2017; Lobao and Stofferahn, 2008). The value of

agriculture goes beyond its function of food production and is "considered to be closely related to rural livelihoods […], [where] sowing, harvesting and processing are likewise culturally embedded into rural societies." (Bunkus and Theesfeld, 2018, p. 3). The social value of land refers to its symbolic meaning, promoting a sense of identity which is either connected to a place or to a way of life (Bunkus and Theesfeld, 2018; D'Odorico et al., 2017; Petrescu-Mag et al., 2017). Land ownership, in particular, creates social value by empowering people to take part of decisions in favour of sustainable land management and to engage in rural development and collective action (Meinzen-Dick, 2014; Mishra and Sam, 2016; Schlager and Ostrom, 1992).

In contrast, agribusinesses perceive land rather as an economic resource instead of a source of socio-ecological wealth (Lobao and Stofferahn, 2008; Mancus, 2007; McMichael, 2014a). Theesfeld & Bunkus (2018) conclude in their research on land concentration/land grabbing in Europe (Eastern Germany) that large-scale land acquisition and ownership changes can have negative but rather subtle side-effects such as aesthetical changes in rural areas, diverging local perceptions of agricultural landscapes, a disconnect of rural people, an increase in migration and social justice issues.

Social movements and political reports state that these subtle changes in land distribution can undermine European food cultures and traditions, as well as the basis for the well-being of local economies and rural societies (European Coordination Via Campesina, 2017; Kay et al., 2015; Noichl, 2017; Rosset, 2011). In this context, Borras et al. (2013) emphasised the need to understand "to what extent, how and why" (p.6) land concentration is occurring in Europe and Bunkus and Theesfeld (2018) reaffirmed that there is limited empirical evidence on the effects of land concentration for rural societies in Western Europe.

Here is where I want to make a contribution with my thesis. Based on the experiences and perceptions of farmers and rural community members, I will be analysing how their livelihoods, work and the landscape in which they live are affected by land concentration processes. This also includes exploring the conditions that favour land concentration, according to the interviewed actors. The region of Lleida in Catalonia (Spain) offers an interesting case as it is a region where small to mid-size family farming remains the predominant model, while first incidences of land concentration can particularly be observed in an area of the Segarra-Garrigues irrigation canal. To focus the research on farmers' and rural community members' viewpoints on how irrigation infrastructure is linked to land concentration processes seems interesting to explore, as to my knowledge it has not been a central issue in research on land concentration in Europe (except Soler & Fernández (2015)).

2.3. Food sovereignty theory

The struggles against land concentration in Europe are embedded in the fights of the food sovereignty movement. The social movement points to the adverse effects that on-going land concentration is likely to generate for farmers, rural communities and the environment in Europe and hints to the entanglements of land concentration processes and the consolidation of the industrial, corporate-owned agrarian model (Chancellor, 2019; European Coordination Via Campesina, 2017). As the term food sovereignty has its origins in the social movement, a theory of food sovereignty cannot be synthesised without looking at these roots.

The global movement for food sovereignty emerged in the early 1990s in a social, political and economic context that was especially impeding the livelihoods of peasants (Desmarais and Nicholson, 2013). In the face of increasing free trade, deregulation of markets, expansion of agribusinesses, consolidation of giant seed companies and growing state efforts to enforce seed certification and intellectual property rights for crop genetic material, peasants' abilities

to make a living from their production and compete in agricultural markets was progressively undermined (Binimelis et al., 2014; Edelman et al., 2014; Iles and Montenegro de Wit, 2015; McMichael, 2014b).
This neoliberalisation[10] of the food and agricultural systems (in the sense of agricultural trade liberalisation and the privatisation of related public companies and services), has involved the subsidisation of Global North agribusinesses and the constant dissolution of trade barriers[11], allowing the artificial cheapening of agricultural commodities and agro-export through selling them below-production-costs. The evolution of the neoliberal agri-food system undercuts small-family farming cultures, not only of peasants in the Global South but also in the Global North, and their forms of agricultural ecosystem management (McMichael, 2011).
In this context, La Via Campesina was founded in 1993 as an umbrella for organisations that had already built resistance against the evolving neoliberal, corporate-driven, agro-industrial model in previous years (Desmarais and Nicholson, 2013; McMichael, 2014b). They defined food sovereignty as "the right of peoples to healthy and culturally appropriated food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Desmarais, 2008; Nyéleni, 2007).
Peasant struggles were not a sudden phenomenon emerging in the 1990s but were rooted in long-standing opposition to two interlinked processes: the metabolic rift and the emergence and consolidation of a corporate and neoliberal food regime.

Conceptual foundation of food sovereignty theory

The concept of metabolic rift and food regimes describe the evolution of a socially unjust and ecologically destructive agricultural system that is critiqued by advocates of food sovereignty. Food sovereignty theory is based on both concepts, in the light of which the root-causes and socio-ecological implications of land concentration processes are going to be discussed in this thesis.
The ***metabolic rift*** refers to "a double separation: of agriculture from its biological foundations, and of humans from nature" (Schneider and McMichael, 2010, p. 461). It is connected to Marx's concept of the metabolic rift in socio-ecological metabolism, as a rupture in the exchange relationship between society and nature (Wittman, 2009). McMichael (2009) emphasised that this process of distancing "underlies the historic separation between countryside and city, as agriculture industrialises" (p.161). Agricultural industrialisation contributed to a disrupted relationship between society and nature by introducing "new agronomic methods dependent upon chemicals and bioengineered seeds and genetic materials produced under industrial conditions" (McMichael, 2009, p. 161).

[10] Neoliberalism, as David Harvey explains, is a political economic philosophy that emerged in the late 1970s and argues for the supremacy of the market in attending to human needs and wellbeing, while the functions of the state is limited to create and preserve an institutional framework that guarantees private property rights, free markets and free trade (Harvey, 2007). According to Alkon and Mares (2012), the most important components of neoliberalism are the "deregulation (the removal of laws restricting the ways that markets can function, or that favour one industry or product over other), trade liberalisation (the removal of protectionist tariffs designed to foster local consumption), and the privatisation of state enterprises and public services."(p.448).
[11] One of the first, large free trade agreements was the General Agreement on Tariffs and Trade (GATT) (Desmarais/Nicholson, 2013). The GATT is a legal agreement between several countries, and the overall purpose was to promote international trade by reducing or eliminating trade barriers. According to its preamble, its purpose was the "substantial reduction of tariffs and other trade barriers and the elimination of preferences, on a reciprocal and mutually advantageous basis." (Source: Wikipedia: https://en.wikipedia.org/wiki/General_Agreement_on_Tariffs_and_Trade (Last access: 10.08.2019)

While society makes use of resources from nature through labour, it reshapes its environment by extracting material and energy and discharging waste and emissions. Social ecology of the Vienna school conceptualised this material and energetic exchange relationship between society and economy (a system embedded in the environment) as ***social metabolism*** (Scheidel et al., 2018). The term was developed in analogy to a biological concept referring to the internal processes of living organisms which "maintain a continuous flow of materials and energy with their environment to provide for their function, for growth and reproduction" (Fischer-Kowalski and Haberl, 1998, p. 574). It visualizes society as akin to a living organism in a mutual, biophysical exchange with nature. Fischer-Kowalski & Haberl (1998) state: "A society's materials and energy input per capita and year is largely determined by the mode of production and the style of life associated to it." (p.574). In that regard, societies can historically be distinguished into three different modes of subsistence: hunter and gatherer, agrarian and industrial societies[12].

The metabolism of agricultural systems is sustained by the constant recycling of nutrients (Wittman, 2009). The metabolic rift points out that today's agricultural system is disrupting the previously closed-loop system of food production where food was distributed to its immediate cultivation areas and waste was reincorporated into production as a way to recycle nutrients within the system. Pre-capitalist societies intentionally transformed natural systems with the aim to improve their utility for society (Fischer-Kowalski and Weisz, 2005). What Fischer-Kowalski and Haberl (1998) define as the ***colonisation of nature*** is a process inherent to human history in which natural ecosystems were replaced by agricultural ecosystems designed to produce biomass or create space for societal use (Fischer-Kowalski and Haberl, 1998). Widespread landscape transformation was also incorporated in pre-capitalist agricultural systems, however, modifications of landscapes were made on a local or regional level to allow for the recycling of nutrients and replenishing soil fertility with wastes, which ensured the continuity of production (Wittman, 2009). The possibility to disconnect agricultural production from its ecological foundations through the use of fossil fuels and technology not only provoked ecological degradation but also a wide range of social effects (Wittman, 2009). McMichael (2009) ascertains that the metabolic rift, pushed by agricultural industrialisations, "expresses the subordination of agriculture to capitalist production relations" (p. 161).

Accordingly, Pichler et al. (2017) resume:

> *"The growing use of fossil fuels coincided with the global expansion of capitalism and unprecedented changes in economic, social, and political organisation and differentiation. These changes acted as a driver of increasing resource use: The*

[12] Hunter-gatherer and agrarian societies relied on a so-called basic metabolism which rests upon the natural reproduction of resources. Since all materials are extracted from current biospheric cycles, and the population density cannot exceed the limits set by locally available nutrition, the metabolic output of such societies should be easily absorbed and reconverted by their local environment. The environmental problem of such societies was natural resource depletion, when the rate of consumption exceeded the rate of natural reproduction.
Industrial societies are characterised by an extended metabolism drawing on the mobilisation of resources from out-side the biosphere, namely non-renewable resources such as fossil fuels, metals and other minerals. Environmental problems are not only linked to resource scarcity but also to waste deposition and pollution, as materials extracted from outside the biosphere kick of new biogeochemical processes which exceed the capability of ecosystems for gradual evolutionary adaptation and absorption (Fischer-Kowalski and Haberl, 1998).

capitalist system requires economic growth through the continuous accumulation of capital of labour and resources." (p. 33).

As McMichael (2009) asserts, the theory of ***food regimes*** "is ultimately anchored in the 'metabolic rift'" (p.161). The basic definition of a food regime is a "rule-governed structure of production and consumption of food on a world scale" (Friedmann, 1987 cited in Holt Giménez and Shattuck, 2011, p. 110). Food regime theory is seen as an analytical lens to understand the current global food system. The theory was developed by Friedmann & McMichael (1989) who define three different food regimes since the second half of the 19th century (McMichael, 2009). The first global food regime (1870-1930s) is characterised by cheap provision of food and raw materials by colonies in the Global South fuelling industrialisation in Europe (Holt Giménez and Shattuck, 2011). The first food regime set the grounds for monocultural agricultures imposed in colonies compromising their local food systems and ecological resources (McMichael, 2009).
The second food regime (1950s-1970s) reversed the flow of food from the Global South to the Global North as the agricultural surplus production was transferred from North to South in the form of food aid. What followed was a global spread of industrial agriculture that was increasingly oriented to the global market. It weakened small-scale family farming agriculture while increasing the power of large landowners, initiating the struggles of peasant movements around the globe in the 1960s for "land redistribution, production credits, fair markets and the right to dignified rural livelihoods" (Akram-Lodhi et al., 2007 cited in Holt Giménez and Shattuck, 2011, p. 111).
The third food regime, known as corporate neoliberal food regime (1980s – present), emerged after the economic crisis of the 1970s. It is characterized by an ongoing process of liberalising agricultural markets, promoted by the World Trade Organisation (WTO)[13] and several free trade agreements. These agreements push the idea of deregulated agricultural markets, monocultural production including biomass production for agrofuels and mass global consumption of industrial food. This food regime paves the way for corporate monopolies and public-private partnerships that increasingly configure the agricultural system. Meanwhile, the right of nation states to regulate food and agricultural production and trade is undermined (Holt Giménez and Shattuck, 2011)

Food sovereignty principals
Against the backdrop of soil, water and genetic resources depletion, as well as the widening separation between rural producers and urban consumers who have become increasingly detached and dependent on food from distant areas, La Via Campesina strives to reverse the breakdown of local food systems and to reconnect agriculture to its ecological basis (Holt-Giménez and Altieri, 2012; Wittman, 2009).

[13] "The WTO was created in 1995 to negotiate international trade agreements. When dominant countries introduced agriculture into the negotiations, they agreed on rules which threatened the capacity of states to organise and manage agricultural production and food supplies for their populations. These rules also allowed transnational corporations to increasingly influence and control food production, distribution and trade. The WTO envisaged a world where all agricultural goods would be produced and traded according to where the production costs are lowest. Agreements often obliged states to dismantle domestic agricultural economies and supports, leading to the expansion of monoculture crops and increased mechanization. Trading on global markets meant pushing production costs lower and lower – so production is centralised where labour costs are lowest for example. This process, accompanied by the industrialization of processing and distribution of food and other agricultural products, meant the destruction of peasant farming and the peasant and rural economy." (Anderson, 2018).

The aspiration of the movement to propose alternatives to an environmentally and socially unsustainable agricultural system provokes scientific discussion as to whether the movement can challenge the dominant corporate, neoliberal food regime (Holt Giménez and Shattuck, 2011; Wittman, 2011).

According to Holt Giménez and Shattuck (2011), food sovereignty is a radical response to the failures and negative impacts of the current neoliberal agri-food system as it is not only devoted to the access to food but also to the right of democratic control over food and the resources to produce food. Such a radical model embraces agroecology and local, community-based food systems and traditional knowledge, scales up grassroots alternatives, and advocates for parity, redistributive land reform, protection from dumping and overproduction, as well as community rights to water and seeds (Holt Giménez and Shattuck, 2011).

Based on the common definition of food sovereignty as "the right of peoples to healthy and culturally appropriated food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Nyéléni Declaration, 2007; Desmarais, 2008)[14], I derived five principles from the literature that delineate the concept of food sovereignty (Rosset, 2003; Windfuhr & Jonsén, 2005; Nyéléni, 2007; Desmarais, 2008; Pimbert, 2009; Altieri, 2009; Patel, 2009; Rosset & Martínez-Torres, 2010; Nyéléni Europe Declaration, 2011; Wittman, 2011; McMichael, 2014; Binimelis et al., 2014; Di Masso et al. 2014; Azkarraga & Desmarais, 2017; Anderson, 2018; Anderson et al. 2018; Tulla & Vera, 2019; Chancellor, 2019).

The first principle, '***local commercialisation, consumption and trade',*** refers to the transformation of trade and commercialisation that is directed to the creation of short and local distribution channels, that can guarantee fairer and more transparent food chains, especially regarding food prices (Rosset, 2003). The former also includes closer commercial relationships between the food producers and consumers (Binimelis et al., 2014; Tulla and Vera, 2019).

It emphasises the right of countries to protect themselves from under-priced agricultural and food imports as well as the need for agricultural prices to be linked to production costs (Windfuhr and Jonsén, 2005). It proposes to countries or unions of states to impose taxes on excessively cheap imports to avoid dumping, but also to control production in their internal markets to avoid structural surplus (Pimbert, 2009). To guarantee local and seasonal consumption, local food infrastructures (e.g. storage facilities, local industry for food processing of primary products) are prioritised, also aiding the implementation of local food commercialisation and distribution systems.

The second principle ***'access to resources'*** implies the popular control of the agri-food system, including the control over land, land prices, seed exchange, water supply and costs as well as financial supports (e.g. subsidies) and the equitable sharing of benefits from resources (Via Campesina, 2007). The aim is to guarantee the right to healthy and culturally appropriate food for all members within society, and especially for those with little or no income. To maintain a sense of local 'food culture', the importance of embracing traditional knowledge on food

[14] Edelman 14/10/2020 14:01:00discusses in more detail the genealogy of the term food sovereignty and demonstrates that the very origins of the term are found in documents of governmental programs, and farmers organisations and activists in Central America. However, a political relevance on the global scale reached food sovereignty when it was formulated and applied in the agenda of La Via Campesina in 1996 in Rome. The concept is constantly evolving what scholars recognize as "a virtue, a strength and a reflection and acknowledgement of the on-the-ground diversity". For more detail read Edelman (2014): Forgotten genealogies and future regulatory challenges.

processing and storing, as well as cooking is emphasised (e.g., through educational campaigns). A just access and repartition of resources often requires changing its governance with the aim to increase stakeholder participation in decision-making processes (Binimelis et al., 2014). The principle also points to the necessity to advocate for redistributive land reforms that reject the privatisation of natural resources through laws, commercial contracts and intellectual property rights (Martínez-Torres and Rosset, 2010).

The third principle ***'participation and political engagement'*** points to the importance of the citizens participation in agricultural policy decision-making to guarantee democratic control over resources (Binimelis et al., 2014). This includes their right to define their own agricultural and food policy as well as to organise food production and consumption to meet local needs (Anderson, 2018; Chancellor, 2019; La Vía Campesina, 2011). In a bottom-up process, civil society organisations engaged in food sovereignty should advocate and support the construction of cooperative and trustful relationships among different actors such as farmers, cooperatives, farm workers and local businesses. Key elements to build such relationships include educational campaigns to raise public awareness related to food and agricultural issues, the construction of collective identities around these issues, and the development of ideas on how to react upon them (Binimelis et al., 2014; Di Masso et al., 2014; Tulla and Vera, 2019). Another important element is the promotion of fair gender relations and the inclusion of youth in local processes of rural and agricultural development strategies (Azkarraga Etxagibel and Desmarais, 2017; Martínez-Torres and Rosset, 2010)

The fourth principle, ***'production models'***, aims for localised and diversified production that includes the enhancement of rural livelihoods, for example by creating job opportunities in the primary sector. At its core is the promotion of agroecological production and the reduction of plastic use in the production and distribution of food. Agroecology is a way to design and manage sustainable agroecosystems that enhance the habitats aboveground and soil biodiversity and produce strong and healthy plants by promoting beneficial organisms (Altieri, 2009). Such a way of farming uses low external input production and harvesting methods in order to contribute to adaptive capacity of ecosystems in the face of climate change and to avoid species loss and environmental pollution (Wittman, 2011). Among these practices are mulch and green manures to cover soils and conserve moisture, which also helps to protect from erosion and high temperatures. Planting a diversity of varieties is also central to maintain genetic varieties and to increase the adaptive capacity of farms to changing environmental and economic conditions (McMichael, 2014b).

Local production models also entails the forging of relationships between different societal actors (urban citizens, producers, researchers, civil society organisations), to widen agroecological practices, build capacities and preserve knowledge and skills related to the management of localised food production and harvesting systems (Anderson et al., 2019).

Finally, with the principle of ***'just social and labour conditions'*** for farmers and farm workers, food sovereignty opposes the popular portrayal of peasants as 'backwardness'. It aims to advocate for a political identity of peasants by drawing attention to the irreplaceable function they fulfil within society by producing food (Desmarais, 2008). It stands for the banning of exploitation and degradation of working and social conditions in the food and agricultural sector. Particular importance is drawn to gender issues and the role of women who perform over the half of world's agricultural work yet own less then 2 percent of the land. This situation requires a reshaping of gender relations which not only implies a shift in property relations but also addresses fundamental inequalities in power (sexism, racism, patriarchy and class) within the social organisation of different agricultural system (Patel, 2009; Wittman, 2011).

Furthermore, a greater valuation of farmers and farm workers is promoted, which is crucial to make farming more attractive for young and new farmers. In the same way, young farmers must also be supported to get access to land, supporting them with special educational and subsidisation programmes.
To conclude, instead of using the described principles as a "checklist of separate 'things to do'" (cited in Boyer (2010), p. 334), a theory of food sovereignty should rather serve as a critical lens through which current social and ecological implications of agricultural changes are analysed. In that way, I want to apply the theory of food sovereignty to the analysis of land concentration processes. The concepts of metabolic rift/social metabolism and colonisation of nature proved to be useful for understanding how and why agriculture historically and into the present times is diverging from its ecological foundation. In the following, I aim to discuss the conditions that favour land concentration in the light of these concepts.

3. Data and Research Methods

This thesis is a qualitative study based on semi-structured interviews carried out in the province of Lleida in Catalonia (Spain) and more specifically in and around the area of the Segarra-Garrigues canal. The main objective of this study was to gain insights both into the conditions that favour land concentration in the hands of agribusinesses in this area and into the socio-ecological implications this might have on farmers and rural community members.
Semi-structured, face-to-face interviews with different actors from the agrarian sector of the region were used as the primary data collection tool, enabling the actors' viewpoints and experiences to be at the centre of this study. The semi-structured interviews were complemented with three open expert interviewees as well as direct and participant observation throughout the fieldwork.

3.1. Fieldsite

The region under study is located in the Southern part of the province of Lleida in Catalonia (Spain). With 793.385 ha of agricultural land the province of Lleida accounts for 48% of Catalonia's total agricultural area (IDESCAT, 2009). Catalan agriculture can still be characterised by small to mid-size farms with 77,6% of the holdings with fewer than 20 ha of cultivable land (Soronellas Masdeu and Casal Fité, 2018). However, a slight shift in agricultural holding structures are also documented in Catalonia. Figure 2 shows that in Lleida the number of agricultural holdings between 100 and 200 ha large are increasing, whereas the number of farms under 20 ha are constantly declining.

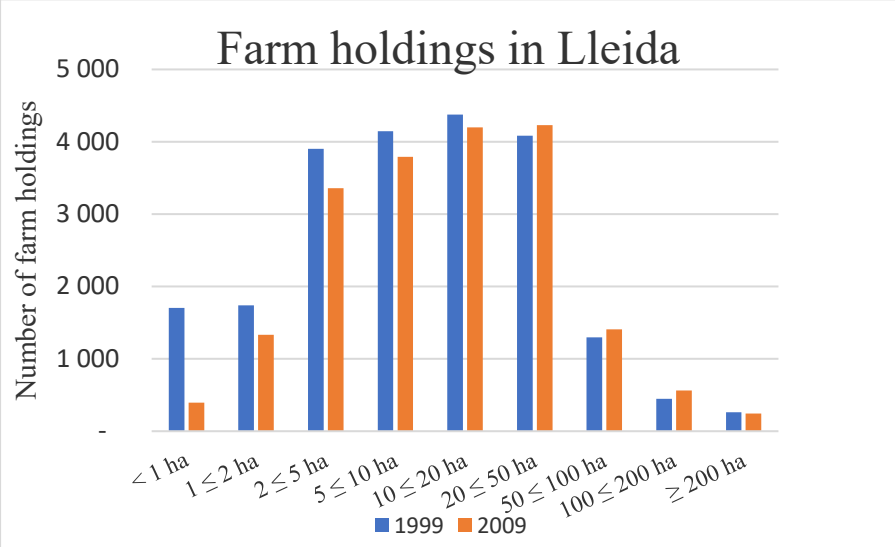


Figure 2. Changes in Number of Farm Holdings in the Province of Lleida[15]

In economic terms Lleida plays a central role for Catalan agriculture as it contributes with a share of 41,5% (in 1999) to the total agricultural production (García Pascua, 2002).
With the Pyrenees in the North, where oak, pine and beech forests as well as grazing land prevail, the epicentre of agricultural production is located in the Southern lowlands (800-1000

[15] Data Source: IDESCAT (own figure).
Available for 2009: https://www.idescat.cat/pub/?id=censag&n=5100&by=prov (last access: 12.03.2020)
Available for 1999: https://www.idescat.cat/pub/?id=censag&n=485&by=prov (last access: 12.03.2020)

m) of the province (Utrera Domínguez, 2014). The Southern districts form part of the central Catalan Basin, which has a dry, continental climate with the lowest rainfalls rates within Catalonia (304mm per year and an average temperature 14,8 C) (Arias and Amat, 2003). Here, typical dryland cultivars, such as vine, olives and dry fruits, always formed part of the agricultural production. Besides dryland cultivars, large parts of the region are dominated by irrigated crops such as fruit, cereal and fodder crop as well as livestock production (Tort i Donada, 2009).

The Southern region of Lleida counts with a long history of irrigated agriculture, with smaller canals and aqueducts first constructed by the Moors in the 15th century (Casanelles, 2014). The first big canal (the Urgell canal) "was built in the second half of the 19th century, and is supplied by the flows of the Segre river (about 87,100)", mainly providing irrigation for great parts of the Pla de Urgell and Urgell districts (Ricart et al., 2016, p. 79).

The field research was carried out in the southern districts of Segriá, Garrigues, Urgell and Pla d'Urgell, which form part of the Segarra-Garrigues canal area[16] (Guasch Casadevall et al., 2017).

Figure 3. Districts within the Province of Lleida (coloured) in Catalonia[17]

3.2. Positionality statement

In line with a feminist research approach, this study is conducted acknowledging the positionality, reflexivity and subjectivity of the researcher (Haraway, 1988; Malterud, 2001). It means that a researcher enters the field of research with a certain opinion and preconceptions about what is going to be studied. Malterud (2001) resumes that reflexivity starts where those preconceptions, including personal and professional experiences, pre-study beliefs and motivations for researching a particular topic, are made transparent and reflected throughout the research process.

I will therefore situate myself before describing the data collection and analysis.

[16] See the exact geographical location of the Segarra-Garrigues canal in chapter 4.2

[17] Source: https://www.viatgeaddictes.com/es/rutas-lleida.php (last access: 12.03.2020)

I am a white, female, middle class student of the Institute of Social Ecology of Vienna. Born and raised in an urban environment in Germany, I do not have a direct link to the place I carried out my fieldwork. While I entered this research with a certain social, physical and cultural distance between myself and the interviewees, I tried to bridge this by being open about my background and the personal and academic interests that drove me to focus on this region. I also did not have an immediate connection to the agricultural and rural issues I researched. Throughout the last years my academic interest in agricultural changes, injustices in the global food chain and alternative agricultural projects was fuelled by personal experiences I made while travelling, living and working in Europe and Latin America. These longer stays working on farms and with local NGO's, staying at permaculture projects and engaging with rural community activities in France, Poland, Nicaragua and Colombia (amongst other places) made me learn and feel both: How deeply (post)colonialism (and today imperialism) changed agrarian systems in Latin America according to an agro-industrial model that creates dependencies for small farmers, and how inspired I was by those farmers in Europe and Latin America who are opposing this model by proposing alternatives. While the context of both continents evidently differs, I experienced similarities - alternative farmers not only aimed to produce food differently, but also aimed to enhance their autonomy and relationships with the rural community. This view might be narrow, and I am conscious of urbanites tending to romanticise the hard reality of a rural life and agricultural work. Nonetheless, these experiences heightened my curiosity about alternative conceptions of agriculture and food systems, amongst them the discourse and theory around food sovereignty. With this thesis, I have chosen a topic that is of my interest and that serves my personal political agenda. I entered the research on land concentration processes with a certain scepticism regarding corporate, agro-industrial farming and those who promote it. It was therefore important for me to be aware of my preconceptions and face the challenge of listening to different actors and trying to understand their motivations, experiences and perceptions of agriculture and agricultural changes in the study region. With my research, I hope to foster a deeper understanding of the conditions that favour land concentration processes and its possible impacts on farmers and community members on a local level in Catalonia, so as to inform academics and policy makers, and my interviewees.

3.3. Preparation and structure of the interview guide

Prior to my fieldwork, I designed interview guides based on the aforementioned study objectives, a first literature review on land concentration processes in Europe, as well as the theory of food sovereignty.

The method of a semi-structured interview was applied to frame the principal topics of the interview and keep track of the study objective.

As I wanted the sample of interviewees to include actors with different backgrounds, I designed three interview guides: for farmers, companies and organisations, and the governmental administration[18] These interview guides were structured along the same nine major categories

[18] I use the term governmental administration for entities that form part of the Catalan Government (e.g. local agricultural departments). In the direct quotes cited in the results part (chapter 5) I apply the wording of the interviewees who used the term 'administration' when referring to the government.

Table 1. Structure of the Interview Guide

	Categories
Part I: Description of the territory	Personal context and relation to agriculture
	Observations and perceptions of agricultural changes
Part II: Experiences from the agricultural practice	Access to resources
	Agricultural production and practices
	Food consumption and relationship to consumers
	Commercialisation and trade of products
	Agricultural policies and participation
Part III: Future prospects	Potentials and challenges of the agricultural sector/territory
	Imagining the future of agriculture

The nine categories comprised 29 questions (farmers), 28 questions (agribusinesses), 33 questions (organisations & governmental administration). Categories three to seven are based on principals of food sovereignty, which were identified as part of the literature review conducted before the interviews. Categories three to seven contain questions on interviewees' perceptions of and experiences with accessing resources such as land and water; production models and different cultivars; relationships between consumers/urban residents and producers/farmers; commercialisation models and political engagement & support (and direct democracy). The full question catalogue is available in the appendix of this thesis.

3.4. Participant selection and description

Participant selection for this study was guided by both purposive and snowball sampling. While purposive sampling is based on the assumption that "certain categories of individuals may have a unique, different or important perspective on the phenomenon in question and their presence in the sample should be ensured" (Robinson, 2014, p. 32), snowball sampling "involves asking participants for recommendations of acquaintances who might qualify for participation, leading to *referral chains*." (Robinson, 2014, p. 37).

A purposive strategy was employed in the case of two employees of an agribusiness. While interviews with them were arranged prior to fieldwork, all other interviews were agreed upon during the research stay in Lleida from August to October 2019.

Purposive sampling was also applied for interviewees in the governmental administration, civil society organisations and other agribusinesses. Potential respondents were contacted after an internet-based search. I searched for actors who were either directly engaged in agricultural activities or do work related to agricultural politics and rural development in the study region.

Snowball sampling was predominantly used in the case of farmers and cooperatives, and contacts were formed through local people and organisations, such as a local consumer cooperative and directly at the veggie box distribution point of the consumer cooperative. Respondents were selected with the aim of including a broad spectrum of knowledge and perceptions and to ensure that their viewpoints on the rising presence of agribusiness, land

concentration processes and implications for farmers and the rural community were incorporated into the study.
The final sample of interviewees was strongly influenced by the responses of contacted persons and their time availability and/or willingness to participate in the study.
Out of the 20 semi-structured and expert interviews eight were conducted with farmers, three with political and administrative authorities, two cooperatives, two activists, 2 agribusiness employees, one researcher, and two consultants for agrarian and rural development.
The sample of interviewees includes four women and sixteen men between 26 and 63 years of age.

3.5. Conducting interviews

Prior to each interview I informed participants about the purpose of the study and the interview process. The interviews were open to some extent with questions added spontaneously according to topics that came up during the conversation (Longhurst, 2010). All interviews were audio recorded using voice recorders. Interview length ranged between approximately 40 minutes and 2 hours and were all conducted and transcribed in Spanish.

Interviews were carried out in and around the city of Lleida and took place either in the living and/or working environment of the respondents or in public places such as cafeterias. Whenever possible I tried to meet interviewees in their work or living place in order to be closer to their everyday life and routines and to create an atmosphere in which they would feel most comfortable.
Indeed, such interviews were often combined with a guided tour on a farm or in the surrounding territory, a walk through a village or the provision of additional information material.
Two interviews were conducted as group interviews with two respondents at the same time. This was mainly due to practical reasons, as for instance in the case of a young farmer couple with a child, they did not have the time for separate interviews.
As I conducted interviews throughout the harvest season some appointments with farmers and cooperatives had to be changed or interviews were cancelled due to a lack of time.

3.6. Direct and participant observation

During the fieldwork, data was also gathered through the ethnographic methods of direct and participant observation (O'Reilly, 2005). Notes on both, direct and participant observations were systematically taken at the end of every day throughout the research stay.
Direct observations were possible before and after interviews, when respondents showed me the area around their living and/or working place and explained patterns of the agricultural landscape and the demographic situation of the area. The field visits enabled me to get a bigger picture of the studied territory and better understand the demographic and agrarian changes by seeing them through the eyes and experiences of my interviewees. Living several days in the agricultural area immediately outside of Lleida also allowed me to engage with fruit farmers of this area through informal conversations close to their fields and inside their cooperative. It gave me some further impressions of rhythms of agricultural work and everyday practices of farmers on the fields during the harvest season.

Participant observation is a method that makes it possible to learn about the activities and routines of people by becoming part of their social reality, observing them in their day-to-day lives and listening to what is said (Kawulich, 2005).

Participant observation could only be applied in one situation in this study.
For one day I participated in the grape harvest of an agroecological cooperative where I also conducted an interview. This cooperative is based on a social project which employs people with functional diversities. During this day, I formed part of the harvesting-grapes team and transported the grapes to the cooperative's storage. Participating in the routines of the cooperative and spending time with co-workers allowed me to get an impression of the food sovereignty alternatives that exist in the studied territory and gain a deeper understanding of their characteristics. Insights from the participant observation only feed into the result section where I describe possible forms of opposition against land concentration and the expansion of agribusinesses.

3.7. Data analysis

Transcripts were analysed using the method of Qualitative Content Analysis by Mayring (2015). Transcripts were read systematically by highlighting and paraphrasing interesting passages of the material. In a next step, the highlighted text fragments were reduced by assigning different deductively or inductively generated categories (and sub-codes) to them in order to summarise and structure the content (Mayring and Fenzl, 2014). I began coding my material with a roughly pre-structured coding system based on the initial interview guide. I coded the text fragments by inductively generating codes as I worked through the transcripts. Throughout the coding process, I refined and summarised the minor categories and subcodes several times. In order to support the analysis and be able to handle the amount of generated data in a traceable way, MaxQDA software was used. The software also enabled me to gather all the additional data collected during the fieldwork. I could feed in the handwritten memos of the direct and participant observations and could include them, simultaneous to the coding process, into the analysis of my material.
The final coding system encompasses three major codes with ten minor categories and several subcodes. The entire coding system with detailed description of all categories and codes as well as representative quotes can be found in the appendix.

Table 2. Coding System

Major category	Minor category
Conditions favouring land concentration	Necessary conditions
	Structural Conditions: Socio-cultural changes
	Structural Conditions: Political deregulation and participation
Implications for Farmers and Rural Community Members (based on Food Sovereignty Principals)	Commercialisation, consumption & trade
	Participations and political engagement
	Production models
	Access to resources
	Social and labour conditions of farmers and farm workers
Food Sovereignty Alternatives	Activities and Proposals
	Demands

3.8. Reflection on methods and data

Drawing on Malterud's (2001) definition of reflexivity in the research processes, as "an attitude of attending systematically to the context of knowledge construction, especially to the effects of the researcher, at every step of the research" (p. 484), it seems appropriate to do some reflections on the methods and data presented in this chapter.

The access to the field and the collection of data relied heavily on the willingness and time availability of my informants to participate in an interview. Since I was not familiar with the region previous to the field research and I did not have any personal contacts (besides the one to the agribusiness), it was challenging to build up personal ties and gain the trust of the interviewees. While I managed to approach interview partners actively and openly, the limited time I stayed in the study region (approximately 4 weeks) made it difficult to reach a more balanced sample of the three interview groups (farmers, agribusinesses, organisations & governmental administration). Snowball sampling turned out to be an important method to find further interview partners. Contacting people solely via email often turned out to be a frustrating endeavour, as the response rate was very low. This was particularly the case when I tried to get in touch with further agribusinesses from the region. Even though I contacted several other agribusinesses via email and phone, I was unable to arrange an appointment with them. Thus, the data on agribusiness activities in the region were gathered on the base of two interviews and might give limited insights into agribusiness objectives and strategies to acquire or lease land for agricultural activities. Furthermore, I could not access more comprehensive, quantitative data on how much land agribusinesses acquire or lease for their agricultural activities in the study region, as this information was not published online or the agribusinesses I found via secondary sources (e.g. newspaper articles) did not have a website. The fact that I carried out my research throughout the harvest season, also limited the possibility to talk to farmers. My material might lack some important viewpoints of farmers which cancelled (sometimes several times) our appointments, as they had too much work to do.

Moreover, the fact that I am not a native Spanish-speaker certainly had an influence on this project. Although my Spanish is fluent, I found myself in situations where I needed more time to process the information from my respondents (as I would need in my mother tongue) and I missed the moment to ask for more details regarding some topics, something I realised during the transcription.

To conclude, in organising and carrying out field research for the first time, I learned that it often takes a lot of time to build trustful contacts and to understand the socio-cultural context of the study site and the interviewees, which is crucial to collecting interesting data.

In accordance with O'Reilly's (2005) reflection on qualitative research (in this case ethnographic methods), it might be good to consider that the gathered "[…] data are not real things; they are the best record you could collect of what you saw and heard, with relevance to the topic you were interest in." (p. 189). I therefore acknowledge that this thesis will certainly cover only a few perspectives and experiences that exists regarding land concentration processes in the study region.

4. Contextualising Land Concentration Processes in Irrigated Areas

In this chapter, I aim to contextualise land concentration in irrigated areas by looking at the history of irrigation in Spain. A historical perspective is important to understand the socio-cultural context out of which past and present irrigation infrastructures emerged and how they are entangled. A short presentation of the Segarra-Garrigues canal provides a basis to comprehend the lines of conflict around the project.

4.1. A brief history of irrigation in Spain

Spain counts on a long history of irrigation infrastructures. Due to its semi-arid Mediterranean climate, especially in the Southern parts of the country it has always been important to store and deliver water and regulate its use for agricultural production (Lecina et al., 2010).

Spanish irrigation practices emerged in "the times when the Muslims occupied the Iberian Peninsula, starting in the 8th century, and further developed Roman irrigation techniques." (Berbel et al., 2007, p. 323).

Since the second half of the 19th century, Joaquín Costa – a young intellectual politician – and his reformist allies promoted irrigation as a measure to improve the livelihood conditions of dryland farmers. At this time, Spain was challenged by a mounting economic crisis and the loss of imperial power (Spain lost their last colonial possessions of Cuba, Puerto Rico, and the Phillippines in 1898) increased the aspiration for a new national identity (Duarte-Abadía and Boelens, 2019; Swyngedouw, 1999). Irrigation became a project of modernisation with the end to "reconcile the ever-growing social tensions in the Spanish countryside" between a growing bourgeois society and a predominantly rural and illiterate population (Swyngedouw, 1999, p. 454). Their premise was "to have water or to die" and "the fate of the drylands became a symbol of the decline of Spain and its failures to modernize"(Swyngedouw, 1999, p. 455).

Costa's vision of rural development was based on the idea of "small-scaled, independent, and democratic peasant society" and a liberal state fostering a "free-market-based, intensive, and productive national economy, whose accumulation process would accelerate on a par with other northern European states." (Swyngedouw, 1999, p. 456–457). Instead of colonizing distant lands, emerged the idea of colonizing their own country by transforming nature (Duarte-Abadía and Boelens, 2019). The attempts of these young intellectuals, later known as Regenerationists, marked the beginning of "state intervention in the construction of new water infrastructures and the creation of a centralised system of governance and administration of the Spanish river system." (Pinilla, 2006, p. 124). The creation of Hydrographic Confederations in the 1920s was one of the first efforts to reach an comprehensive management of entire river basins and to integrate the management of other water uses (e.g., urban water supply) into the design of irrigation plans (Pinilla, 2006). At the beginning of the 1930s, the Law of Irrigation Works was established, so that the state could finally have the legal capacity to execute hydrographic projects and related tasks (Closas, 2018).

Under the Francoist dictatorship, the expansion of irrigation infrastructures was deepened and the construction of around 287 dams between 1940 and 1963 (with 132 constructed solely for the purpose of irrigation) reshaped the hydraulic geography of Spain in a fundamental way (Closas, 2018; Swyngedouw, 1999). The authoritarian state picked up the early idea of colonisation and "merged hydraulic policy with agricultural transformation through colonizing dryland, *marisma* wetlands turning them into irrigated cropland." (Duarte-

Abadía and Boelens, 2019, p. 156). However, Franco's idea to colonise land through irrigation went beyond the idea of disciplining nature, and was certainly used to control rural inhabitant. In that accord, Duarte-Abadía and Boelens (2019) remark:

> *„Later, in 1949 – the bitter legacy of the regenerationist dream of domestic colonization – the laws on colonizing and distributing property in irrigable zones and on forced expropriation were enacted. These entitle the government to expropriate to build waterworks. (p.156) […] Large landholders supported the Franco regime, which promised not to change the property status quo and rather proposed to build new towns to put rural inhabitants into order and under discipline (p.155)."*

The scale of irrigation works carried out under Franco evidently led to large-scale landscape changes, including the replacement of old field patterns by linear field systems and incentivised the introduction of crops with higher water requirements (Pinilla, 2006). If in the beginning of the 20th century, irrigation was installed to ensure more regular harvests of traditional Mediterranean crops, areas of irrigated intensive crops, such as fruits, increased drastically throughout the century (Pinilla, 2006). Rising water usage in agriculture and increasing demand for water in other growing economic sectors "have strengthened competition for water resources, and cyclical droughts have brought social conflicts between uses, users and regions within Spain" (Lecina et al., 2010, p. 266).
Today national and regional irrigation plans (e.g. "El Plan Nacional de Regadíos. Horizonte 2008" or "El Pla de Regadius de Catalunya") try to respond to these new challenges with the overall aim to build more efficient irrigation infrastructures, modernise older canal systems and increase the awareness among irrigators for more sustainable water usage methods (Ricart Casadevall et al., 2011). While water scarcity boosted water efficiency measures, seemingly the ultimate goal of irrigation policies remain the same: to increase the competitiveness under the paradigm of productivity (see: Guasch Casadevall et al., 2017).

4.2. The Segarra-Garrigues Canal

The Segarra-Garrigues canal is the newest and "one of the most expensive civil engineering projects ever put out to tender in Catalonia" (Ricart et al., 2016, p. 79). It is executed by a public-private partnership which consists of the Government of Spain, the Generalitat of Catalonia and several (semi-)private companies. The canal flows approximately 85 km from the Rialb dam to the L'Albagés reservoir, and water from the Segriá river is additionally fed into the irrigation system (Ricart et al., 2016). In regard to the quantity of water, the canal provides three different shares of irrigation water: 6.500 m^3/ha/year ("transformative" irrigation) and 3.500 m^3/ha/year & 1.500 m^3/ha/year ("supportive" irrigation).

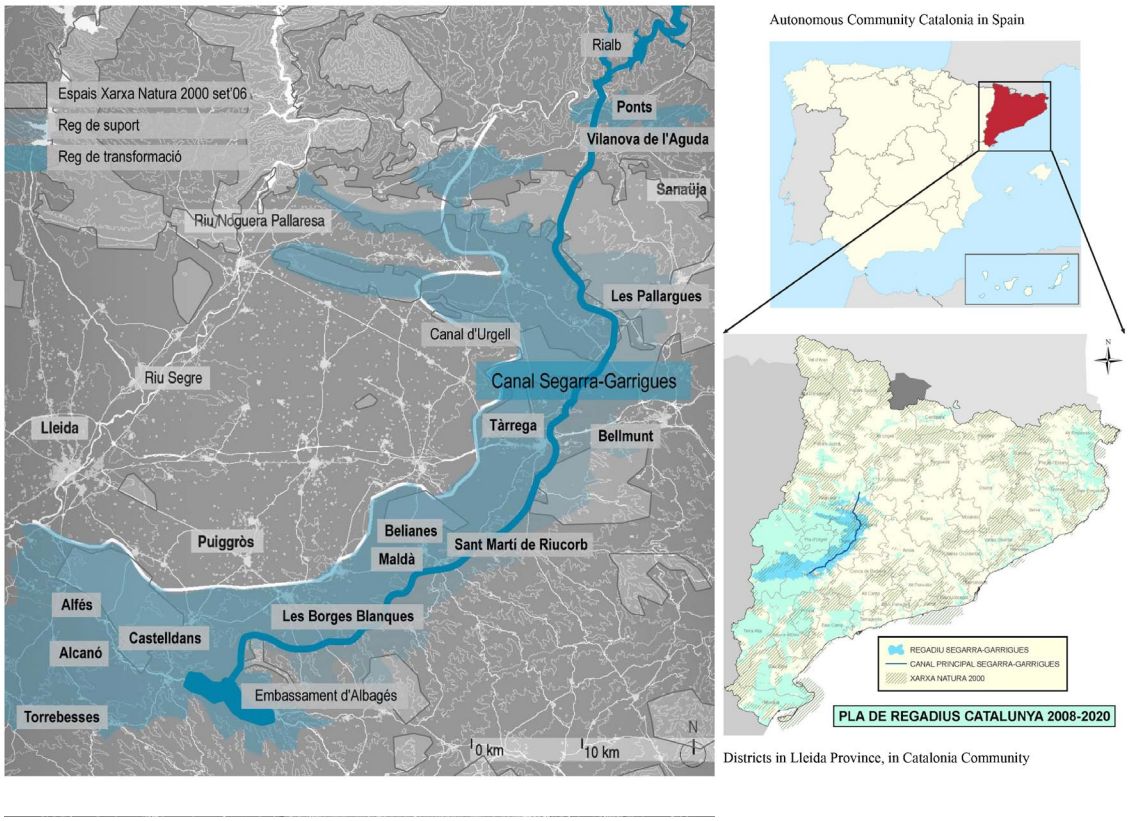


Figure 4. Location of the Segarra-Garrigues Canal[19]

The construction of the Segarra-Garrigues canal followed a historical demand of those dryland areas which could not access water from the Urgell canal. With a bordering region that developed a prosperous agriculture thanks to the Urgell canal, farmers from the drylands felt disadvantaged with respect to their neighbours (Del Estal Malillos, 2015).

The Segarra-Garrigues canal was thus officially justified by promising that (1) the access to water would allow farmers to plant new cultivars, save the harvest during extreme dry events and diversify production, (2) the land consolidation[20] and construction of new road would increase the efficiency of agricultural production and thus its profitability, and (3) irrigation would bring positive spillover effects for the entire territory (benefits to the local industry and cooperative, new employment opportunities, increasing attractiveness for young farmers) (Guasch Casadevall et al., 2017). The construction of the canal started in 2003 with the initial objective to irrigate an area of 70.150 ha of agricultural land. These planned areas diminished by 42.200 ha as the European Union ruled in 2007, "that Spain was failing its obligation to protect […] Natura 2000 areas affected by this large-scale construction project" (Ricart et al., 2016, p. 79). The diminution of the potential irrigated area forced a complex environmental

[19] Own figure. Sources for the three maps:
[1]http://territori.scot.cat/cat/img2/2009/11/025_canalsegarra_gar.jpg;
[2]https://upload.wikimedia.org/wikipedia/commons/thumb/d/d0/Cataluna_in_Spain_%28plus_Canarias%29.svg/636px-Cataluna_in_Spain_%28plus_Canarias%29.svg.png
[3]http://agricultura.gencat.cat/web/.content/09-desenvolupament-rural/infraestructures-agraries/regadius/segarra-garrigues/fitxers_binaris/1_sistema_segarra_garrigues.pdf

[20] The land consolidation consists of the restructuring of smaller, often dispersed properties of one owner. After the concentration process an owner usually has one large property which implies that throughout the process, he/she has to interchange its formers lands with another owners.

conflict between different actors amongst them environmentalists, farmers, civil society groups and the regional governmental administration (see: Muñiz San Martín, 2005).

Although the construction of the main canal is completed, large parts of the secondary network (necessary to bring the water to the fields) are still non-existent, so that around 5000 ha of land are irrigated today (status 2017) (Guasch Casadevall et al., 2017). Since the start, the canal has been a contested project (Casadevall and Pavón, 2014). Guasch Casadevall and colleagues (2017) identified three critical elements in regard to the Segarra-Garrigues project. In environmental terms, the canal produces negative effects for steppe ecosystems in the region. Considering the changing climatic conditions, they calculated that there will not be enough water to cover the demands of the canal.

Economically, they point to the negative rentability of the project for the governmental administration as well as for farmers (depending on the crops they cultivate). The authors calculated that corn and barley farmers could hardly amortise their investments in irrigation infrastructures and water due to low commodity prices. Finally, the canal generated social resentment as the investments in the canal are too expensive (especially for older farmers) and its planning did not sufficiently consider the multifunctional uses and demands for water (beyond agricultural use).

5. Results

This chapter presents the main findings of this thesis, in response to its leading research question: What are the conditions that favour land concentration processes and how do these processes affect farmers and the rural community? The chapter is divided into four subchapters, addressing (1) the socio-ecological conditions that underline farmland concentration, (2) the role of irrigation and how it might accelerate land concentration, (3) the socio-ecological implications of land concentration processes for farmers and rural communities, and (4) an outlook on the actions and demands of 'alternative' farmers and projects within the territory.

5.1. Socio-ecological condition underlining farmland concentration: farmers and rural community members reminding the past

> [1] *"The tendency of Catalan agriculture over the last few years, of an intensive, capitalist agriculture, is this. Big exploitations of monocultures, very specialised crops which are changing according to the trends and necessities of the market. And this is how it goes."* (Interview 9, Paragraph 10)

Agricultural changes in Catalonia rest upon "a process of adaptation to the intensification and internationalisation of the market for agricultural products […]" (Soronellas Masdeu and Casal Fité, 2018, p. 67). With 78% of the holdings being smaller than twenty ha, in Catalonia small to mid-size farming still prevails (Soronellas Masdeu and Casal Fité, 2018). However, the adaptation process has initiated a change in agricultural holding structures.

The quote above, taken from an interview with a woman from an agroecological cooperative, is representative of the interviewee's perception of agricultural changes in the region of Lleida, regardless of whether they perceived these changes positive or negative. Most of the respondents perceived the phenomenon of land concentration in the region of Lleida as a slow development which forms part of an **on-going evolvement of an intensive, export-oriented agriculture** (Interview 1, Paragraph 89; Interview 2, Paragraph 10 & 30; Interview 5, Paragraph 27; Interview 9, Paragraph 10).

Unsurprisingly, interviewees tie the beginning of intensive agriculture to the so-called green revolution, which started in the 1960s, and introduced new machinery and agrochemicals to agriculture. Two of the older interviewed farmers (aged around 60 years) were born into this changing system and experienced how an almost Neolithic agricultural system, based on men, animal power, and wooden tools, was replaced by mechanised agriculture, and how subsistence agriculture disappeared in favour of export-oriented agriculture. (Interview 5, Paragraph 15; Interview 6, Paragraph 17-18). They ascertained both, that mechanisation to some extend helped farmers retain their dignity as farm work became less labour-intensive, but it also marked a moment of growing dependence (Interview 6, Paragraph 26 & 30). The investments in external inputs and costly machinery would force farmers to increase their production capacity in order to compensate for the low commodity prices and to be able to amortise their investments (Interview 5, Paragraph 62). Interestingly, the shift to the agrarian system in Catalonia not only changed the way people produced food, but also how they rendered traditional agricultural practices useless in the face of new technologies and innovation.

> [2] *"We come from the heritage of the Green Revolution, of the pesticides and chemicals, and*

let's say that our grandparents, our parents they are still with this vision that you have to throw a lot of pesticide and herbicide so that everything looks clean. It's also like… this point of view is now being reversed, but when we started with this, it was a bit like a fight on a family level. An intergenerational fight, it was like: how are you going to go back that much now that we have all this, and we have been told that throwing pesticides is good?"
(Interview 5, Paragraph 35)

Spain's accession to the European Economic Community (EEC) in the 1980s marked a further step towards an intensive, export-oriented agriculture. The pressure on farmers and agricultural cooperatives increased, particularly in terms of opening new channels for commercialisation and exportation. As one farmer and manager of a cooperative underlined:

[3] *"Back in 1992 I already said: until now, they had told me that Spain is in process of incorporation to the Economic Community, but it is not true, it is the Economic Community which has entered Spain, […] In the year 92 we went to sell and our markets were occupied by the French, by the Italian. So, it was then when we realised that they had invaded us. From this year onward I am putting stickers and I commercialise. […] So, this is how the evolution has been."* (Interview 7, Paragraph 89)

It was also with the accession to the EEC when farmers started to receive agrarian subsidies, which most of the interviewees perceived as a "double-edged sword" (Interview 4, Paragraph 169). On the one hand, subsidies turned into an important part of their yearly budget. On the other, farmers have become largely dependent on European Union demands for them (Interview 4, Paragraph 166-169) and partly lost self-determination over their production. As Interviewee 7 asserted:

[4] *"We are neither producing what we want nor how we want; we are producing how they make us produce. Imagine, only considering the last years, without 300.000 euros per year. [Our cooperative] wouldn't exist. […] I don't think, I act. And you might say: what you do is bad, to not think. But to think will do me no good. In this sense, it is sad. I don't like it. But it is like that."* (Interview 7, Paragraph 80)

The integration in the international market was also associated with growing deregulation of agricultural markets. Words like "messy territory" or "lack of market equilibrium" were dropped during the conversations, particularly when referring to the fruit-producing sector in Lleida (Interview 14, Paragraph 68; Interview 2, Paragraph 100).
Fruit production in the region of Lleida looks back on a long history where apples and pears (and later stone fruits) were planted on fertile soils around the city, and along the Segre River and were embedded in a polyculture system of other crop varieties. These varieties vanished once the fruits were integrated in the international market and farmers intensified and enlarged their plantations to meet market demands (Casal Fité, 2019). Today, some of the farmers and community members expressed their concerns about the speed with which plantation areas have changed and the fact that tree varieties have been planted according to temporal demand, but without considering the saturation of the market (Interview 2, Paragraph 100, Interview 14). Yet, others highlighted the impressive growth of the sector and the affluence it brought to the region.
In whichever way the situation is evaluated, most of the interviewees, at some point, mentioned that the fruit sector suffers from periodical overproduction and declining

agricultural commodity prices. Additionally, the situation is worsened when cheaper, imported fruits flood the market and skew the prices even more, with particularly devastating effects for small producers (e.g. Interview 6, Paragraph 34, Interview 10, Paragraph 52)
Another farmer discerned that in unregulated markets, the speculation with agricultural commodities is rising and there is a looming danger that an inflated speculation bubble could burst at any moment, with negative effects for the territory, which has specialised in one sector. He explained this in the context of the livestock-producing sector:

[5] *"At this moment in 2019, there is a real bubble. So, there are very good prices for pork, simply because in China they have the plague and there is a demand. It is a society that consumes more and more animal protein and there are these global imbalances that affect the local level. And well, if they return to the old prices, it is likely that all these farms in 5 or 10 years will be 'livestock archaeology' again."* (Interview 5, Paragraph 33)

A young farmer couple noted that the focus on exports and the dependence on subsidies would make them more vulnerable to macroeconomic and political changes on an EU level (Interview 4, Paragraph 166-169).
The effects of a growing vulnerability of farms are also reflected in the data. Majoral (2006) showed that those who could not adapt to changes in agricultural production and markets gave up their farms, which led, in part, to 60% of agricultural holdings within Catalonia disappearing between 1962 and 1999.
During the interviews, farmers particularly emphasised that today **small farms lack viability**, and a family cannot make a living off of them (Interview 7, Paragraph 60). An older farmer referred to past times, where in Lleida existed this saying that a family could live from four ha of land, providing enough income to cover the costs of education for their children and buy a summer apartment in Salou, a coastal municipality in the neighbouring province of Tarragona. Sarcastically, he remarked that [6] "*today, with four hectares you don't even have enough to make your daily coffee"* (Interview 6, Paragraph 50).
To live from their land, farmers either need to enlarge their property by buying or leasing land from neighbours or take the path of land abandonment, renting their land to those who make them the best offer (Interview 5.1, Paragraph 52). One interviewee explained that taking one or the other decision is not necessarily a free choice, as the enlargement of farms is expensive and not affordable for every farmer (Interview 12, Paragraph 93). This is also signalled in the analysis of Soler and Fernández (2015), who found that the average price of one hectare of land in Catalonia increased by 218,8% between 1997 and 2011 (from 5,585 to 12,223 EUR/ha). For some farmers, selling or renting to a third person is therefore the only way to make some money from their land.
Meanwhile, farmers who enlarge their properties are exposed to different challenges, such as the need to professionalise the commercialisation of their production. One young farmer admitted that he does not like the commercial part of his profession, but since they enlarged their land and he began to produce higher quantity nowadays than his grandfather did historically, it became an unavoidable task (Interview 8, Paragraph 102).
The lack of small farms viability correlates with **rising living costs**. Especially, farmers with extensive cultivars (e.g. wheat, corn) are paying the consequences of globalisation. Commodity prices of wheat and corn are set by large-scale producers from the Great Plains in the US who are able to hold down the prices (Interview 6, Paragraph 30). While the living costs have increased constantly over the last decades, particularly with the introduction of the Euro, the commodity prices of wheat have remained unchanged for 40 years (Interview 3,

Paragraph 6). One farmer reflected: [7] "*So, of course, what happened? We need to have much more land to survive."* (Interview 6, Paragraph 30)

The above-mentioned **land abandonment** of farms has particularly been observed in areas of rainfed agriculture. During the interviews, farmers mentioned that without access to any kind of irrigation, the economic conditions in the drylands are very hard. As the climate becomes more unpredictable, farming population is decreasing notably (Interview 11, Paragraph 34).

[8] *"Let's say the village, for instance Belianes, where we are now doing the interview, is a dryland economy dependent on whether it rains or not, […]. Statistically it rains less, and this is provoking an escape and a certain abandonment of farmland and of agricultural exploitations."* (Interview 5, Paragraph 8)

Farmers expressed their deep concerns regarding the loss of rural population. While land was formerly inherited by their children, most of the farmers are nowadays **lacking a generational replacement**. Almost all of the interviewees pointed to the problem that there are very few young people willing to work in agriculture and live in a small village.
Retired farmers, who are reluctant to give up the land or sell it to strangers, often change their cultivars to extensive crops (e.g. wheat), which they can manage more easily at their age and with little expenditure of human labour (Interviewee 6).
Interviewees have different explanations for why new generations are not interested in working in the primary sector. One farmer mentioned that accessibility and availability of the secondary school system is relatively recent in Spain, and the opportunity to enter a university career has made more young people decide against staying and working on the family farm (Interview 5, Paragraph 27).

Figure 5. Rain-fed agricultural areas close to the village El Cogul

Source: own photograph

Furthermore, the period of economic growth in the late 1990s provoked a certain social change in Spain, where young people lost their interest in the agricultural sector as they perceived it as a sector with low wages and with little social recognition (Interview 10, Paragraph 10).

The young farmer couple confirmed: [9] *"There has also been a de-valorisation of our work because actually you work a lot of hours and it is paid very bad"* (Interview 4, Paragraph 42). Unsecure wages and changing climatic conditions are also reasons why their parents' and grandparents' generations dissuaded them from working in agriculture. They do not want their children to live in the same conditions they have lived through throughout their lives and prefer to rent or sell their land in order to leave their children with some money (Interview 4, Paragraph 42)

[10] *"The people who are 55, 60 years old are fed up. They don't want their children to continue working in the family property. These people say: I don't want you to continue, find another job, I don't want you to dedicate to agriculture."* (Interview 8, Paragraph 60)

Concerns have also been raised with regards to the social equilibrium of the villages, which has become unbalanced due to the lack of young people and accelerated the deterioration of infrastructures and services.

[11] *"Of course if there are no young families that have children, the schools are closing, the offer of public services is non-existent, and what stays are human deserts. This danger has already occurred in the pre-Pyrenees, in the very concreted areas of Tarragona and Lleida. The population is declining massively. I got to know a village with almost 1000 inhabitants and now we are half of it."* (Interview 5, Paragraph 10)

Moreover, the loss of farmers, particularly in drylands, is perceived problematic in terms of their political representation. The fewer there are, and the more dispersed they are all over the territory, the more difficult the internal community organising amongst the farmers is (Interview 4, Paragraph 150). While the number of working hours is seen as a factor that hampers farmers' ability to engage in political activities, most of them emphasised the importance of the "political voice" of farmers (Interview 4, Paragraph 148; Interview 9, Paragraph 40). A farmer who held the Mayor's office in his village and was engaged in the "Association of Micro Villages"[21], a platform defending the needs and demands of Catalan villages with less than 500 inhabitants, ascertained:

[12] *"It is so, if you do not do politics, the others will do it for you. […] Farmers must get involved in politics."* (Interview 11, Paragraph 50)

Land abandonment in drylands and uncertainties about farm succession generates unease among farmers, who are not certain about the future of the region: [13]*"And it is sad because sometimes you think and you say: I don't know how this will be in few years"* (Interview 4, Paragraph 244).

[21] More information under: https://www.micropobles.cat

One public bus per day goes between Lleida and El Cogul. There are only two other people on the bus with me. Crossing the green belt around the city of Lleida, I find myself in a desert-like landscape. In comparison to the abundant agriculture around Mollerussa only a few kilometres away, almond and olive trees here are standing dispersed over stony fields. Once I arrive in El Cogul, Andrés[22] *picks me up on the central square and walks me around the village. It doesn't take long until he starts telling me that the village has lost a lot of inhabitants, there are only around 400 people left. Almost like a prayer, he repeats over and over again that if the water from the Segarra-Garrigues canal does not arrive soon, there won't be any farmers left and most likely, this land will end up in the hand of the companies. He says his daily work is driven by the hope for water, even though it will be expensive.*
(Fieldnote, Direct Observation in the village Cogul, 1st October 2019)

5.2. An irrigation canal for farmers or agribusinesses? Land concentration processes in new irrigation areas

> [14] *"But I tell you one thing, if there is no water there is no life. (...) Environmentalists can say what they want, but water is life. And agriculture today has no future without water."*
> (Interview 6, Paragraph 66)

The installation of irrigation in Spain rests upon a narrative of rural development. It is based on the idea that irrigated agriculture is a mechanism to reach territorial equilibrium between arid and water-rich areas (Muñiz, 2009). The quote above demonstrates that the same or similar narrative exists today in the area in and around the Segarra-Garrigues canal. Several interviewed farmers perceived access to irrigation as essential to sustain population in the territory and make agriculture more attractive to young people. On one hand, irrigation could assist with the above described tendencies within the territory and act as a measure to halt land abandonment, enhance the viability of farms, and encourage young farmers to maintain and/or scale-up the family farm (Interview 1, Paragraph 19-20; Interview 6, 66)

[15] *"The change has been that there are young people who were able to stay here to work."*
(Interview 8, Paragraph 32)

But on the other hand, the canal project is perceived as an entry door for agribusinesses.

[16] *"If there are no water guarantees, agribusiness capital does not move. For example, it is a fact that close to Lleida even companies closely linked to infrastructures, such as Sorigué, have created an empire of almond trees, fruit trees... that is to say, vast expanses of land."*
(Interview 5, Paragraph 31)

Those reluctant towards the project did agree on the importance of access to water as one measure to stop land abandonment in drylands but criticised the irrigation model that it is built upon (Interview 5, Paragraph 39; Interview 15, Paragraph 6).
The project failed to sufficiently consider neither the agroclimatic conditions of the different geographical areas where the canal was installed, nor the demands and needs of the people

[22] Name changed by the author

from this territory (Interview 9, Paragraph 58). For instance, the Segarra district is an area prone to frost, which means that that cultivation of Mediterranean crops is excluded from the options farmers have in that territory. What remains are water-demanding extensive crops (e.g. wheat, corn) which have low profit margins and are even less profitable considering the high investment costs of irrigation water (Interview 1, Paragraph 36). The agrarian panorama of the district of Segriá and Les Garrigues – the ones I focused on – is dominated by fruits and Mediterranean crops. One interviewee explained that the canal mainly improved the situation for fruit agribusinesses that established themselves throughout the last decades along the Segriá River. With the extension of irrigated areas, they enlarged their plantations and ensured their ascendance in the fruit market. Meanwhile, the pressures on smaller fruit producers are increasing, hence undermining their ability to compete with large producers (Expert Interview 2).

In the area where Mediterranean crops (e.g. olives, pistachios, almonds) prevail, usually little amounts of water are needed to increase the productivity. Farmers remarked that this demand has seemingly not been heard as the canal provides high shares of water, which is more attractive to big agribusinesses than for farmers from the region (Interview 9, Paragraph 58; Interview 11, Paragraph 44).

[17] *"The agribusiness and the administration who have planned the Segarra-Garrigues want this: agribusiness, large owners, intensive land use. They have not thought about agricultural development. They have thought that there must be agriculture, that there must be money and investment. But this won't happen with small organic farmers who rather need help."* (Interview 9, Paragraph 58)

Figure 6. Segarra-Garrigues canal close to the village Maldà

Source: own photograph

Indeed, it is not only the general **access to water** which sparks the interests of agribusinesses in the territory of the Segarra-Garrigues canal, but it also depends on the share of water they receive (Interview 12, Paragraph 35 & 37)

The Segarra-Garrigues canal provides different shares of water depending on the sector. Interviewees explained, that in the left realm of the canal water for agricultural uses reaches 1.500 cubic meters per ha/year which used to be sufficient for smaller farmers, while in the right realm of the canal up to 6.500 cubic meters per ha/year is accessible (Interview 1, Paragraph 22; Interview 5, Paragraph 45).

The interviewed agribusiness emphasised that for them it was not about water expenses, but *"about having quantity and not having limitations"* (Interview 14, Paragraph 39). They highlighted:

[18] *"We need high shares of water for what we do, otherwise you produce less. Later you apply drip irrigation and it is sustainably used and so on, but you need a quantity so that the tree will be strong. Without a lot of water, there is no way. We wouldn't have taken any property here."* (Interview 12, Paragraph 39)

During the fieldtrip, farmers emphasised that the construction of the canal followed a historical claim of people from the dryland areas. Some of the farmers told me that their grandparents already grew up with the hope and promise that their land would be connected to irrigation (Interview 4, Paragraph 68; Interviewee 5). However, farmers stated that the irrigation is arriving at a time in which the demographic situation of the region has already changed drastically, with more than half of the agricultural population aged over 55 (Interview 4, Paragraph 68; Interview 11, Paragraph 28).
What happens is that old farmers are not eager to spend money on the installation of the secondary network, which is needed to bring the water to the fields, as they cannot expect returns on their investment during their lifetime. During conversations, several farmers named the canal a *"pharaonic work"* pointing to the high costs of its construction and implementation. Investments are costly and farmers are responsible for 30% of the expenses of secondary network, which corresponds to 3100 EUR per ha of land (Interview 1, Paragraph 34). Additionally, farmers have to pay for the water costs which are divided into a fixed tariff per ha plus the tariff per cubic metre (e.g. 101.93 €/ha + 0,1021 €/m3)[23]. For the younger generation of farmers, the canal arrives ten years (too) late, and as one young farmer ascertained, he has seen too many young people from his generation (mid-twenties) leaving the family farms (Interview 8, Paragraph 36 & 38). Farmers expressed their distrust towards authorities and suggested the possibility that the governmental administration intentionally prolonged the construction of the irrigation channel so that there would be almost no farmers left in the territory and businesses could access the land more easily.

[19] *"It's like what they have done… like the administration has done it this way to wait until the region or the towns become too small, and then big companies can enter."* (Interview 4, Paragraph 70)

The late construction of the canal created a window of opportunity for agribusinesses, who observed the same pattern that the farmers recognised during our conversations:

[20] *"Agriculture requires investment. If you are already 60 years old and you have spent your whole life working in agriculture, you will not invest. And the generations that came behind them don't want to be on the fields."* (Interview 12, Paragraph 33)

This situation appeared to be advantageous for the agribusiness. Nevertheless, the issue of getting **access to land** was the *"most delicate one in order to grow as a business"* (Interview 13, Paragraph 15).
In the first place, several criteria, such as access to water, climatology of the area (with little or no frost events) and rich soil quality, played an important role for the agribusiness in choosing their plantation areas. Afterwards, they looked for direct contacts to landowners in those areas which fulfilled their criteria. The governmental administration provided the company a list of farmers who participated in the land consolidation process (Interview 12,

[23] See: https://aiguessegarragarrigues.cat/ca/precios-vigentes/ (access: 26.02.2020)

Paragraph 71). The land consolidation is a compulsory measure farmers must agree on if they want to access to irrigation water from the Segarra-Garrigues canal (Interview 3, Paragraph 6). In this way, the company made sure that they would contact farmers who do not have dispersed, smaller pieces of land but consolidated and bigger properties (Interview 11, Paragraph 38).
This confirms the perception of a village Mayor who said that villages have put a lot of effort in convincing people to participate in the concentration of parcels, to construct new roads, and bring irrigation to the district, however he now observes that it is the businesses who are taking advantage of these efforts (Interview 11, Paragraph 36).

[21] *"Villages have made a great effort to convince people to apply irrigation and land consolidation. And now you see that all these efforts that have been done throughout the last 20 years […] others take advantage of them. They [agribusinesses] have found everything already done."* (Interview 11, Paragraph 36)

In response to the question of how agribusinesses approach farmers, it was said that it works predominately through personal contacts, phone calls and direct visits, a practice also called *"mouth-to-ear"* (Interview 11, Paragraph 22).
Besides personal contacts, it was found to be especially relevant that agribusiness employees came from the same region and had a personal background in agriculture. It was the *"same language"* they spoke which created an atmosphere of confidence. Otherwise, farmers used to be reluctant to foreigners or even people from other regions of Spain who were interested in buying or leasing their land, something that Monllor (2014) also found in her research on farm succession in Catalonia. The agribusiness underlined:

[22] *"Instead we went there, speaking a bit like equals. We put ourselves on their level and we were farmers, so we almost knew what they wanted to hear. Almost. And this was very important to access land, otherwise it would have been very difficult. Any land we rented, we achieved it by talking to the owners on the same level they are and creating an atmosphere of confidence."* (Interview 13, Paragraph 15)

As mentioned above, the high water and implementation costs hamper farmers to access irrigation. Conveniently, agribusinesses do not share this problem and stated *"it is easier to find money than land"* (Interview 12, Paragraph 107). Their project of intensive almond crops is based on the financial support of a consortium of international investors. The agribusiness took advantage of the rising interest in agriculture of funders who would prefer to invest in a sector of the real economy, seemingly less prone to speculations than other sectors such as real estate or technological start-ups (Interview 12, Paragraph 17 & 21). Since investors look for stability, almond production in Spain was evaluated as a promising business. On the one hand, almonds are dollarised due to the high production in California (U.S.), which guarantees a certain stability of prices (Interview 12, Paragraph 21). On the other hand, Spain offers legal security and a secure market, which is also an important criterion for investors (Interview 12, Paragraph 21).
Their business model, based on external funding, allowed the agribusiness to **access enough capital** to transform large pieces of leased drylands into irrigated land within a short time period (2-3 years).
Interestingly, the way actors looked at opportunities for rural development through irrigation, very much differed from each other.

The agribusiness saw the demographic situation as an indicator of the end of small-scale agriculture, which would simply no longer be viable in the future. While they already attested to the "death" of small-scale farming, they explained that their project was a way to develop rural economy and use the rich resources (e.g. soil, water) of the area instead of leaving them unused (Interview 12 & 13). A fast transformation to irrigated land and an intensive plantation scheme was seen as beneficial or even necessary for their business to comply with their investors' demands (Interview 12, Paragraph, Interview 13, Paragraph 63).
For instance, around the village of Alcanó, it was observed that agribusinesses push their interests to install the secondary network rapidly. The remaining farmers of this village were convinced to transform large pieces of their land all at once. They ended up overwhelmed by the costs and the increase in working hours associated with more labour-intensive irrigated land. Those farmers who could not carry the economic burdens of the rapid transformation to irrigation, decided to cease working their land and rent out parts of it to businesses (Interview 11, Paragraph 8, 24).
A farmer portrayed his observations as follows:

[23] *"There were few farmers, but they had a lot of land. Every farmer had 100 hectares, 120, 80. They could not admit it. First economically, but also socially and psychically you cannot transform your entire land in two, three years. Planting it, managing it and, of course, what have they done? Well, they have leased it or sold a part of their land to companies. [...]*
Being a small/mid-size farmer, can you afford to become a great entrepreneur in two or three years? Without training, without anyone to help you. It's hard. Many people have been left behind and I see it, rightly so, because they couldn't resist [this pressure]." (Interview 11, Paragraph 8)

Additionally, a farmer narrated that the way in which the canal implementation has been managed has a bearing on rural development and is crucial to the question of whether irrigation helps to fix rural population in the territory or not.
Whilst the aforementioned implementation of irrigation increases the pressure on farmers and concentrates more land in the hands of agribusinesses, positive experiences have also occurred when transforming the land piece by piece in other areas. A piece-by-piece transformation allowed farmers to receive returns on their investment from the already transformed land; money they are able to re-invest in the next piece. It also influenced young farmers to engage in the family farm (Interview 11, Paragraph 8, 24, 28).
Apart of economic burdens, a rapid transformation to irrigation was also associated with a psychological burden for farmers who have to adapt to new technologies and production models. Such adaptation can be especially challenging for farmers of older generations, for whom access to higher education was not as common as it is nowadays.

[24] *"So, the problem, above all, was the farmers' [in]capacity to change their entire mentality from rainfed crops to irrigated crops, which are totally different. This can be done by a 30-year-old farmer, but for a 70-year-old it is very difficult to do this reconversion and this learning - which requires technical learning – at that age."* (Interview 13, Paragraph 38)

The interviewed agribusiness emphasised the importance that technical knowledge of their employees and scientific support has on developing their project (Interview 12, Paragraph 103; Interview 13, Paragraph 5).

The Faculty of Agronomy played a decisive role in growing the proficiency of farmers in Lleida, and the Institute for Agri-food Research and Technology (IRTA) is an important scientific backbone of the agricultural sector in the region (Interview 12, Paragraph 101). The agribusiness narrated that IRTA supported them in the beginning of their enterprise, providing them with new, more productive, varieties of almonds and advising them about the viability of intensive plantation schemes.
Since IRTA receives around 70% of its budget through contracts with companies, the access to knowledge is only partly free and, as the business ascertains*, "if you are small you cannot pay this"* (Interview 12, Paragraph 55).
From this vantage point, it's not only financial means but also the **access to higher education and scientific knowledge** that has a bearing on the successful implementation of irrigation and, furthermore, on processes of land concentration.
Farmers are worried that mainly agribusinesses will profit from the irrigation infrastructure in the long run.

[25] *"Well, nobody takes water. The canal is consolidated and, why are there so few people irrigating? Because it is expensive, because people have other projects, because sociologically such a large project did not take into account the demographics, the aging of the population. And they put very high costs on everything to guarantee the industrial margin of the companies."* (Interview 5, Paragraph 60)

Looking for returns on the high public investments made for the canal project, some farmers expressed their concerns that the governmental administration (whilst may not be fostering) welcomes the entry of businesses that could afford to rapidly transform large extensions of land. However, this would put into question the social objectives that justified the public investments into the project (Expert Interview 2).

[26] *"It is another bad part of the Segarra-Garrigues, we are seeing that land is being taken, the best land, by large companies that do not come from this world. They are not farmers."* (Interview 11, Paragraph 8)

5.3. Lived experiences – Socio-ecological implications of land concentration processes

> [27] *"Land property is very well distributed until today [...] thanks to family farms, which have brought this rural balance. For example, there is no landlordism in Catalonia. Let's see, a farm from the 19th century when the development of the Canal d'Urgell was made has 300 hectares, well this is an anomaly. […] Well, nowadays you can see a new form of latifundism which would be agroindustry.*" (Interview 5, Paragraph 27 & 29)

The observation this farmer made, describes the notion of land concentration processes in the region of Lleida which are nourished by a growing commercial interest in agriculture and land. Evidently, the socio-ecological implications of land concentration processes that farmers and other interviewees experienced or observed are closely linked to a further consolidation of an industrial agricultural model in the region.

Growing power of agribusinesses, growing pressure on farmers

The example of the almond agribusiness presented in the previous chapter has shown that the access to irrigation is an important factor in attracting agribusiness to the Segarra-Garrigues region. Almost all interviewees mentioned that in areas which have already been connected to irrigation, large businesses have shown interest to acquire and/or lease the land and adapt the properties for their purposes (Interview 14, Paragraph 9; Interview 8, Paragraph 44).

[28] *"Look, in Alcanó, the next village, there were some plots of land which were a bit hilly and they were rented to a company from Aragón or Huesca, people told me. Then they came with machines and erased everything. That is, properties used to have several owners, I don't know how many, and now there is only one. This company."* (Interview 3, Paragraph 48)

Usually businesses follow a strategy to find their first piece of land, settle down, start to build up confidence with the local farmers, and then enlarge their property proceeding from the first point (Interview 1, Paragraph 29-30; Interview 8, Paragraph 44). In the study area, different types of agribusinesses were identified. While there are some well-established businesses in the region, such as Borges and Turrón Vicencs, which have plantations and an its own attached processing industry, other businesses from the construction sector started to invest in agriculture a few years ago.

The areas in and around the Segarra-Garrigues are attractive for businesses since all the crucial infrastructures for an agricultural enterprise already exist, including the facilities of agricultural service companies or high-speed train connections to important cities within Spain.

[29] *"We as a company […] are close to these industries, and they like that we are close because they can come and visit us to see our product. They can come and go back in the same day. That is important. Water, strategy, communication. Infrastructures are important."* (Interview 12, Paragraph 101)

Several farmers and other rural community members expressed their concerns regarding the growing presence of agribusinesses and associated enlargement of intensive plantations.
They expect rising pressure on smaller farmers and cooperatives since commodity prices are likely to be squeezed by bigger producers (Interview 5, Paragraph 62-65; Interview 14, Paragraph 14).

[30] *"But of course, then to small producers, I do not say that they [agribusinesses] deceive them (...) But they set prices that are mocking them. They tell you: Now it is at 5. And we are selling at 5.80 (EUR per kilo of almonds)."* (Interview 12, Paragraph 59)

Moreover, price volatility was mentioned as a threat for farmers who have little or no bargaining power within the market. Especially, in the fruit sector prices are not only driven by bigger producers but also by the five to six retailers who dominate the European market. Over the last years, farmers experienced a "roller-coaster" of prices, which are sometimes not even covering the expenses for the production (Interview 8, Paragraph 26).
Some interviewees were doubtful about the expansion of irrigation in the Segarra-Garrigues region, which would incentivise farmers to plant more fruit trees, aggravating further the competition within this sector.

[31] *"I produce sweet fruit and it turns out that my government constructs an irrigation canal so that the territory next to mine, which is also part of my country, competes with me and drop the prices. It's all very surreal."* (Interview 14, Paragraph 68)

Certainly, a growing competition for small farmers with big producer is not limited to one sector (Interview 3, Paragraph 46). Interviewees observed that it becomes more common for smaller farmers start to produce as contractors for bigger companies, for instance grape farmers who started to sell their production to large Cava producing companies.
According to my interviewees, contract farming would limit farmers' possibilities to sway commodity prices and increases their vulnerability on the market. The first strikes by grape farmers in the neighbouring region Penedés in the summer of 2019, who were protesting against the disastrous prices they got paid, were mentioned as an exemplary case of growing dependency of farmers on agribusinesses (Interview 5, Paragraph 33; Interview 9, Paragraph 10; Interview 6, Paragraph 58; Interview 5, Paragraph 62-65).[24]
Interviewee's portrayals of the growing presence of agribusinesses in areas recently connected to irrigation contained words such as "monsters" or "capitalists", with which they emphasised their concerns regarding unidirectional interest of businesses to maximise the profit generated from the land (Interview 1, Paragraph 29; Interview 14). Accordingly, an employee from the governmental administration in the district of Les Garrigues commented:

[32] *"It is better to have 100 hectares with four farmers than 100 hectares in the hand of these large companies. Because these four farmers will surely stay in the village, they generate wealth, they can live from it, they will have children in the village, they will stay in the territory. The others will not. The others go, pick whatever they can and leave."* (Interview 1, Paragraph 32)

[24] See newpaper article: La Vanguardia (23.08.2019): "La mediación de la Generalitat no logra desencallar la crisis del cava.". Available: (Broekman and Abella, 2013) (last access: 12.03.2020)

Interviewees have shown that there are generally two ways how farmers are confronting the pressures caused by the advancing power of agribusinesses: They either decided to organise on the micro level and offer more specific, higher quality products (including the option of organic farming) or they transformed the family farm into a usual business, increased plantation areas and intensified their production accordingly (Interview 6, Paragraph 56; Interview 8, Paragraph 56; Interview 10, Paragraph 50).
However, in some cases, it was observed that farmers who transformed their small farms too fast into a business were unable to cope with the new tasks and challenges they suddenly faced (Interview 5.1, Paragraph 52). They lacked education to manage a business and would end up "crazy" with the additional work load they had to shoulder (Interview 11, Paragraph 8, Interview 5.1, Paragraph 52; Interview 15, Paragraph 32).
One young educated farmer who did so and transformed the drylands of his family into intensive fruit plantations narrated the pressures he was exposed to, even though he knew how to manage the farm:

[33] *"Because six years ago I joined agriculture, so was I wrong in planting so much fruit? Well, I don't know. Not until now, because I didn't lose money any year. What happens is, that you have to do it very well to not lose money. (...) Today, would I do the same thing I have done? I wouldn't."* (Interview 8, Paragraph 96)

With the intensification of production, the number of commodities produced in the region would be too high to place them only on the local markets (Interview 8, Paragraph 90, 92). Despite this, agricultural cooperatives are showing an interest in commercialising parts of their production locally, and maintaining the traditional link they used to have with their surrounding territory (Interview 7, Paragraph 40; Interview 10, Paragraph 56).
While governmental administrations do support some initiatives to promote local commercialisation, they are not very optimistic about the potential for wider success. A lack of awareness amongst consumers and retailers (e.g. local shops) was mentioned as a factor that **impedes local commercialisation** (Interview 6, Paragraph 44).

[34] *"Under my house there is a greengrocery. I don't buy my vegetables there. And I feel bad about it because it is local commerce and I want to support local commerce. But they sell fruits from Mercadona being in an agricultural area. Are we crazy or what is going on? And you go there and ask where things come from and they don't know it."* (Interview 9, Paragraph 32)

Intensification of production
In general terms, interviewees observed that the access to irrigation and the entry of agribusinesses in the region was linked to the intensification of production. Production systems mainly depend on the number shares of water that are accessible. Areas which have access to up to 6000 cubic meters per ha/year used to be transformed into intensive plantations (Interview 1, Paragraph 24, 66-67)
Accordingly, a fruit farmer in an area of high shares of irrigation narrated that the access of water allowed them to increase their production almost exponentially.

[35] *"In five years, we have multiplied tenfold our production. We departed from producing 159,000 kilos ten years ago and, today, we are making 1,500,000 kilos of fruit."* (Interview 8, Paragraph 50)

As mentioned in the previous chapter, intensive plantations are crucial for the agribusiness business model. 450 almond trees/ha is the tree density they need in order to get their predicted returns on investment. In this way, one year after planting the tree they were able to harvest 200 kg/ha in the third year they reached 1,500 kg/ha and from the fourth year onward production increased up to 2000 kg/ha (Interview 13, Paragraph 63). In comparison, dryland almonds produce approximately 200 kg/ha (Interview 5.1, Paragraph 35).
Intensification is related to increasing the use of new technologies, machinery, fertilisers and plant protection. They guarantee a high production (e.g. 20,000 kilos per ha/year of corn) and a rapid harvest (40 to 50 ha per day) (Interview 10, Paragraph 52; Interview 1, Paragraph 66-67).
Farmers critical about intensification not only point to the negative effects of agrochemicals but more generally to the perpetuation of an agricultural model that neglects its social and ecological externalities.
In that regard, one interviewee mentioned that the produced corn and wheat in the study area almost exclusively goes to the livestock sector and is used as fodder for animals that are exported to Europe, Asia, the United States, Mexico and the Maghreb States (Interview 10, Paragraph 54)

[36] *"They export live animals throughout the Maghreb area. Boats full of live animals. They are floating farms on huge ships."* (Interview 10, Paragraph 54)

Livestock farms are associated with groundwater pollution and lack of animal welfare as well as the deterioration of working conditions in slaughterhouses (Interview 9, Paragraph 26; Interview 14, Paragraph 38 & 77).
Furthermore, farmers who count on intensification and mechanisation are more prone to indebtedness. One farmer observed that especially those farmers who work as contractors for bigger companies, take on debt to buy big tractors. Since low commodity prices would not allow them to amortise their investment, he deemed mechanisation (and indebtedness) as one factor that pushes farmers out of agriculture on the long run.
Intensification of agriculture in irrigated areas is also linked to **crop changes** or replacement of old varieties with new, more productive ones. Critics of this have said that areas that provide high shares of irrigation would incentivise farmers to plant water-intensive crops like fruits or corn, instead of typical Mediterranean crops. Indeed, one example from the fieldwork has shown that the access to high shares of water was pivotal for a young farmer to increase his fruit plantations from 6 to 52 ha. According to him, in his district (Sunyer) approximately 90% of the surface has been transformed into fruit plantations since it was connected to the Segarra-Garrigues canal (Interview 8, Paragraph 36).
Crop changes are perceived as problematic for several reasons: First, fruits, corn, alfalfa and wheat have low or volatile market prices which may not compensate for the investments made into irrigation in the first place. Second, cultivating water-intensive crops in a desert-like landscape while water becomes an ever-scarce resource under climate change conditions is simply not perceived as future-oriented agriculture. Third, the removal of typical dryland crops leads to a loss of collective memory on how to cultivate drylands, something that might be important to retain for the future (Interview 5, Paragraph 47 & 56; Interview 14, Paragraph 9).
Evidently, intensification and crop changes have a bearing on agricultural landscapes.
Agricultural landscape changes were mainly mentioned in relation to the introduction of the Segarra-Garrigues canal. During the fieldwork, I was shown different part of the Segarra-

Garrigues area and farmers explained that particularly in the hilly areas small stone terraces and walls were built and maintained over centuries. They were installed to adapt the landscape for agricultural uses in the most efficient way, mostly to avoid erosion and facilitate water retention.
Some farmers already experienced that areas were completely flattened, and hills erased in order to install the irrigation systems (Interview 2, Paragraph 20; Interview 3, Paragraph 48; Interview 4, Paragraph 38-41).

Figure 7. Traditional terrace cultivation in the valley close to the village Guimerà

Source: own photograph

Farmers were concerned about the removal of soil for the installation of the irrigation systems, as every movement of the soil would negatively affect its quality (Interview 4, Paragraph 38-41; Interview 5.1, Paragraph 79). However, it was stated that negative implications depend upon how the installation process is executed. If done correctly, farmers or agribusinesses store the topsoil layer and return it to the fields after finishing the installation. This step is not being completed by those farmers/agribusinesses who want to save some money and/or time (Interview 11, Paragraph 82-84).
During an interview it was also mentioned that, a declared natural reserve ('Los Marqueses y els Besons'), was sold off to a wine company. Farmers mentioned that they had planted vineyards in this reserve, which was protecting a unique ecosystem of a Quercus tree species (Interview 4, Paragraph 90, 92).
Some interviewees expressed their concerns that a landscape mosaic with different plantation models, varieties and protected areas with its ecological functions, is going to be lost in the long run (Interview 5.1. Paragraph 18; Interview 14, Paragraph 7).

Local contestations on the access to resources

An increasing presence of agribusinesses that acquire/lease land or contract farmers to produce on their behalf, enhances **difficulties to access land**. Most of the interviewees mentioned that the access to land is difficult in the study region. While land used to be inherited by the oldest daughter or son, today this generational replacement is disrupted and old farmers tend to rent or sell their land to a third party (Interview 4, Paragraph 42; Interview

8, Paragraph 34; Interview 12, Paragraph 99). For people from outside the farming sector, it is almost impossible to access land for rent since offerings are not released officially and farmers would prefer to rent their land to neighbours or other people they know (Interview 2, Paragraph 46)

[37] *"Nowadays, land is no longer offered on the market, but rather it is bought or leased, and you don't find out. You no longer have an option."* (Interview 6, Paragraph 98)

Since there is no regulation of prices, usually the person who bids the most would get the land (Interview 6, Paragraph 54). Often small farmers have to compete with agribusinesses when it comes to land sales, where usually "the law of the strongest" is being applied (Interview 6, Paragraph 48, Interview 10, Paragraph 24)

[38] *"Who takes them? Big businesses or large-scale holdings take them because they can pay more."* (Interview 6, Paragraph 48)

Difficulties to access land are therefore critical as today farmers often need to enlarge their cultivation areas in order to be able to live from their land. A lack of access can accelerate abandonment of agriculture and a further reduction of the number of farmers (Interview 6, Paragraph 48 & 98).
While dryland areas used to be less attractive for agribusinesses and the land is still easier to access, one farmer from the new irrigation area of the Segarra-Garrigues experienced that a business started to rent (and partly buy) land around his village such that today there is basically no land left.

[39] *"And then we have another problem. Because of the arrival of foreign businesses, we are not able to grow more. Because there is no rentable land left."* (Interview 8, Paragraph 98)

The rising presence of agribusiness in irrigated areas and increasing prices of land were often associated with **land speculation** (Interview 4, Paragraph 74-75; Interview 5, Paragraph 31). With a special emphasise on the construction sector, interviewees mentioned that land becomes more attractive for businesses. They explained that the construction sector was involved in many public infrastructure projects between the late 1990s and early 2000s, where they accumulated a lot of capital. It was observed that with the start of the economic crisis in 2008, agriculture became a 'refuge' for the money in this sector as it was rated as a safe harbour (Interview 10, Paragraph 12, 14, 16; Interview 11, Paragraph 28).

[40] *"Because that is a very safe good. You will never lose the land, the land always increases in value, only a little bit, but the value always increases."* (Interview 6, Paragraph 56)

Farmers perceived companies that speculate with land as unstable as they invest a lot of money in their properties and specialise in one crop with expected high revenue. Once the prices fall, it would become difficult for them to amortise their investments. By then the company would be more prone to fail than a smaller, more diverse family farm (Interview 11, Paragraph 20; Interview 5, Paragraph 46). Consequently, agribusinesses are contributing to the destabilisation of the farming sector in the region.
During the fieldwork land speculation was also perceived alarming as it hampers the entry of a young farmer generation. During one interview, a case of a young farmer couple was

depicted who were looking to start an organic pig farm. They were unable to find land since most of it is cultivated by farmers who produce pig fodder for the company BonArea. This company is a secure purchaser and has a high demand which led to an explosion of land prices in this area.

[41] *"To feed the Guissona pigs they needed as much land as possible to plant cereal. Well, the price of the land was rising and they, who were young people from this territory, from the villages there, and who wanted to run an ecological pig farm, they couldn't find any land."* (Interview 9, Paragraph 20)

The **access to water** in the Segarra-Garrigues region, as described in the previous chapter, is limited by the financial means of the farmers. Decisions against the installation of irrigation were certainly influenced by the high costs of investment and water prices (per cubic meter), as well as the high age of a majority of the farmers (Interview 4, Paragraph 65; Interview 14, Paragraph 64; Interview 8, Paragraph 38; Interview 13, Paragraph 19). Accordingly, an interviewee, who could not afford the investments in irrigation, pointed to the problem that the value of land for those owners who decide against irrigation, decreases drastically, once all the surrounding farms have been connected to water (Interview 15, Paragraph 10)

Nevertheless, there are farmers who are still willing to invest in the infrastructure. Throughout the last 20 years they are observing climatic changes, and more and more, irrigation is being seen as vital for the future of agricultural production in the region. Furthermore, during a fieldtrip a farmer mentioned that summers have become hotter and rain is less abundant, such as in the summer of 2019, where they experienced several weeks of temperatures over 40°C which would have been an anomaly if it were just a couple of days in the past (Interview 5, Paragraph 8; Interview 11, Paragraph 6).
Some of the farmers who wanted to get access to irrigation are facing the problem that the secondary network of the canal, which is needed to bring the water to the fields, is still under construction. Until now it was mainly the lack of necessary budget and indebtedness of the governmental administration that hampered its construction (Interview 11, Paragraph 6).[25]
A Mayor of a village in Les Garrigues emphasised, they had to put a lot of pressure on the governmental administration until they finally reached an agreement that, by 2032, the secondary network of the Segarra-Garrigues must be completed (Interview 11, Paragraph 6).
Another reasoning behind the limited access to irrigation was related to the implementation of the bird-protected areas within the Segarra-Garrigues area. After planning the whole irrigation project, which was supposed to provide 70.000 ha of land, the European Union imposed the condition upon the governmental administration to adopt protected areas for a native bird species.[26] Several interviewees complained that this condition diminished the originally planned irrigated area by half and would endanger the livelihood of farmers (Interview 4, Paragraph 60; Interview 6, Paragraph 102, Expert Interview 3). Meanwhile, others evaluated it as a further failure of the governmental administration, who did not take into account the different demands within the territory (e.g. ecological demands) and existing regulations (e.g. Natura 2000 network).

[25] See also: (Broekman and Abella, 2013): La no-recuperación de costs en el Segarra-Garrigues: La mercantilización de los recursos naturales.
[26] See also: (Muñiz San Martín, 2009): El conflict por el Canal Segarra-Garrigues: Lecciones para enfrentar la problemática rural.

Some farmers expressed their concerns that the mismanagement of the canal would favour agribusinesses and agricultural lobby groups could take advantage of this situation to further push their own interests over land uses in the region (Interview 3, Paragraph 44; Interview 5, Paragraph 33). As an example, the lobby of the livestock industry demonstrated a great interest in the Segarra-Garrigues irrigation project, as the fodder production (mainly corn and wheat) for livestock breeding requires a lot of irrigation water (Interview 5, Paragraph 33).

Political engagement and the lack of perceived self-efficacy

The growing presence of agribusinesses in the Segarra-Garrigues area, the lack of access to irrigation in a majority of the area, and first signs of land concentration, all seemingly created some distrust of farmers in the governmental administration and led to political struggles around agrarian/rural development issues throughout the last 20 years (Interview 3, Paragraph 16; Interview 11, Paragraph 30).

From its beginning, the Segarra-Garrigues canal was a contested project. In an early stage of its construction, a group of farmers and intellectuals formed opposition to the type of agricultural model the project was promoting. Their main critique was that the official planification of the channel would endorse an intensive agricultural model with high requirements of water, while ignoring the local demands of farmers and failing to attend to the different water demands of the society beyond the agricultural sector (Interview 5, Paragraph 39, Interview 5.1, Paragraph 18, Expert interview 2). One farmer stressed that the governmental administration applied the simple formula that more water will lead to more prosperity in rural areas. He perceived this formula as a pre-capitalistic and outmoded way of thinking as water is not only an important resource for agriculture but also has a lot of other uses and functions (e.g. local industry, tourism, ecosystem services etc.).

[42] *"I believe that Segarra-Garrigues was born (...) with a nineteenth-century, almost pre-capitalistic idea of 'more water, more wealth.' (…) That is an idea known as 'Joaquín Costismo'. So, more water for a rural, only agrarian society, the more water, the more wealth, the better would prosper this society. Not today! Today we need water for all kinds of uses. We all know that it is a scarce resource that depends on a complex climatology."* (Interview 5, Paragraph 33)

Under the name 'Manifest de Vallbona', this group developed a concrete and technically approved counterproposal considering the irrigation system as an opportunity to develop the region economically while improving social conditions of farmers and villages and maintaining an ecological equilibrium (Expert Interview 2 & 3). This counter-proposal presented in 2004 and to this day, still had not been applied; no surprises then that, the interviewees who were involved in this group or at least sympathised with the proposal expressed their disappointment about this "wasted opportunity". and seemingly are not surprised about agricultural changes such as the expansion of water fruit plantation in former drylands (Interview 5.1., Paragraph 64; Interview 15, Paragraph 42).

However, the further expansion of fruit plantation worries those activists who are involved in the social movement "Fruits with Social Justice". It is a platform that fights for the rights of migrants who are mostly working in the fruit harvest. Activists expressed their concerns that the Segarra-Garrigues is fostering an agricultural sector, which is already in crisis, while the labour and human rights violations in this sector have continued to stay invisible. Even though their daily work is very much focused on the concrete aim of denouncing and improving the social and working conditions of the fruit pickers, their struggle is embedded in their more

general critique of the intensive, export-oriented agrarian sector in the region (Interview 14, Paragraph 48)

[43] *"These trends, now Segarra-Garrigues, now you irrigate, so now we all plant almonds, now they pay a good price for the grapes. So here in the region close by they have put irrigation, so let's plant vineyards because Torres or Cordorniu will buy our grapes. This is also a growing tendency. Very big and few cultivars."* (Interview 9, Paragraph 10)

They share this critique with the agroecological movement, which mainly consists of small farmers, and projects that try to promote a more diverse production and upgrade local commercialisation channels. They also organise within the 'Asamblea Pagesa'; a self-organised entity of farmers which strives for mutual learning, exchange of skills, concrete support in between farmers (e.g. commercialisation) and a political representation of alternative farmers (Interview 9, Paragraph 28 & 40).
During conversations it was striking that small farmers and projects involved in political struggles consistently expressed their frustration and their lack of belief, as their attempts and proposals to bring about change had not and would not be heard on higher levels (Interview 5.1., Paragraph 64; Interview 9, Paragraph 42). It was articulated that farmers involved in this movement turned out to be very disappointed that their engagement did not lead to any profound changes, making it even more difficult to keep up the political opposition for current and future fights.

[44] *"But there are two things happening. One is that those who have been fighting for a long time are a little tired of trying to do things and that these don't work. So, they are starting to focus on their own things, so that their own projects work, more practically. And the young people are too young and too inexperienced. And it is costing a lot. And then it is also that there are very few, very few people. So, what happens? It is self-exploitation; they have projects which are hard to bring forward. So, don't try to tell people they also should do a lot of assemblies to do I don't know what ... and this is a reality"* (Interview 9, Paragraph 42)

Social and labour conditions of farmers
The given situation has a bearing on the **self-perception of the farmers** and how they evaluated their role within the greater society. Most of the farmers narrated that it was really "natural" for them to work in agriculture since they grew up with farming and learned to appreciate it, as one farmer described almost poetically:

[45] *"It was almost congenital, I mean, I was born in a family who valued the village, agriculture and I made the decision between 15 and 17 years old. Spain had that change from dictatorship to democracy and it was very attractive. And demographically, me who lived in this village, it resembled an Italian movie, with its own cinema, its own life, very interesting. Apparently, a scenario of happiness and work opened up. Yes, yes, it was very natural to stay."* (Interview 5, Paragraph 2)

Many farmers emphasised that they enjoyed working in agriculture and the freedom and independence it gives them. They perceive it as a way of not only reconnecting to themselves but also to the earth, seasons, and meteorological conditions that surround them during their day to day (Interview 2, Paragraph 68; Interview 5, Paragraph 4)

[46] *"It's not easy because, well, it's a lot of hours, but it's nice because you know you do it for yourself. It is pleasant. You know you do something that benefits the earth, that benefits everything."* (Interview 2, Paragraph 68)

Nevertheless, it was also mentioned that agriculture requires a lot of dedication, particular in harvest seasons, with no guarantee of vacation or free time. A lot of passion would be needed in order to be able to cope with the insecurities this work brings about (Interview 8, Paragraph 12). To hold up this passion is not that easy for some farmers as they perceive a disregard of rural areas and a growing gap between rural and urban areas. Urban inhabitants would either have a romanticised image of the rural life far away from its reality or would make farmers responsible for environmental pollution (Interview 6, Paragraph 90; Interview 9, Paragraph 30; Interview 11, Paragraph 50).

[47] *"Also, sometimes we blame the farmer and the problem is that society does not get involved with the farmer. They have left him alone, they did not train the farmer, they have left him alone, in the hands of technicians from the agroindustry, who sell them whatever product. So, now they have told them that glyphosate works super well, so, they apply glyphosate. We have left them very abandoned."* (Interview 9, Paragraph 30)

Several farmers expressed a feeling of abandonment and lack of appreciation for their work. They also mention that a lot of policies that have been adopted are ignoring the needs and demands of rural areas. At the same time, they do not have a voice in political decision-making processes and media (Interview 11, Paragraph 50). One farmer mentioned the lack of good internet connection and energy supply in his village and asks rhetorically: *"Which kind of business are you able to establish here?"* (Interview 11, Paragraph 56). He pointed to the problem that the presence or absence of infrastructure and primary services is influencing the decision of whether or not people to stay in the region and engage in economic activities.

One farmer couple said that the indifference about rural areas created a certain pessimism and disillusion amongst the locals. They named the example of the Segarra-Garrigues canal which was already promised to their grandparents when they were children, and who are going to die without seeing their region being connected to the canal (Interview 4, Paragraph 193-194). Another farmer, who was engaged in the counterproposal for the channel project, and who saw that their proposal was acknowledged but never really considered in political decisions, also expressed his frustration:

[48] *"Well, I had these hopes before, the possibilities are still intact, but there is no one who turns on the light, everything is dark."* (Interview 5.1., Paragraph 79)

The feeling of indifference towards rural areas, that farmers expressed, was also nourished by the negative **social side-effects of the canal** project.
Albeit, it was revealed that the canal has been an incentive for some young farmers to stay in agriculture and maintain and/or scale-up the family farm (Interview 1, Paragraph 19-20), the possibility of negative implications has not been considered during the planning of the project. As signified in the previous chapter, the transformation from dryland to irrigated land increased the workload of farmers. While typical dryland cultivars are less labour-intensive, irrigated agriculture requires a lot of manpower (Interview 11, Paragraph 8). One farmer explained that this rapid change of mentality, from dryland to irrigated agriculture, produced

a certain psychological and social overload for farmers (Interview 11, Paragraph 44). They suddenly were confronted with tasks, such as managing employees or understanding the technical part of the new irrigation system, which they have never done before and were left alone with these unexpected burdens.
As a result, the increasing presence of agribusinesses in the new irrigation areas creates a feeling of inferiority for smaller farmers. One interviewed woman reflected on the behaviour of her husband who started to call himself "small" since neighbouring farms became bigger. She resumed:

[49] *"You arrive, and you see their big farm and because you have a small farm somewhere, you feel smaller. I think on an emotional level, you do feel smaller. Another thing is that these people, who buy up land, also put on airs and graces, like 'I have more money than you'. This is changing a lot the relationships [between people]."* (Interview 4, Paragraph 238-240*)*

Despite the fact that in some areas, the access to irrigation convinced young farmers to stay in the region, most of the interviewees perceived the **depopulation of the rural areas** and the loss of small farmers as something that will not be reversible.

[50] *"The big businesses want to take all, and the small farmers will disappear, you'll see."* (Interview 3, Paragraph 44)

[51] *"Yes, there are nuances, summers, weekends. There are certain increments, like jobs in the area. It is not a sleepy village, because it still has its school, its small shops, but everything indicates that it is the end of the journey."* (Interview 5, Paragraph 13)

One interviewee explained the rural exodus as a vicious cycle in which people move away from a village so that the maintenance of services and infrastructures such as schools, medical centres or cashpoint become obsolete and inefficient. As a consequence, the infrastructures and services are relocated to the biggest village of the region. The deterioration of services and infrastructures make more people leave the village, while the other village grows further (Interview 11, Paragraph 67-74).
Some of the interviewees also detected the growing presences of agribusiness as a driver of the rural exodus. They analysed that big companies usually do not create affluence for a village or a region where they carry out their business. One farmer observed that big companies with a high labour demand drive their workers to the fields, but the workers neither start to live in the village and reinvest their earned money in the local economy nor develop a relationship with the territory and the people (Interview 11, Paragraph 30).

[52] *"The demand-oriented economy caused by the family farm business is very powerful: Small workshops,…. It's always the same. On the other hand, agribusinesses have a tendency to delocalize even the demand for their goods."* (Interview 5, Paragraph 56).

These demographic and social changes also have led to **changes in the workforce on the fields** (Interview 5, Paragraph 6). While some sectors, such as olive harvest, became almost completely mechanised, the fruit producing sector still maintains its high labour demand of estimated 30.000 workers in the harvest season (Interview 4, Paragraph 202, Interview 5, Paragraph 19).

Interviewees narrated that in the past, particularly students, women and elderly people, were working in the fruit harvest, until this started to change in the late 1980s. In a period of economic growth, more young people went to study in universities and women looked for jobs in other sectors. The gap of workers was and is still filled with temporal migrant workers who started to come in the 1990s mostly from north African and sub-Saharan countries (Interview 14, Paragraph 11, Interview 5.1.; Paragraph 50). One interviewee stated that these transformations in the labour force changed the whole social panorama of the region. While the fruit harvest was a social event where different generations came together in this specific period of the year, now it became precarious labour of temporal migrant workers. The interview called the collective of migrant workers "subalterns", as they are a group of people who often do not obtain official papers and therefore are extremely vulnerable to workers' rights violations (Interview 14, Paragraph 11).
In fact, the migration of temporal or constant workers to the region of Lleida has produced xenophobia and racism against them, particularly in the villages, as one farmer observed:

[53] *"They are like a marginalised collective within our society that we don't want to see even though without them there would be no way to deal with the harvest in the irrigated areas, the fruit plantations."* (Interview 5, Paragraph 8)

The social movement "Fruits with Social Justice" emerged in a moment when the municipality started to expel migrate workers from a square in the old town of the city by splashing water on them while they were sleeping. The movement is trying to report and denounce **labour rights violations and racism** that migrant workers suffer at all levels, as the two activists mentioned in detail during the interview (Interview 14). They particularly pointed blame on the temporal employment agencies who tend to aggravate the situation of migrant workers, as they create a scenario in which neither the employment company nor the farmer or agribusiness feel responsible for the workers and their basic needs such as food and shelter (Interview14, Paragraph 52-54). One farmer even indicted that in one period the conduct of temporal employment agencies seemed like slavery (Interview 5.1., Paragraph 52).
While the interviews showed that small farmers used to work more or less with the same migrate workers every year and provide them shelter and food in their villages, it is rather large companies who deploy the service of temporal employment agencies as they have a very high or infrequent demand for workers (Interview 14, Paragraph 54; Interview 12, Paragraph 81; Interview 8, Paragraph 72-70).

[54] *"We harvest fruits in the irrigated areas, apples. Already for 25 years we work with the same families from Morocco (…) when they arrive, we hug each other and when they leave too."* (Interview 5 - Farmer, Paragraph 21)

[55] *"If you need someone you phone an ETT. They are temporary employment agencies. They have workers and you say: I want 40. I want 3. I want 28. I want 50. And they provide them to you. But it is for occasional works."* (Interview 12 - Agribusiness, Paragraph 81)

In the face of the desolate situation of migrant workers in irrigated fruit plantations, activists were concerned about the fact that the Segarra-Garrigues canal will incentive the further augmentation of large, corporate owned fruit plantations (Interview 14, Paragraph 7). In order to change the situation, they said the contrary must happen:

[56] *"Well, as a final solution, long term and utopian if you want, is to change the agrarian model. More than half of the fruit trees must be logged, we have to return to polyculture and, to look for other forms of commercialisation. […] Avoid land grabbing. Limit the capacity of large multinational exporters […]"* (Interview 14, Paragraph 48)

5.4. Outlook: Little Oases or Food Sovereignty alternatives at the margins

> *It is a foggy morning when I arrive in the serpentine landscape around Vallbona de Les Monges. Stone terraces with grapevines on the hillsides. In-between the grapevines are people already working. They come from all over the world. Guatemala, Argentina, Catalonia, France. Although, the wine harvest is a physically exhausting work, we laugh and converse in the meantime. During the collective lunch after finishing the work, I observe this colourful group of people gathered together in this little, medieval village and it seems to me, that this agro-ecological cooperative truly puts the collaboration and the human in the centre of its business model, embracing the abilities they bring with them.*
> (Fieldnote, Participant observation in and around the village Vallbona de les Monges, 29th September 2019)

During the fieldwork I had the opportunity to talk to different farmers and visit projects who are trying to enhance an agricultural model based on the principals of food sovereignty. While the interviewees showed a high intrinsic motivation to promote alternatives to the intensive and export-oriented agricultural model which dominates in the region, they are perceived and perceive themselves rather as oases acting from the margins (Interview 4, Paragraph 7; Interview 9).
Nevertheless, they found ways to make their projects work and formulate concrete demands and measures that would favour the agricultural model that they are pursuing.

Enhance Direct and Local commercialisation
Farmers perceived direct and local commercialisation as an important step to get paid better and receive more appropriate prices for their products (Interview 2, Paragraph 98; Interview 4, Paragraph 7).
Interviewed farmers, in general, saw a lot of potential to commercialise their products locally as they have Barcelona close by with a high consumers demand (Interview 4, Paragraph 124; Interview 5, Paragraph 29). The challenge is rather to find the time to establish contacts with consumers and activate the internal demand for instance in school canteens or hospitals (Interview 9, Paragraph 26).
Another farmer reported that he had to dedicate a lot of energy to build contacts with schools in Barcelona to whom he provides his organic olive oil (Interview 11, Paragraph 8).
Direct commercialisation is organised through different channels. For instance, one farmer delivered her vegetable harvest to different consumer groups, to households via vegetable boxes and attended local farmers market twice a week. She mentioned that such a commercialisation model secures the financial stability of her family farm as she knows she will have fixed purchasers and prices (Interview 2, Paragraph 60 & 62).

Other farmers reported about experiences with selling the olive oil via internet which worked out very well for them (Interview 3, Paragraph 28; Interview 5.1., Paragraph 42).
However, it was underlined that the personal contact to consumers is key when it comes to local commercialisation. Several farmers mentioned that their customers value and trust the quality of their products, which makes them be faithful to the projects over years (Interview 4, Paragraph 123; Interview 2, Paragraph 64, Interview 5.1., Paragraph 33). Also, the possibility to visit the plantations and know the personal story behind the projects would deepen the confidence of the costumers (Interview 11, Paragraph 12).
While some farmers commercialised up to 85% of their products within Catalonia, others do sell their products in other European countries (Interview 9, Paragraph 34, Interview 5.1; Paragraph 25). In any case, it is important that the products are sold with an added value (e.g. olive oil instead of olives) and with a higher quality in order to mark a difference to products which can be bought in normal supermarkets (Interview 5.1., Paragraph 73; Interview 9, Paragraph 36)

Support local economies
Direct commercialisation is a way to support the local economy as agriculture also fuels other economic sectors. One farmer stated that for the installation of his olive press, he gave employment to craftsmen from the region (Interview 5.1., Paragraph 62). Agricultural regions which not only produce primary products, but also invest in a processing sector support agricultural development and contribute to the maintenance of a rural equilibrium (Interview 5.1., Paragraph 73).

Figure 8. Horticulture Project in the Green Belt around the city of Lleida

Source: own photograph

One farmer from an agro-ecological cooperative narrated that the aim of their project has always been to create a social, ecological and economic benefit for the region and the local economy. They do so, by giving employment, revitalising local businesses or transmitting knowledge to other farmers and help them run their projects (Interview 9, Paragraph 28). These networks of mutual support were also mentioned by others who see them as an

important base for their projects. On the one hand, networks serve farmers in the form of advisory regarding concrete questions of cultivation and commercialisation (Interview 9, Paragraph 28). On the other hand, they are important when farmers can't make their supply cover their demand. In such cases, a farmer can buy the missing amount from a trustful member of the network and cover the demand of his clients (Interview 2, Paragraph 78).
Finally, several farmers mentioned that the creation of agricultural tourism could be an import motor for the local economy, and there are first ideas and attempts to create an olive oil tourism project with Italy as a role model (Interview 4, Paragraph 40 & 214).

Embrace ecological and Mediterranean cultivations

Several farmers took the stance that typical Mediterranean crops are important to enhance the local economy since they have a higher value on the market and could be cultivated to be more water efficient (Interview 5, Paragraph 47 & 56).
Two things mainly motivate ecological production: on the one hand, farmers follow an intrinsic motivation and belief that agriculture is feasible without inorganic fertilisers and pesticides (Interview 4, Paragraph 35). On the other hand, they experienced that they get higher revenues from ecological production (Interview 5.1., Paragraph 21 & 56, Interview 8, Paragraph 30). Interviewed farmers also emphasised the importance of planting a diverse variety and/or those which are adapted to the local climate. One interviewed woman runs a vegetable garden where they try to plant as many varieties as possible in accordance to the seasonality (Interview 2, Paragraph 52).
The other interviewees stuck to Mediterranean crops, such as olives, almonds and vine (Interview 3, 4, 5, 9, 11).
Furthermore, Mediterranean crop are not only adapted to the local conditions and form part of the landscape, but also influenced the formation of the landscape over centuries. During the field visit I was shown the typical landscape of stone terraces which were built to retain water and maintain the soil quality to grow vine and olives. Farmers underline that the kind of agriculture they practice is a way to maintain the cultural and ecological value of these terraces which they perceive as a natural patrimony of the region (Interview 4, Paragraph 20, 36, 42; Interview 5.1., Paragraph 79)

Create land banks

In order to regulate land prices and facilitate smaller farmers the access to land, several interviewees mentioned the importance to create so-called "land banks". Land banks could either be managed by the governmental administrations or by cooperatives. The general idea that the interviewees proposed is that once a farmer wants to sell or rent his or her land the governmental administration or the cooperative becomes in charge of finding a new owner or tenant and simultaneously steps in as a kind of security for the owner in case the new tenant would not pay the rent. This model also ensures that small farmers and projects benefit financially when it comes to the repartition of available land (Interview 6, Paragraph 94; Interview 8, Paragraph 102)
Interviewees mention that the first attempts which are made on the municipality and the cooperative level, but they are not yet implemented (Interview 1, Paragraph 42; Interview 9, Paragraph 20)

6. Discussion

6.1. The politicized nature of land concentration processes in the Segarra-Garrigues canal area

Agrarian changes and the socio-ecological implication they involve, are political (Moragues-Faus, 2016). Ignoring the influence of political economic forces that shape land concentration processes in Catalonia would be an apolitical account of the European agrarian changes over the last 60 years, of which land concentration forms a large part of (reffering to Robbins, 2012). To understand agricultural (holding) structures and their modification as a result of political processes, requires looking at the features that reconfigure the agricultural system, away from being grounded in small-scale family farms.

Land concentration processes in Catalonia are embedded in political attempts to restructure and modernise European agriculture in the aftermath of the Second World War. Between the 1950s and late 1980s, agricultural modernisation in Europe aimed to increase food production through the implementation of an "intensive, industrially driven and expansionist agriculture with the state support based primarily on output and increased productivity" (Lowe et al., 1993, p. 221). At the same time, in Spain, similar to the rest of Europe, land abandonment of small-scale farms has been observed since the early 1960s (Soronellas Masdeu, 2012).

In Catalonia, the simultaneous act of modernisation of agriculture and industrialisation and deployment of the service sector has attracted rural citizens to move to urban centres. The gradual economic shift from the primary to other economic sectors, pushed by the Francoist Regime, resulted in massive rural depopulation of the Spanish countryside. It caused a rupture of traditional farm succession within the family, a problem that persists until the present day (Majoral i Moliné, 1986). However, the lack of generation replacement was not only a produce of the rural exodus, but was also influenced by social changes. What started to prevail was an imaginary of rural backwardness, nourished by the discrediting of the farmer's profession and its way of life. In contrast, the 'urban' was promoted as the symbol of modernity, promising higher wages, social recognition and later on education (Soronellas Masdeu, 2012). During my fieldwork in the Segarra-Garrigues area, I found the traces of this historical development, where farmers' narrations of their ever-diminishing villages reflected those opposing imaginaries.

They associated the disappearance of small, subsistence farms and their declining viability with the intensification and export-orientation of agricultural production and the opening of agricultural markets beyond national borders in the course of the so-called 'Green Revolution' (1960s) and the EU accession of Spain (1986).

McMichael (2009) describes this turn to agriculture solely focussed on increasing productivity as the "subordination of agriculture to capitalist production relations." (p. 161), heralding the start of the export-oriented, intensive food regime (second food regime).

But how did 'the subordination of agriculture to capitalist production relations' affected small-scale farmers in Catalonia and how did it pave the way for land concentration processes?

The export-oriented, intensive food regime follows the logic that more productivity and cost-reducing techniques and technology allow the sale of agricultural commodities on a low-price level, making it competitive in the market. To maintain a certain level of income in a globally oriented market, where commodity prices are far from stable, the scale of production and capital investments in farming must increase, and correspondingly the extension of cultivated land (Akram-Lodhi, 2015).

What Akram-Lodhi (2015) describes theoretically, is exactly what older farmers from Lleida narrated, who found themselves under the rising pressure to cultivate more land and increase yields to be able to compensate for swaying commodity prices and cover rising living costs.
In Spain, productivity increases are closely linked to its history of hydraulic development. In the second half of the 20th century, we saw productivity gains motivated the excessive expansion of irrigation infrastructures, and this meant that "output per hectare more than doubled between 1950 and 1990" (Pinilla, 2006, p. 138). Increasing yields were also facilitated by machinery and agro-chemicals (known as 'Green Revolution'); the use of which is frequently evaluated as "creating dependences where there was independence [and] driving farmers in a spiral of increasing debt" (Clunies-Ross and Hildyard, 2013, p. 59).
Dependencies manifest in the need to buy fossil fuels, pesticides, fertilisers or even seeds and get loans for investments (Rosset and Altieri, 1997). Besides these perceived dependencies, farmers interestingly connected the industrialisation also to positive effects: Since farming work became less physically demanding and less labour-intensive, they perceived a gain in dignity for their profession. Today, farmers would be able to live a more normal life, associated with having vacations or pursue a hobby. In that regard, Bebbington (2004) advises against a "exaggerated, over-generalised, and sometimes simplified critique of technological modernisation" and exposes a case of small-scale Quichua farmers from the Ecuadorian Andes who consciously decided for the use of modern technologies and which I shortly use to develop my argument: Against the backdrop of rural out-migration and arising social problems as well as weakened cultural practices, Andean farmers justified the use of agrochemicals and new crop varieties as a strategy to maintain the rural population and its indigenous cultural identity in their region. Embracing modern technologies also became a source of empowerment, as these indigenous farmers claimed, "that they now have the same rights to demand access to resources and benefits (including new technologies) that historically were the preserve of white and mestizos" (p. 371).
Although, the reality Bebbington describes is far away from the cultural context of Catalonia, it helps to sharpen the view for the complex facets of agrarian 'modernisation' which can have a bearing on the preservation of rural life, farmers' livelihoods and generational replacement. A simplistic condemnation of technology ignores the right of farmers to have less exertive work and pre-empts to discuss about a reasonable level of 'technification' appropriate for the holding and activity of a farmer. The latter might, for instance, prevent farmers from falling into the trap of getting indebted for too costly machinery that they cannot amortise with the agricultural activities they pursue.
Moreover, Bebbington (2004) hints to another interesting observation, namely, that the spread of industrial agriculture influences the self-perception or even the identities of farmers.
In my research, I came across the narrative of backwardness of small-scale, (agro)ecological farming as it bans most of the 'achievements' of the 'Green Revolution'. Mostly younger farmers reflected on the reality of older farmers, who were told by institutions or the agro-industry that agrochemicals are beneficial for them. Older farmers would often lack an understanding of alternative agricultural models that young farmers propose. Robbins (2012) explains that this turn in the self-perception of farmers and their profession as a result of "institutionalised and power-laden environmental management regimes [that] have led to the emergence of new kinds of people, with their own emerging self-definition, understandings of the world, and ecological ideologies and behaviour." (p. 216). It goes some way depicting that powerful actors (e.g. agro-industry, state institutions) within the agricultural system are able to push their interests by presenting them as an objective, scientifically approved truth.

Because of the prestigious character of “expert knowledge” as compared with “aboriginal knowledge” (e.g. knowledge of farmers), it could be assumed that the holders of expert knowledge achieve to govern to some extent how farmers think about desirable agricultural practices and how they evaluate alternatives (Robbins, 2012).
It demonstrates how deeply the narrative of continuous progress is rooted within the society, even though some people (here, farmers) might drop behind, as they are not able to adapt to the changes that progress demands. In the case of the Segarra-Garrigues canal, where some farmers have been overwhelmed by the new tasks and additional working hours of irrigated agriculture, the negative side-effects of progress become apparent: Namely, that a supposed measure to halt land abandonment can further contribute to its aggravation.
In Catalonia, abandonment of agricultural holdings was reinforced with the accession to the European Economic Community (EEC) in the mid-1980s. Between 1982 and 2009, the number of agricultural holdings in Catalonia diminished by half. Only around 2% of the population was able maintain its farming activities, reinforcing the duality of land abandonment and agricultural intensification (Soronellas Masdeu, 2012).

The accession of Spain to the European Community (EC) (later EU) coincided with a political crisis of the state’s regulated, intensive agricultural model within the EC (Moragues-Faus, 2016). The system of farm subsidisation not only led to overproduction and budgetary problems of the EC, but increased international tensions, as EC policies “contributed to a precipitous drop in world prices” and made “traditional, non-EC exporters of agricultural commodities los[e] world market share to the EC“ (Patterson, 1997, p. 136). In response to the problems of European agricultural policies, a political reform period was initiated in the late 1980s that incorporated a progressive inclusion of pro-corporation interests in the design of policies, paving the way for a corporate food regime (Moragues-Faus, 2016).

In line with Moragues-Faus (2016) argument, I found that the farms in the study area which were unable to intensify their production or implement economies of scale in order to cope with the cost-price squeeze of agrarian products (e.g. by enlarging holdings, increase inputs and technology), either became more dependent on state support (forfeiting the self-determination over their production) or were pushed out of agriculture. Accordingly, land concentration processes started when small-scale farms without the means to enlarge their holding, gave up their activities and sold/rented out their land to neighbour farms or businesses.

The fruit-producing sector in the study region is exemplary in tracing how land concentration is being influenced by the emergence of the corporate food regime. Fruit production in the region of Lleida looks back on a long history where apples and pears (and later stone fruits) were planted on the fertile soils around the city and along the Segre River and were embedded in a poly-culture system of other crop varieties. With the integration into international markets, farmers intensified and enlarged their production to be able to compete in the market (Casal Fité, 2019). Family farms transformed into agricultural businesses, which in turn enlarged their plantation areas with the land of farmers who were unable to implement the necessary modernisation measures and to cope with the challenges of the market integration, e.g. because they had too small properties (Soronellas Masdeu, 2012). This process continues until present times, since the transformation of drylands with the implementation of the Segarra-Garrigues canal has allowed fruit producing companies to grow even further (Casal Fité, 2019).

Historically, these areas of rain-fed agriculture were posed as being especially prone to land abandonment since they could not be adapted to the productivity requirements of an intensive, export-oriented agricultural model. The productive capacity of Segarra-Garrigues area was (and in a lot of parts still is) limited by its environmental conditions.
To overcome restrictions set by the environment, since the second half of the 19th century, prevail the ideas of Joaquín Costa and the Regenerations' movement of irrigation being the appropriate measure to improve the livelihood conditions in drylands and develop rural areas in Spain (Swyngedouw, 1999).
Based on this rural development narrative, the implementation of the Segarra-Garrigues irrigation canal followed the strategy of colonising nature, namely, transforming land to increasing its usefulness for human needs. However, when interventions into the natural system are made, it is often ignored that these changes increase the complexity of a society-nature system which can lead to unforeseen side-effects. Fischer-Kowalski and Haberl (1998) explain:

> *"Once crops are planted, irrigation must be organised. Once there is irrigation, soil salinity must be controlled by periodic flooding. To be able to do so, dams have to be constructed. To maintain these dams, a society must keep labourers and security forces, and so on. With every innovation, with every further step, the risk at stake is becoming larger."* (p. 575)

The different perceptions and experiences of actors from the territory reflect that the implementation of the canal caused unintended social and ecological effects and created conflicts of interest between diverging rural development paradigms actors pursue.
While Costa's irrigation project was developed in a time where the great majority of the Spanish population lived in rural areas and water was predominantly perceived as a resource that should serve the agrarian development, today's water resources have become scarcer and whilst having to satisfy different demands. Accordingly, one of the main critiques of farmers and civil society members was that the governmental administration applied a 'Costismo' irrigation model to the Segarra-Garrigues area, ignoring different societal and ecological demands of water usage as well as the demographic situation of the territory.
In line with the findings of Ricart et al. (2016), farmers and rural community members articulated , "that some politicians understand neither the territory where the canal is located nor the society that lives in the territory, and subsequently have not contributed to perceiving the canal as a common good." (p. 85). Farmers, rural community members, and the civil society advocated for an integrated irrigation model which serves ecological, small-scale production, responds to broader societal demands for water (e.g. tourism, local artisan industry), ensures the compatibility of the infrastructure with nature protection requirements (e.g. bird protected areas), and takes into account the demography of the region (see: Aldomà i Buixadé, 2009).
Particularly, the demography was not considered sufficiently in the implementation plans of the governmental administration which focussed mainly on the expected benefit of irrigation for agricultural development, so that "the main objective of the Segarra-Garrigues canal […] to place people in the territory" and maintain family farming structure was not achieved (Ricart et al., 2016, p. 86).
In reference to Robbins (2011), these conflicting interests over the use, management and change of the environment can be interpreted as a result of "development plans [that] tend to imagine the subjects of development [e.g. local farmers] with assumptions about their

outlook, behaviour, and interests that reflect the socially situated imaginaries of the planner" (Robbins, 2012, p. 202–203)

Farmers remarked their political marginality in the territory (which manifests in the small share of farmers and their dispersion over the territory, their little internal organisation and lack of time for political engagement) as a reason why their necessities and demands have not been considered sufficiently in the planning of the canal.

Resuming it in the words of Swyngedouw (1999), irrigation cannot only be understood as a project of physical restructuring of a space, but it is adjunct to the emergence of a socio-environmental landscape, where "landscapes […] are simultaneously physical and social [and] reflect historical-geographical struggles and social power geometries." (p. 461).

The disregard of farmers' (and civil society') demands points to the uneven social and political power of actors that swayed the planning and implementation process of the canal. Reflecting on the wording of the agribusiness' employees who "put themselves on the same level as the farmers" when they tried to access land in irrigation areas and "almost knew want they [the farmers] wanted to hear", reveals to some extent these uneven power relations that put into scrutiny such as: Who is going to benefit from the installation of the canal or who gets access to the land of older farmers?

In this regard, this study suggests that mainly agribusinesses profit from irrigation instead of small farmers, as the planification and characteristics of the canal (e.g. high shares of water, newest technologies which require specific knowledge to handle them, high installation costs, concentration of parcels) are rather aligned to the necessities and capabilities of agribusinesses than to those of small-scale, predominantly old farmers. Agribusinesses start to concentrate the land of farmers, who see the lease or sale of their land as one of the few opportunities that they have to get some financial benefits from their land.

This gives rise to look more closely to the socio-ecological implications of land concentration by agribusinesses and discuss whether and how food sovereignty of farmers and rural community members are undermined.

6.2. Pitfalls and Opportunities to reach Food Sovereignty

Starting with the growing presence of agribusinesses, it is inevitable to draw the attention to the financialisation of agriculture. Financial capital was crucial for the interviewed agribusiness to develop its project. Interestingly, it justified its activities by stressing that the land they leased would otherwise be underused, as farmers are too old, and their numbers decline continuously. Hereof, Fairbairn (2014) discerned that "farmland investors often draw from discourses that stress the profitability of long-term productive investments, and frequently choose to […] [invest] in agricultural production as well as the land (p. 791).

While the Segarra-Garrigues area is truly a region of declining agrarian population, the agribusiness does not consider or negate that their activities may aggravate the demographic situation in the future, as less land will be available to potential new farmers.

Moreover, the productivity gains that agribusinesses promise are seen critically by some farmers who pointed to the fragile character of agribusinesses. As van der Ploeg (2014) has shown, agribusinesses tend to speculate with high commodity prices of one specialised crop and are therefore more economically vulnerable to volatile prices than divers, small farms. Considering for example the changing price of almonds (before 2014: 3 EUR; 2014/15: 9 EUR; since 2016: 5 EUR) which is dependent on the US American almond production, gives reason to the critique of farmers (Daniel, 2016). Adverse effects of speculation are expected, when

farmers produce as contractors for agribusinesses and specialise in one crop, so that a decline of prices could easily push them out of agriculture. Needless to say, that this raises social unrest amongst contract farmers who have to fight for their survival.
As I have shown, the financial capital brings agribusinesses into a privileged situation enabling them to pay for access to knowledge, land and irrigation. Farmers usually cannot afford such investments and are exposed to a situation of competition. For instance, financialisation of agriculture contributes to the alteration of land market (Clapp, 2014; Fairbairn, 2014). Since agribusinesses have the financial means to bid higher for a piece of land, land prices are likely to increase disproportionately which reduces the access to land for smallholders (Fairbairn, 2014). Intensive production schemes and high yields provide them with more bargaining power regarding commodity prices. In contrast, smaller producers usually have to subordinate to the prices they get offered.
This signals a deepening of the intensive, export-oriented agricultural model and a more restrictive access to natural resources. Main goals of food sovereignty, such as helping to build bridges between (urban) consumers and farmers, reducing instabilities of the global agricultural market by strengthening the local demand or implementing regulations for land markets, are, thus, being undermined (van der Ploeg, 2014).
Livelihood conditions of farmers are not only affected in material terms but also in a more symbolic way. A negative side-effect of agribusinesses is the feeling of disappointment, inferiority and lack of self-efficacy that farmers developed in the face of growing large-scale neighbouring farms. Farmers' disappointment is also related to the perceived lack of recognition for their work and the contributions they make to society.
In contrast to agribusinesses, farmers not only produce food, but also take care of the environment (e.g. fire protection), maintain the socio-cultural life of villages of which they form a part of, and nurture the local economy (Malvar, 2020; van der Ploeg, 2014). Iles and Montenegro de Wit (2015) argue that the "lack of recognition of people's identity […] in governmental policies or public discourses can result in weakening their status in a society […] and can demoralise people over time as they realise that they are not taken seriously by powerful institutions" (p. 493). The perceived ineffectiveness of political engagement and expressed pessimism amongst farmers could be interpreted as a sign of such 'demoralisation'. It puts in question one aim of food sovereignty of "strengthening (as opposed to atomising) social relations" (van der Ploeg, 2014).
Furthermore, on-going agricultural specialisation and intensification as well as the introduction of new crops, incentivised by the installation of irrigation, point to deep socio-metabolic changes in former dryland areas (Pinilla, 2006). Socio-metabolic changes are generated by the growing need for fertiliser application and water usage or fossil fuel demands for machinery amongst others and certainly influence crop biodiversity, ecosystem capacities of autonomous replacement fertility and spatial heterogeneity of the land (Mancus, 2007; see also: González de Molina and colleagues (2020) on the social metabolism of Spanish agriculture). Also, agro-ecological practices, such as terrace cultivation to retain water and maintain soil fertility, are endangered by the installation of irrigation. These practices contributed to the formation and preservation of a specific landscape, a nature-culture heritage in the eyes of farmers and rural community members.

Finally, the appalling life and working conditions of migrant farm workers, particularly of fruit producing agribusinesses, are by no means complying with the food sovereignty principle of sound social and working conditions in agriculture. Irrigation is fostering the expansion of fruit plantations and increases the demand for cheap, short-term labour. With a declining agrarian

population, agriculture depends on migrant labour (Mata Romeu, 2018; Soronellas Masdeu, 2012). Civil society groups together with labour unions and the workers are indicting non-compliance of the labour agreement within this sector, as for instance the provision of shelter (Mata Romeu, 2018). Despite the support of some civil society groups, migrants remain vulnerable to labour rights violations. Their vulnerability manifests in their poverty and their unsecure resident status or 'illegality', which leaves migrants without bargaining power to reach better working conditions and wages (Pelek, 2019). The exploitation of migrant labour is engrained in the logic of the corporate food regime which thrives for agricultural competitiveness in the global market by cutting costs wherever possible: "Migrant labourers are preferred due to their lower salaries, greater docility (due to precarious conditions), and the evasion of administrative and social security obligations" (Corrado, 2017, p. 3).

In the face of the situation of the agricultural sector in Lleida, it remains the question: How would an alternative draft to the given situation look like? Is agriculture built on food sovereignty principles a feasible alternative to oppose land concentration processes and its socio-ecological implications or is it utopian?

To discuss food sovereignty as an alternative it is helpful to return to its theory. Food sovereignty theory has given me an important frame to discuss my findings. Nevertheless, it remains a theory 'under construction' and rather gives an orientation than a clear-cut goal of how to move towards a more sustainable, socially just agriculture (van der Ploeg, 2014). More importantly, food sovereignty should be turned into something that is 'negotiable', a practice that includes creating connectivity and social learning on levels where movements and people are confronting their struggles. Such networks allow people to better understand the place-specific challenges they confront and "are potentially capable of by-passing institutions, points of lock-ins, and re-distributing power, knowledge, and resources through much 'faster' non-hierarchical processes across many for levels that established political […] institutions may allow" (Iles and Montenegro de Wit, 2015, p. 490).

Taking into consideration the idea of creating networks, I identified that the binding element of the food sovereignty demands and alternatives practice I came across throughout my research, is the strong personal connection to the territory that people cherish and their willingness to engage with other people to preserve and refine the distinctive social, cultural and environmental features that characterise this territory. Whether it is the idea to develop an olive oil tourism project and embrace the cultural and environmental value of Mediterranean cultivars or organise local commercialisation channels, they demonstrate that the creation of networks is inevitable to approach food sovereignty. Exemplary, for the success of networking and political engagement is the case of the farmer and mayor who achieved to carry out a 'piece-by-piece' transformation to irrigation in the district of his village. It shows that a highly contested irrigation project can have positive outcomes for small-scale farming and the agricultural holding structure of the territory, unless a bottom-up management is implemented which puts farmers needs and interests at its centre.

However, farmers perceived lack of self-efficacy to intervene into the dominate intensive, export-oriented agricultural model raises the question about the limits of bottom-up activities. Accordingly, Trauger (2014) asserts that "activities are always vulnerable to state power unless food sovereignty's economic and territorial alternatives are also written into the national state constitutions" (p. 1148). To increase the acknowledgement of food sovereignty

proposals within dominant institutional and constitutional structures, Iles and Montenegro de Wit (2015) advance on the idea that movements should exert their "practical power through organising their own programs. […] [It] offers a potential inroad, as over time, movements may win legitimacy from powerful institutional actors and publics, thus legitimating their existence and work." (p. 489). First collaborations of farmers/cooperatives with a municipality to advance on the idea of creating a land bank on the district level could be evaluated as an attempt to build synergies between advocates of food sovereignty and the political level. Land banks are a way to administer and distribute land which was released to the market. They can interfere into a competitive, non-transparent land market by offering land to people with agricultural projects (Meligosa Castañeda, 2015). Although land banks are only one step towards a more just repartition of land, it gives momentum to think about concrete measures for the 'access to land' question and regain a sense of empowerment in the face of on-going land concentration processes.

7. Conclusion and Outlook

On-going demographic changes within the agrarian society, the diminishing number of farmers and growing presence of corporate entities in the agricultural sector are increasingly deemed worrisome by Spanish agricultural and farmers organisations. The cover page of a recent publication of the 'Coordination of Farmers and Livestock Organisations'[27] shows farmers as marionettes presumably guided by a hand of a businessman. Metaphorically it hints to the concerns the organisation has when looking at the trajectory of the agriculture sector and rural areas in Spain, where the ever-declining peasantry lacks political agency in the face of growing corporate power (COAG, 2019)

Based on perceptions and experiences of different actors involved in land concentration processes in the Segarra-Garrigues canal area (Catalonia), this thesis strives to gain an deeper understanding of the conditions that underlie and favour land concentration in the hand of agribusinesses and identifies socio-ecological implications for farmers and rural community members.

This study shows that land concentration processes unfold in a complex scenery, where the on-going consolidation of a historically grown, intensive, agro-industrial model increases the pressures on small-scale farmers to abandon their holdings. Historically, irrigation has played an important role in pushing an intensive agriculture and in subordinating peasants to the dictates of a capitalist agricultural production.

The results of my study suggest that, mainly agribusinesses profit from the irrigation project, as the planning and characteristics of the canal (e.g. high shares of water, newest technologies which require specific knowledge to handle them, high installation costs) are rather aligned to the necessities and capabilities of agribusinesses than to those of small-scale, predominantly older farmers. From this stance, the access to water largely generates prosperity for agribusinesses, instead of improving the livelihood conditions of farmers. The concentration of land by big agribusinesses in irrigated areas is, thus perceived as the beginning of a vicious cycle: Although agribusinesses used to have a high rentability, they create little benefits for the local economy (e.g. generation of few and often temporal job opportunities due to mechanisation, lack of involvement in local activities and villages), which in turn aggravates the problem of generational replacement, abandonment of the agrarian sector, and rural depopulation.

I further suggest that land concentration processes in the study area entail socio-ecological implications that undermine the food sovereignty of farmers and rural community members. These implications are: First, increasing pressures related to commercialisation, consumption and trade (e.g. decrease and volatility of prices, lack of bargaining power, little local commercialisation). Second, changing productions models (e.g. intensification of agriculture, crop changes, alteration of traditional landscapes). Third, restricted access to resources (e.g. lack of access to irrigation water because of high costs, rising land prices), Fourth, growing disenchantment with politics and lack of perceived self-efficacy (e.g. emergence of social movements and local conflicts, little influence in political decision-making processes) and Fifth, deteriorating social and labour conditions of farmers and farm workers (e.g. feeling of inferiority, violation of labour and human rights of migrant farmworkers).

Notwithstanding, I have shown that under specific circumstances (e.g. an old farmer has a young farmer behind who develops a agricultural project with an added value such as organic

[27] In Spanish: Coordinadora de Organizaciones de Agricultores y Ganaderos (COAG)

farming) or with the application of management practices coordinated by farmers (e.g. piece-by-piece implementation of irrigation) the irrigation canal can generate beneficial outcomes for small-scale farmers. It points to the importance of political engagement of farmers to push their ideas and defend interests that might serve the whole territory.

Although not at the centre of my research, I also came across farmers and cooperatives that are actively engaged in implementing alternative ideas. They oppose the pressures of intensive, export-oriented agricultural model by embracing alternatives practices routed in the idea of re-localised commercialisation and consumption as well as mutual support and learning.

To explore more deeply how such 'food sovereignty projects' interact with local politicians and institutions to bring their ideas and demands on a political agenda, was out of the scope of this thesis. However, research on public policies for food sovereignty lately gained momentum. It emerged the question how and whether, in the future, networks of food sovereignty should collaborate with political actors to put forward their ideas and institutionalise food sovereignty practices and principals via policies (Iles and Montenegro de Wit, 2015). Accordingly, Kay and colleagues (2018) remark that "it is only through active social mobilisation and pressures from below that public policies that strengthen food sovereignty and are based on the Right to Food will crystalize. […] Public policies [are] the outcome of a constant process of negotiation, contestation and state-society interactions" (Kay et al., 2018, p. 5)

From this positive stance, an active collaboration of food sovereignty advocates with politicians and institutions might open up the possibility to reveal that their struggles for small-scale agriculture is not a simple claim to preserve the traditional structures of local life, which have been criticised for their potential "to reinforce racism, sexism, xenophobia, and other forms of inequality historically embedded in locales" (Iles and Montenegro de Wit, 2015, p. 489). On the contrary, the inspiring farmers, projects and activists I met could demonstrate that their vision to retain traditional agricultural holding structures implies concrete ideas behind the desire to create flourishing of rural economies, to attract young people to stay or return to rural areas, and to take a stance for the rights and livelihood conditions of the much needed migrant labourers (Edelman et al., 2014).

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Appendix

Interview Guide

Example (in Spanish): I. Guía de Entrevista - agricultores

Estoy ansiosa de escuchar sus puntos de vista sobre los cambios agrícolas y el desarrollo de las zonas rurales de la región alrededor de la cuidad de Lleida. En particular, estoy interesada en cómo y por qué la propiedad y los arrendamientos de tierras han cambiado y también cómo se alteraron los cultivos, el trabajo en el campo y la vida en las zonas rurales desde que usted vive en la región de Lleida. Para conocer más sobre estos cambios del sistema agroalimentario en la región de Lleida, me gustaría aprender de sus experiencias y perspectivas como agricultor/a.

FECHA	
LUGAR	
HORA DE INICIO	
HORA DE FINALIZACIÓN	
APUNTES Y OBSERVACIONES DURANTE LA ENTEVISTA	

1. Presentación de la Persona y Referencia Personal a la Agricultura

1.1. ¿Le gustaría contarme qué le llevó a ser agricultor/a?
1.2. ¿Qué le gusta especialmente de la profesión de agricultor/a?
1.3. ¿Cómo describirías al campesinado de la región de Lleida? ¿En qué se caracteriza su forma de vida y trabajo?

2. Observaciones y Percepción de los Cambios en la Agricultura

2.1. ¿Cuánto tiempo usted conoce la región de Lleida? ¿Se ha cambiado la región durante este tiempo y si es así cómo? ¿Cómo me puedo imaginar una típica granja tradicional?
2.2. ¿Qué caracteriza a la agricultura en la región hoy?
2.3. ¿Cómo explicaría usted estos cambios? ¿Cuáles son los factores principales que han originado estos cambios?
2.4. ¿Cómo es un pueblo típico de esta región? ¿Cómo han cambiado los pueblos y por qué? ¿Qué papel ha jugado la agricultura y su evolución en esta transformación?

3. Experiencias de la Práctica Agrícola: Organización, Trabajo y Recursos

3.1. Acceso a los Recursos

3.1.1. ¿Es usted propietario de la tierra que trabaja? ¿Desde cuándo es propietario de la tierra que cultiva?
3.1.2. ¿Qué hacen los agricultores de la región que buscan nuevas tierras o quieren agrandar sus propiedades?

3.1.3. Si un día dejara de trabajar su propia tierra, ¿A quién le daría la tierra y por qué?
3.1.4. ¿Se trabaja las tierras de manera diferente hoy de lo que solía hacerse?
3.1.5. ¿Qué papel juega el acceso al riego para la agricultura hoy en día? ¿Cuáles son sus ventajas y desventajas desde distintos puntos de vista, e.g. ecológico, económico, social, etc.?

Sub-preguntas:
- ¿Utiliza regadío en sus campos?
- ¿Sabe quién usa riego en la región?
- ¿Por qué cree que algunos agricultores no riegan?

3.2. Modelo de Producción

3.2.1. Me gustaría conocer en detalle como funciona exactamente el cultivo (de almendras, frutas) desde la plantación del árbol hasta la primera cosecha.
3.2.2. ¿Qué variedades cultiva?
3.2.3. Me gustaría conocer el día a día del trabajo en el campo. ¿Quién trabaja en el campo? ¿Cuánta gente trabaja por ejemplo durante la siembra, y durante la cosecha? ¿Cuantas horas? ¿Qué máquinas se usan?
3.2.4. ¿Han cambiado las condiciones de trabajo en el campo? Si es así, ¿cómo?

3.3. Derecho a la Alimentación y Consumo de Alimentos

3.3.1. ¿Quién consume la comida que produce?
3.3.2. Según su experiencia, ¿qué es importante para las personas que compran sus productos?

3.4. Comercialización y Comercio

3.4.1. ¿Cómo llega su cosecha a los consumidores?
3.4.2. ¿Tiene contacto directo con sus clientes?
3.4.3. ¿Cuáles son las posibles dificultades que pueden surgir al comercializar los productos?
3.4.4. ¿Puede explicar cómo se produce el precio de su producto? ¿Cómo cambia el precio?

3.5. Política Agrícola y Participación

3.5.1. ¿Hay alguna iniciativa política específica o apoyo financiero para la agricultura a pequeña escala en la región? ¿Qué tipo de apoyo es?
- Por ejemplo, la "Ley de los espacios agrarios"

3.5.2. ¿Participa en alguna organización / asociación que defienda los intereses de los campesinos?
3.5.3. ¿Qué demandas son particularmente importantes para ti?

4. Potenciales y Desafíos

4.1. En su opinión, ¿cuáles son los mayores desafíos que enfrenta el sector agrícola y en particular las pequeñas granjas? ¿Y potenciales?
4.2. ¿Desde su punto de vista, qué posibilidades hay para enfrentar estos desafíos?

4.3. ¿Conoce a grupos/iniciativas/proyectos que estén involucrados activamente en la lucha por los intereses de la agricultura a pequeña escala? ¿Cuáles son sus lineas de acción?

5. El Futuro de la Agricultura

5.1. ¿Cómo seria su escenario ideal para el desarrollo de la agricultura en la región en los próximos veinte años?
¿Qué se necesitaría para alcanzar este ideal?

- Modelos de cultivo
- financiamiento

Coding System

Conditions favouring Land Concentration

Conditions that favour land concentration in the hand of agribusinesses are divided into (1) necessary conditions and (2) structural conditions. *Necessary conditions* are defined as those conditions which are indispensable from an agribusiness point of view to enter the agricultural sector in the region of Lleida and are basic for their expansion. *Structural conditions* refer to those conditions which are indirectly favouring land concentration as they contribute to devitalize the traditional small to mid-size family farming model. The structural conditions are subdivided in *socio-cultural changes* and *political deregulation and participation*.

Minor category	Subcodes	Description of code	Representative quote
Necessary Conditions	Access to irrigation	Statements about the importance to access irrigation and high shares of water.	*"For us, what we need is high shares of water otherwise you produce less. Later you apply drip irrigation and it is used sustainable and so on, but you need a quantity so that the tree will be strong. Without a lot of water, there is no way. We wouldn't have had taken any property." (Interview 12, Paragraph 39)*
	Access to education and know-how	Statements on the importance to find and employ trained staff and receive scientific advisory services for intensive agriculture.	*"[…] Here is a lot of important potential, there is knowledge, there is an important University for agronomic engineers, there is a center of IRTA with important scientists […]"*

			(Interview 12, Paragraph 101)
	Access to land	Statements about the importance and challenge to find and about experiences how to rent (or buy) land	*"Instead we went there, almost talking a bit from you to you. We put ourselves on their level and we were farmers, so we almost knew what they wanted to hear. Almost. And this was very important to access land, if not it would have been very difficult. And any land we rented, we achieved to rent it by talking to the owners and talking on the same level where they are and creating an atmosphere of confidence." (Interview 13, Paragraph 15)*
	Access to capital	Stated experiences on access of capital via external financial investors.	*"And there are people who trusted us and who facilitated us to become a large company, but we have to guarantee profitability to some investors. What I mean is that we have some people who gave us money so that we could […] strengthen and develop [the project]. But of course, it is not philanthropist. It is: You have to pay me some dividends." (Interview 12, Paragraph 17).*
	Access to technology and infrastructures	Expressed importance of the use of new technologies and the presence of infrastructure (transport, roads, services)	*"We as a company […] are close to the industries, and they like that we are close because they can come and visit us and see our product. They can come and go in one day. This is important. Water, strategy, communication. The infrastructures are important." (Interview 12, Paragraph 101).*
Structural Conditions:	Development and continuation of an	Experiences with and statements on the	*"The tendency of the Catalonian agriculture of the*

Socio-cultural changes	intensive agricultural model	development and continuation of an intensive agricultural model, characterized by intensification and export-orientation	*last years, of an intensive, capitalist agriculture is this. Big exploitations of monocultures, very specialized crops which are changing in function with the trends and necessities of the market. And this is how it goes." (Interview 9, Paragraph 10)*
	Lack of viability of small farms and rising living costs	Experiences with decreasing viability of small farms with a small production as well as rising living costs	*"In the past, in Lleida, next to the city, they said, with 4 hectares of land a family could make a living, it was enough for paying the studies of the children and buy an apartment in Salou. Today with 4 hectares you don't even have enough to make your daily coffee." (Interview 6, Paragraph 50)."*
	Land abandonment in drylands and lack of generational replacement	Perceptions on land abandonments particularly in drylands and reasons for the lack of farm succession	*"Let's say the village, for instance in Belianes where we are interviewing at the moment is a dryland economy dependent on if it rains or not, […]. Statistically it rains less and this is provoking an escape and a certain abandonment of farmland and of agricultural exploitations." (Interview 5, Paragraph 8).*
Structural Conditions: Political deregulation and participation	Lack of regulation of agricultural markets	General perception of a lack regulation of agriculture and experiences with overproduction, price fluctuation and rising competition through imported agricultural commodities.	*And now it has become a trend to cultivate one pear which is being planted since a lot of years. So, now everyone is planting this pear. And there is no market equilibrium. There is nobody who organize that a bit. Who says: So, we can plant this quantity of this pear, but when this quantity is planted, we stop. Because otherwise we will face this, that there will be exorbitant pears of this type, they*

			cannot be sold, and people will pull out trees and change cultivars." (Interview 2, Paragraph 100).
	Lack of political initiatives from the administration	Perceptions on the lack of political ambitions to support small farmers.	*„So, for me it is the only solution. That the administration takes responsibility and starts to regulate the prices of land, it's possible, it's a lack of political commitment. They should do it. Otherwise it is playing with money, with the territory, the landscape, with everything." (Interview 9, Paragraph 20).*
	Lack of political organisation from the bottom-up	Perceptions on the difficulties of a farmers' organisation from the bottom-up.	*"Look, we have made some gathering with friends of the food sovereignty sector in order to activate it [political engagement] because it is super necessary. […] But it would need a lot of energy to do this. And at the moment everything is paused. The people do not have time. (Interview 9, Paragraph 40).*

Implications on Local Food Sovereignty

The minor categories of the implication of land concentration on food sovereignty were derived deductively from the theory and encompass: *Commercialisation, Consumption & Trade, Participation and political engagement, Production models, Access to resources* and *Social & labour conditions for farmers and farm workers.* Subcodes were generated inductively along the collected data from the fieldwork.

Minor category	Subcodes	Description of code	Representative quote
Commercialisation, Consumption & Trade	Growing power of companies	Perceptions and experiences with growing influence of agricultural companies operating in the territory.	*"Look, in Alcanó, the village close by there were some properties which were a bit hilly and they rent them to a company from Aragón or Huesca they told me. They came with*

			machines and erased everything. So, before it was owned by several owners, I don't know how many, and now it's one. This company." (Interview 3, Paragraph 48).
	Decrease and volatility of prices and lack of bargaining power	Statements to experiences with price volatility and decreases and the lack of power of smaller farmers to bargain prices.	*"I am producing fruits and it turns out that my government constructs an irrigation channel so that the territory next to me, which is also from my country, competes with me and which decreases the prices. This is like very surrealistic." (Interview 14, Paragraph 68).*
	Increasing competition for small farmers and rise of mid-size businesses	Experiences with increasing pressures on small farmers within the market and as a result the rise of mid-size businesses replacing the family farm model.	*"I don't see a future for the small ones. That's how I see it. It is not competitive because everything is very global today. You can produce peaches here and suddenly peaches arrive from Morocco." (Interview 12, Paragraph 95)*
	Little local commercialisation	Problems with local commercialisation related to the increasing volume of production.	*"And today we have this habit of buying in the supermarket, and you go to the market and you also don't know whether it comes from here or from elsewhere. Because with the trucks today they bring some apples which are from Girona and they can sell them in Lérida." (Interview 6, Paragraph 44)*
Participation and Political engagement	Political fights and social movements	Experiences and point of views of local social	*"I am a bit disconnected because since I became a mother my political*

		movements which organize against an intensive and intensive agricultural model.	*energy is incapacitate. But before, I remember, pregnant with 8 months, we were planning a trip to the Basque country to learn how N-Bizcaya is organized. To see how they organize and to get some ideas from there in order to apply them here, to organize a meeting of all agroecological farmers in Catalonia, to see how we could structure." (Interview 9, Paragraph 42)*
	Distrust in the administration	Statements on distrust with the work of local administrations regarding the management of agriculture and resources.	*It's like they have done it…[…] from the side of the administration they would have done it particularly… to wait until the district becomes small or the villages, so that afterwards big companies come in. (Interview 4, Paragraph 70)*
Productions models	Intensification of production	Observations and experiences with the intensification of agricultural production.	*"In 5 years, we have decupled our production. We started 10 year ago, we were able to make 159.000 kilos and today we are producing 1.500.000 kilos of fruits." (Interview 6, Paragraph 50)*
	Crop changes	Observations and experiences with crop changes.	*"So, what we have seen in the last years is the disappearance of drylands. Drylands disappear, every year huge excavators are eliminating all the small hills, and everything*

			turns into plane land with irrigation and dryland cultivars disappear in favour of fruits." (Interview 14, Paragraph 7)
	Agricultural Landscape changes	Observations and experiences with agricultural landscape changes.	*"So, the land is modified. Basically, because it is interesting to have more fruits. If there was a difference in altitude or anything, what they do is leave everything plane in order to cultivate more and benefit more from the land." (Interview 2, Paragraph 20)*
Access to resources	Difficulties to access land	Experiences regarding the access to land through buying or leasing.	*"And we have another problem, since those companies from outside arrived we are unable to grow much more, a part of what we already have. Because there is no more rentable land available." (Interview 8, Paragraph 98).*
	Land speculation	Observations of speculation with land predominately for agricultural uses.	*"This is another bad part of the Segarra-Garrigues, well we are seeing that they are taking over land, the best land by large companies who are not from the sector, they are not farmers. That is to say, in Alcanó is an investment fund, so it is not even a company." (Interview 11, Paragraph 8).*
	Access to water	Statements on the accessibility to water resources within the region, predominantly for	*So, nobody joins (?), so, the channel is consolidated and why are there so less people irrigating? Because it is expensive, because*

		purposes of irrigation.	*people have other projects, because for such a big project sociologically they did not take into account the demography, the aging of the populations. (Interview 5, Paragraph 60)*
	Management of the infrastructure and water resources	Perceptions and experiences with the management of local infrastructures and water resources, predominantly referring to the Segarra-Garrigues channel.	*"The agroindustry and the administration have planed the Segarra-Garrigues. They want this, agroindustry, large landowners, an intensive use of the land. For me it is that. They have not thought in the agricultural development. They have thought that there will be agriculture, that there will be money, that there will be investment. But this is not achieved with small organic farmer who rather need help." (Interview 9, Paragraph 58)*
Social and Labour Conditions of farmers and farm workers	Perception of agricultural work	Personal perceptions of farmers regarding their work in agriculture.	*"Well, it is not easy, it is a lot of hours but, well, it is lovely because you know that you make it for yourself. It is pleasurable. You know that you are doing something which is beneficial for the soil, beneficial for everyone." (Interview 2, Paragraph 68)*
	Disregard of farmers and rural areas	Perceptions of farmers and cooperatives related to lack of valuation of their work and the	*"It is also this, sometimes we make farmers responsible and the problem is that society is not interested in a farmer, they left*

		lack of interest for rural areas.	*him alone, they did not educate him, they left him alone in the hands of technicians from the agroindustry who sell them any kind of product. Well, they have told them that glyphosate works super well, and they applied glyphosate. We have left them very abandoned." (Interview 9, Paragraph 30).*
	Social side-effects of the irrigation channel	Perceived and experienced social effects which are related to the construction of the Segarra-Garrigues channel and the implementation of irrigated agriculture.	*"Can you allow yourself, being a mid-size farmer, to become a businessman within 2, 3 years, without education, without anyone who helps you? It is difficult. A lot of people have lagged behind." (Interview 11, Paragraph 8)*
	Rural exodus and decrease of infrastructures and services	Experiences with signs of a rural exodus including the disappearance or relocation of infrastructures and services.	*"Yes, there are nuances, summers, weekends. There is a certain rise [of population], for works in the region, it is not like a sleepy village, because it still maintains its school, its small shops, but everything points to the end of a trajectory." (Interview 5, Paragraph 13)*
	Changes in labour force and violation of workers' rights	Observations of changes in labour force particularly in the harvest and related violations of workers' rights.	*"They are like a marginal collective in our society which we do not want to see. But without them there would be no way to harvest the fields in the irrigated areas, the plantations of fruits."*

			(Interview 5, Paragraph 8).

Little Oases: Food Sovereignty Alternatives

The results on food sovereignty alternatives and demands are divided into four subcategories which imply both, the alternatives they already put into practices and the demands they formulate for the future: *Enhance Direct & Local Commercialisation, Support Local Economies, Strengthen Ecological and Mediterranean Cultivations* and *Create Land Banks*.

Minor category	Subcodes	Description of code	Representative quote
Activities and Proposals	Enhance Direct & Local Commercialisation	Statements on experiences with direct and local commercialisation of agricultural products and challenges that farmers face.	*„I think that the fruits and vegetables we sell have more life. You know who is behind, of course. For instance, today in the morning I delivered vegetable boxes. And the lettuce was freshly harvested, and I think people value that. They know that the product is organic, from where it comes, the people who are behind, the project. I think that people value this." (Interview 2, Paragraph 64)*
	Support Local Economies	Experiences on how agriculture can and should be a motor for a local economy.	*"We made an oil press with some small industries from Tarragona. Yes, we bought Italian machinery because they have a very good oil industry in Italy. But we employed brick layers from the region, electricians from the region. If you make a contract, a monstrous one, workers from Poland and iron from Russia will come, margin, profit margin and the people from*

			here will not even see an Euro." (Interview 5, Paragraph 58).
	Strengthen Ecological and Mediterranean Cultivations	Perceptions on the importance of ecological and Mediterranean cultivations.	*„Instead, with little amounts of water I have Mediterranean cultivars and I make a great living because within the global market Mediterranean cultivars are in minority/not very abundant." (Interview 5, Paragraph 56).*
Demands	*Create Land Banks*	Perceptions on the importance to create land banks and to strengthen initiatives which are already started.	*"Here the small properties should have access to land. I think we would need a land bank. But this is very complicated. They talk a lot about that, but we have not achieved it yet. And we would need a land bank managed by the administration. And first of all, small properties should have priority, so that they can persist." (Interview 6, Paragraph 94)*

Original Quotes

[1] "Que la tendencia de la agricultura catalana de los últimos años, de la agricultura intensiva, capitalista es esta. Grandes explotaciones de monocultivo, cultivo muy especializado, que se cambian en función de las modas y de las necesidades del mercado. Y así va." (Interview 9, Paragraph 10)

[2] "Además que también venimos de la herencia de la Revolución Verde, de los pesticidas y los químicos y digamos que nuestros abuelos, nuestros padres pues todavía están como con una óptica de se tiene que labrar mucho, tienes que tirar mucho pesticida, herbicida para que se vea todo limpio. Es como que también … Ahora es que se está revertiendo, no, este punto de vista pero también cuando empezamos con esto a nivel familiar era un poco como una lucha, no, una lucha intergeneracional, era como, como vais a volver tanto atrás es que ahora que tenemos todo esto y nos han dicho que tirar pesticidas es bueno, no." (Interview 5, Paragraph 35)

[3] "Yo el 92 yo decía: Hasta ahora me decían España estaba en proceso de incorporación a la comunidad económica y no es cierto es la Comunidad Económica quién ha entrado en España

me cago en la puta. (…) Así que nosotros fuimos a vender el año 92 y nuestros mercados estaban ocupados por los franceses, por los italianos. Entonces nos dimos cuenta que ellos nos habían invadido. A partir de ese año que yo pongo stickers y comercializo. (…) Y bueno y así ha sido la evolución." (Interview 7, Paragraph 89)

[4] "Nosotros no producimos lo que queremos, ni como queremos, producimos como nos manda. Porque imagínate que sería de Sanui, nada más considerando los últimos años sin 300.000 € anuales? No existiría Sanui.[…] Yo no pienso, actuo. Y tú puedes decir: Que lo haces mal de actuar y no pensar. Pero es que no me sirve de nada pensar. En este sentido es triste. No me gusta. (…) Pero es así." (Interview 7, Paragraph 80)

[5] "[…] en este momento en este presente de 2019, hay una burbuja real. Es decir, que hay muy buenos precios en la carne de cerdo, sencillamente porque en China tienen la peste y hay una demanda. Es una sociedad que consume cada vez más proteina animal y bueno son estos desequilibrios globales que inciden en lo local. Bueno, si vuelven los precios antiguos es posible que todas estas granjas en 5 o 10 años vuelven a ser arqueología ganadera." (Interview 5, Paragraph 33).

[6] "Ahora con 4 hectáreas no tienes ni para hacer un café diario." (Interview 6, Paragraph 50)

[7] "Entonces claro, qué ha pasado? Necesitamos mucha más tierra para poder sobrevivir." (Interview 6, Paragraph 30)

[8] "Es decir el pueblo, por ejemplo en Belianes dónde ahora entrevistamos es siempre está economía de intemperie de si llueve o no, tenemos una cosa de cereal. Estadísticamente llueve menos y esto está provocando un huida y un cierto abandono de las fincas y de las explotaciones agricolas." (Interview 5, Paragraph 8)

[9] "Ha habido también una desvalorización del trabajo porque realmente se trabaja muchísimas horas y se paga muy mal." (Interview 4, Paragraph 42)

[10] "La gente que tienen 55, 60 años está quemadísima. Y esos no quieren que sus hijos continuen en la explotación familiar. Hay gente que dicen: No quiero que continuas, busca te otro trabajo, no quiero que te dedices a la agricultura." (Interview 8, Paragraph 60)

[11] "Claro, si no hay familias jóvenes pues que tengan hijos, se cierran escuelas, los servicios públicos no tienen sentido, pues se desertiza humanamente y este peligro ya ha ocurrido en el prepirineo, en zonas muy concretas ya también de Tarragona y de Lérida. Que la demografía cae en picado. Yo conocí un pueblo de casi 1000 habitantes y ahora daremos la mitad." (Interview 5, Paragraph 10)

[12] "Es así, si tú no haces la política te la van a hacer los otros. […] Hay que involucrarse los agricultores en la política." (Interview 11, Paragraph 50)

[13] "Y da pena porque, si que a veces piensas y dices que pues, no sé como va a ser esto dentro de unos años." (Interview 4, Paragraph 244).

[14] “Pero yo te digo una cosa si no hay agua no hay vida. (…) Digan lo que quieran los ambientalistas, pero el agua es vida. Y la agricultura hoy día sin agua, no tiene futuro.” (Interview 6, Paragraph 66)

[15] “Los cambios han sido que hay gente jóvenes que no hemos podido quedar a trabajar allí.” (Interview 8, Paragraph 32).

[16] “Si no hay garantías de agua, digamos el capital agroindustrial no mueve. Por ejemplo es un hecho cerca de Lérida incluso que empresas muy vinculadas a las infraestructuras, Sorigué ha creado un imperio de almendros, frutales… es decir grandes extensiones.” (Interview 5, Paragraph 31)

[17] “La agroindústria y la administración que ha planeado el Segarra-Garrigues. Quieren esto agroindustria, grandes propietarios, el uso de tierra intensivo. Para mi es esto. Ellos no han pensado en el desarrollo agrícola. Ellos han pensado que haya agricultura, que haya dinero, que haya inversión. Pero pues esto no pasa por pequeños agricultores ecológicos que necesitan más bien que les ayuden” (Interview 9, Paragraph 58)

[18] “Para lo que nosotros hacemos necesitamos dotaciones importantes porque si no produces menos. Eso si luego el agua va por goteo, viene utilizada sostenible y tal pero necesitas cantidad para producir para que el árbol esté fuerte. Sin mucha agua no hay manera. Nosotros aquí no cogeríamos ninguna finca.” (Interview 12, Paragraph 39)

[19] “Es como lo que han hecho es… como se hubieran hecho como desde la administración lo hubieran hecho especialmente…para que esperar a que.. que la comarca se quede pequeña o los pueblos pequeños, para después que entren los empresas grandes.” (Interview 4, Paragraph 70)

[20] “La agricultura requiere inversiones. Si tú tienes 60 años ya y llevas toda una vida, ya no invierten y las generaciones que venían por detrás no quieren ir al campo.” (Interview 12, Paragraph 33)

[21] „Los pueblos han hecho un gran esfuerzo de convencer la gente para que riege, para que se venga riego, para hacer la concentración parcelaria. Y ahora ves que todo el esfuerzo que has hecho durante 20 años atrás porque veía que riego era buen no es tangible. Se lo aprovechan otros. Lo han encontrado todo hecho.” (Interview 11, Paragraph 36).

[22] “En cambio nosotros fuimos, casi hablando un poco de tú a tú. Nos poníamos un poco a su nivel y ya eramos agricultores, casi que sabíamos lo que querían escuchar. Casi. Vale. Y esto fue muy importante para entrar, si no hubiera sido muy difícil. Y cualquier finca que hemos alquilado la hemos conseguido alquilar hablando con el propietario y hablando al mismo nivel que están ellos y creando un clima de confianza.” (Interview 13, Paragraph 15)

[23] “Había pocos agricultores pero tenían mucha tierra. Claro cada agricultor 100 hectáreas, 120, 80. Claro no lo pudieron admitir. Primero económicamente, pero socialmente y psicamente tú no puedes transformar toda tú superficie en dos, tres, años. Plantarla, gestionarla y claro que han hecho. Pues la ha arrendado o han vendido una parte sus tierras

a empresas. […] Te puedes permitir de ser un medio agricultor de ser un gran empresario en 2,3 años, sin formación, sin nadie que te ayude. Es difícil. Es difícil. Mucha gente se ha quedado atrás y yo lo veo, con razón, porque no podían resistir a esto." (Interview 11, Paragraph 8)

[24] "Entonces el problema sobre todo era la capacidad de los agricultores en cambiar toda su mentalidad de cultivos de secano a cultivos de regadío que es totalmente diferente. Y esto pueda hacer un agricultor de 30 años pero uno de 70 está muy difícil que te haga esta reconversión y este aprendizaje - que requiere un aprendizaje técnico - que a esta edad ya cuesta." (Interview 13, Paragraph 38)

[25] "Pues nadie se acoge, es decir, está consolidado el canal y por qué hay tan poca gente regando? Porque es caro, porque la gente tiene otros proyectos, porque sociologicamente un proyecto tan amplio no tuvieron en cuenta pues la demografía, el envejecimiento de la población. Y le pusieron unos costes elevadísimos a todo para garantizar el margen industrial pues de las empresas." (Interview 5, Paragraph 60)

[26] "Es una otra parte mala del Segarra-Garrigues, vale estámos viendo que se están llevando tierras, las mejores tierras grandes empresas que no vienen del mundo, no son agricultores." (Interview 11, Paragraph 8)

[27] "La propiedad está muy bien repartida hasta el día de hoy y […] la empresa familiar agraria es la que le ha dado este equilibrio rural. Por ejemplo en Cataluña no hay latifundismo. A ver, una finca de cuando se hizo el desarrollo en el siglo 19 del canal d'Urgell tiene 300 hectáreas, bueno esto es una anomalía. […] Bueno ahora puede ver un nuevo latifundismo que sería la agroindustria." (Interview 5, Paragraph 27 & 29)

[28] "Pues, mira en Alcanó mismo, el pueblo al lado había unos terrenos que eran todos un poco montañoso, pues lo arrendaron un empresa de Aragón o de Huesca me dijieron que era. Pues llevaron maquinas y los borraron todo. O sea que eran de tantos dueños, no se cuantos, ahora es de uno. Pues de esta empresa." (Interview 3, Paragraph 48)

[29] Nosotros como empresa Ocean Almond almendra Europa estámos cerca de estas industrias, les gusta que estemos cerca, porque pueden venir a ver nuestro producto. Y puede venir y volver en un día. Eso es importante. Agua, estratégia, comunicación. Eso es importante la infraestructuras. (Interview 12, Paragraph 101)

[30] Pero claro, luego al pequeño productor, no digo que le engaña, pero son precios… (…) Pero son precios que están tomando el pelo o sea. Ahora igual te dice: Ahora está a 5. Y nosotros estamos vendiendo a 5,80. (Interview 12, Paragraph 59)

[31] Yo produzco fruta dulce y resulta que mi gobierno hace un canal de agua para que el territorio del lado, que también es de mi país, compita conmigo y que me bajen los precios. Es todo como muy surrealista (Interview 14, Paragraph 68).

[32] "Es mejor tener 100 hectáreas con cuatro agricultores que 100 hectáreas de empresa de estas grandes. Porque estos 4 agricultores seguramente se quedan en pueblo, generan

riqueza, pueden vivir de esto, tendrán hijos en el pueblo, se quedarán en el territorio. Los otros no. Los otros van, recogen lo que sea y se van." (Interview 1, Paragraph 32)

[33] "Porque hace 6 años me incorporé a la agricultura, entonces me equivocado hacer tanta fruta? Bueno no sé. Hasta ahora no, porque yo perder dinero, no perdí dinero ningún año. Lo que pasa para no perder dinero lo tienes que hacerlo muy bien. (…) Hoy por hoy yo derepente haría lo que he hecho? No." (Interview 8, Paragraph 96)

[34] "Bajo de mi casa tengo una verdulería. Yo no compro mi verdure allí. […] Y me sabe mal porque es comercio local y lo quiero respaldar al comercio local. Pero fruta de Mercadona estando en una zona de agricultura. Que estámos locos o que pasa. Y tú vas allí y preguntas de donde son las cosas y no lo saben." (Interview 9, Paragraph 32).

[35] "En 5 años hemos decuplado la producción. Y venimos hacer hace 10 años, podíamos hacer 159.000 kilos y hoy estámos haciendo 1.500.000 de kilos de fruta." (Interview 8, Paragraph 50)

[36] "Exportan a animales vivos en toda la zona de Magrehb. Animal vivo. Barcos de animales vivos. Son granjas flotantes en barcos enormes." (Interview 10, Paragraph 54)

[37] "Es que ya las tierras no salen al mercado, ya se compran o se arriendan y no te enteras. Ya no tienes opción." (Interview 6, Paragraph 98)

[38] Quién las coge? Las cogen grandes empresas o grandes explotaciones porque pueden pagar más. (Interview 6, Paragraph 48).

[39] "Y luego otro problema que temenos. Como llegaron aquellas empresas de fuera pues no podemos crecer mucho más lo que ya tenemos. Porque no hay más superficie alquilable." (Interview 8, Paragraph 98)

[40] "Porque eso es un bien muy seguro. Las tierras nunca las perderás, la tierra siempre aumentan poco poquito pero siempre aumenta el valor." (Interview 6, Paragraph 56).

[41] "Entonces para alimentar los cerdos de Guissona pues se plantaba cereal por allí, necesitaban los máximos tierras posible. Pues el precio de la zona, pues estaba subiendo el precio de la tierra y ellos que eran jóvenes de la tierra, pues de los pueblos de allí que querían hacer una granja de cerdos ecólogico no encontraban tierra." (Interview 9, Paragraph 20).

[42] "Yo creo que el Segarra-Garrigues nació (…) con una idea decimonónica, casi precapitalista de decir: Más agua, más riqueza. (…) Eso es una idea algo que socialmente se llamaba Joaquín Costismo. Es decir, más garantías de agua a una sociedad rural solo agraria, cuanto más agua más riqueza, mejor prosperaría esta sociedad. Ahora no, ahora son las garantías de agua para todos los usos. Todos sabemos que es un bien escaso que depende de una climatología compleja." (Interview 5, Paragraph 33).

[43] "These trends, now Segarra-Garrigues, now you irrigate, so now we all plant almonds, now they pay a good price for the grapes. So here in the region close by they have put

irrigation, so let's plant vineyards because Torres or Cordorniu will buy our grapes. This is also a growing tendency. Very big and few cultivars." (Interview 9, Paragraph 10)

[44] "Pero aquí pasan dos cosas. Una, que los que hace tiempo que están en la batalla están un poco ya cansados, de intentos de hacer y que no salgan las cosas, y ya van un poco a la suya, a que mi cosa salga y voy a lo práctico. Y los jóvenes son muy jóvenes y muy inexpertos. Y está costando mucho. Y luego que son muy pocos, muy poca gente. Y qué pasa? Es auto-explotación, son proyectos que cuestan un montón que salgan adelante. O sea, a la gente no le hables de que además tiene que hacer muchas asambleas para hacer no se qué… y esto es una realidad." (Interview 9, Paragraph 42).

[45] "Casi era congénito, es decir, yo nací en una familia que valoraba al pueblo, la agricultura y tomé la decisión entre 15 y 17 años, España tuvo ese cambio de la dictadura a la democracia y era muy atractivo. Y democraficamente, yo que vivo en un pueblo, parecía a una película italiana, su cine, su vida propia, muy interesante. Aparentemente se abrió un escenario de felicidad y de trabajo. Si, si, fue muy natural quedarme." (Interview 5, Paragraph 2)

[46] "No es fácil porque bueno, son muchas horas pero bueno es bonito porque sabes que lo haces por ti. Es placentero. Sabes que haces una cosa que beneficia a la tierra, que beneficia para todo." (Interview 2, Paragraph 68)

[47] "También esto, a veces culpamos al agricultor y el problema también es que la sociedad no se implica con el agricultor, lo ha dejado solo, no ha formado al agricultor, lo ha dejado solo, en los manos de los técnicos de las agroindustrias, que les venden lo que quieren de producto. Bueno les han dicho que el glifosato va de putamadre, y aplican glifosato. Los hemos dejado muy abandonado." (Interview 9, Paragraph 30).

[48] "Bueno yo estas esperanzas las tenía antes, las posibilidades quedan intactas, pero no hay nadie quien ensienda la luz, todo está oscuro." (Interview 5.1, Paragraph 79)

[49] "Tú llegas y ves su gran finca y como tú las tienes pequeñas por allí, pues te sientes más pequeño. Pienso que a nivel emocional si hay un punto así de sentirse más pequeño. Y la otra es que esta gente que van comprando es como también tienen otros aires: Como yo tengo más dinero que tú. Eso si cambia un montón las relaciones." (Interview 4, Paragraph 238-240)

[50] "Las grandes empresas quieren cogerlo todo y al pequeño agricultor nos van hacer desaparecer, ya verás." (Interview 3, Paragraph 44).

[51] "Si que hay matices, los veranos, los fines de semana. Hay como ciertos repunte, pues de trabajos de la zona, no como pueblo dormitorio, porque aún mantiene su escuela, sus pequeños comercios, pero todo apunta que es un final de recorrido." (Interview 5, Paragraph 13)

[52] "La economía inducida que provoca la empresa familiar agraria es muy potente: Pequeños talleres, …. Siempre es lo mismo. En cambio la agroindustria tiene tendencia a deslocalizar incluso la demanda de sus bienes." (Interview 5, Paragraph 56)

[53] “Son como un colectivo marginado en nuestra sociedad que no queremos ver pero que sin ellos no habría posibilidad de explotar el campo de las zonas de regadío, de plantaciones de frutales.” (Interview 5, Paragraph 8).

[54] “Cogemos la fruta en el regadío, manzanas, llevamos ya 25 años con las mismas familias de chicos de Marruecos (…) cuando llegan nos abrazamos y cuando se van también.” (Interview 5 (Farmer), Paragraph 21)

[55] “Cuando necesitas llamas a una ETT. Son empresas de trabajo temporal. Ellos tienen trabajadores y tú lo dices: Quiero 40. Quiero 3. Quiero 28. Quiero 50. Y te los facilitan. Pero es para hacer trabajos puntuales.” (Interview 12 (Agribusiness) Paragraph 81).

[56] “Bueno nosotros como solución final, última a largo plazo y utópica si quieres, es que hay que cambiar el modelo agrario. Hay que arrancar más de la mitad de los arboles frutales, hay que volver al policultivo y hay que buscar otras formas de comercialización. […] Evitar el land grabbing. Limitar la capacidad de las grandes multinacionales exportadoras […].” (Interview 14, Paragraph 48).

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