D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results

Part A: Technical Report

Korthals Altes, W.K.

Publication date
2021

Document Version
Final published version

Citation (APA)
Korthals Altes, W. K. (2021). *D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results: Part A: Technical Report*.

RURALIZATION

RURALIZATION

The opening of rural areas to renew rural generations, jobs and farms

D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results

Part A: Technical Report

RURALIZATION GRANT AGREEMENT NO 817642

"The project RURALIZATION has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817642."

Version history

Ver.	Date	Comments/Changes	Author/Reviewer
1.0	30/10/2020	Final version reviewed by the S.A.B. and GA	Willem Korthals Altes (TU Delft)

Project Acronym	**RURALIZATION**
Project Title	The opening of rural areas to renew rural generations, jobs and farms
Project Number	817642
Instrument	Research and Innovation Action (RIA)
Topic	RUR-01-2018-2019 Building modern rural policies on long-term visions and societal engagement
Project Start Date	01/05/2019
Project Duration	48 months
Work Package	WP6 Access to Land
Task	T6.3 Quantitative analysis of land holdings and land market trends
Deliverable	D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results
Due Date	31/10/2020
Submission Date	30/10/2020
Dissemination Level [1]	PU
Deliverable Responsible	TDL
Version	Part A, version 1.0
Status	Final
Author(s)	Willem Korthals Altes (TU Delft)
Contributor(s)	Titus Bahner, Annelies Beyens, Clara Blasco, Miquel Correa, Sylwia Dołzbłasz, Krzysztof Janc, Anne Kinsella, Imre Kovách, William Loveluck, Aisling Murtagh, Alice Martin-Prevel, Silvia Sivini, Robert Skrzypczyński, Attila Szocs, Veronique Rioufol, Petra Tas, Herman de Wolff
Reviewer(s)	RURALIZATION S.A.B. and Consortium members

[1] PU= Public, CO=Confidential, only for members of the consortium (including the Commission Services), CL=Classified, as referred to in Commission Decision 2001/844/EC

Table of Contents

List of Boxes

List of Figures

List of Tables

Acronyms & Abbreviations

CAP	Common Agricultural Policy
CEE	Central and Eastern European
DP	Decoupled payments
EC	European Commission
ECA	European Court of Auditors
EIP-AGRI	European Innovation Partnership for Agriculture
EP	European Parliament
ESPON	European Spatial Planning Observatory Network
EU	European Union
FG	Focus group
inh/km2	Inhabitants per square kilometre
n.a.	not available
NGO	Non-governmental organisation
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
QoG	Quality of Government
REIT	Real Estate Investment Trust
RURALIZATION	'The opening of rural areas to renew rural generations, jobs and farms', an EU Horizon 2020 project funded under grant agreement 817642
SAB	Stakeholder Advisory Board
SFP	Single farm payment
UN	United Nations
UUA	Utilised agricultural area
WP	Work Package
YF	Young Farmers

Executive Summary

RURALIZATION deliverable D6.3 'Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results' Part A provides an overview of relevant developments in land holdings and of land market trends that are relevant for access to land for new generations in rural areas. This fits to the broader aims of RURALIZATION. RURALIZATION is concerned with understanding how to facilitate rural regeneration and generational renewal. In this context, its key focus areas are: rural foresight and trend analysis; the future dreams of rural youth; facilitating rural newcomers; farm succession; new entrants into farming; and access to land.

Although there are few statistics on land mobility, the number of transactions, on the land market, the statistics and other studies on land markets suggest that land mobility on rural land markets is low. Few plots of land are being transacted for sale.

There are, especially in areas within the commuting range of cities, many other functions that have a potential demand for land, and landowners speculate on the potential to achieve such a higher land value. This means that they are not likely to sell it for an agricultural value and prefer to wait whether buyers with deeper pockets arrive. The agricultural value is in these cases a kind of bottom value that can be achieved anyway and selling land destroys the potential value as development land. In many of these cases no speculative land buyer is active, but owners of agricultural land have more patience (they do not need a high internal rate of return on their land).

In the case that land prices are based on agricultural value, the dominant form of transaction is by buyers that aim to enlarge their farms. After all, the balance between marginal costs and benefits for existing farms is more positive as they have already covered most of their other costs and they can profit from the economies of scale by buying extra land. This means that these prices are too high for new entrants into farming.

As family farming is the dominant form of agricultural production in the EU, most of the land stays within the family and is not being likely to be sold at the market. Family farming is generally a patriarchal tradition in which land is transferred from fathers to sons. Although, legally females have currently achieved equal rights to farm inheritance, the practice is different. Of the land held by farmers under 40, only 13.3% is held by females. In practice, culture and institutions on land markets do not provide equal access to land for females in the context of family farming.

Generation transfer within families may result that one of the siblings is taken over the farm. This sibling must compensate the parents or other siblings for this or is bound to the other siblings who are holding a share of the farm. High land values are so a burden to farm successors that face extra costs to farm succession. So, in context of high land prices, these prices provide a major obstacle to succession. After all, the prices are not based on the value of an entire farm, but on the marginal costs of enlarging an existing farm. So, a successor may start under the burden of debt. Selling the farm to a neighbour is often the option with a

higher monetary value. So, farm succession within the family means assigning a higher value to tradition than to money.

Depending on the context, leasing land can also provide access to land for new farmers. It has the advantage that no big investment upfront must be made. The rights and protection of the tenant versus the rights and protection of the owner differ largely by national context and result in different outcomes. In some contexts, the protection of tenants, including a pre-emption right to buy the land, resulted in a transfer from a tenant-based system towards an owner-based system. By selling land to tenants, owners could invest elsewhere. The opportunity costs of landownership were too high. In other systems, the protection of tenants did not result in a redirection of capital from non-farming owners. Most tenancy laws are based on a situation of a few wealthy landowners who have many pour farmers as tenants that need to be protected; both based on social sense (protection of the peasant class) as in economic sense; to ascertain that tenants may pick the fruits of the improvements in the land they have invested in.

It must be noted that in some cases the transaction costs of buying and selling land are so high that market transactions are based on leases. Especially in the case of some former socialist countries redistribution of small parcels of land to the undivided heirs of past owners have resulted in a fragmentation of property rights. Issues of quality of government has made that procedures to break more efficient through stalemates have not worked as there are no trustworthy institutions to allocate decision making powers; so, landownership is still undivided. Transaction costs can be excessive in relation to the land values, because of the small size of the parcels, the fragmentation of ownership and the non-transparency in establishing who these owners are. The allocation of a temporary right of lease can be provided with less transaction costs. The outcome is that reverse tenancy relationship occurs: many small, fragmented owners and a few tenants managing a large land portfolio, which goes beyond the scale of the family farm.

In most EU regions the direct payments of the Common Agricultural Policy are higher than the rent of rural land. There is no need to actually farm on the land to be eligible to these grants; it is only necessary to keep the land in a decent shape. In this context there is no incentive at all to rent agricultural land to a novel farmer. The rent does not compensate for the loss in decoupled payments by the CAP. The only way to get this going, is to make a deal that the decoupled payments will still go to the landowner, which seems to be not the objective of the CAP, because it does not support the farmers. Only the 25% extra CAP payments to farmers run by holders under 40 may be an incentive to rent to a new entrant as it will result in extra eligibility of grants. The figures on the age of farm managers do not suggest that in the context of family farming, inner-family transfer of farms to younger generations is exceeded to a massive scale. So, the impact on the land market appears to be limited. Studies also shows that in the case of many small owners, the transaction costs of administering the grants provide an impediment and this feeds the practice of reverse tenancy relationships. It must, however, be noted that outside the EU, in the Ukraine, these relationships also exist in an even more extreme form, and the CAP is so not a necessary condition for this to come forward. It seems to be more related to the mix of high transaction costs, fragmented land ownership and low quality of government.

Next to all sprawl based on urban development, the energy transition, makes that some land is used for novel functions, such as solar panels. Precondition is that areas are well connected to the power grid and land is relatively cheap. In intermediate regions these conditions may apply, but also in areas which industrial heritage has resulted in good power connections. This provides extra obstacles to access to farmland.

Even in the most remote, low density, regions access to land is in practice an issue. Although farmland abandonment can be seen as spatial phenomenon, it is usually no abandonment legally: owners do not give up their ownership rights. Many of these remote areas have very unequal patterns of landownership, in many of these areas traditional patterns of ownership prevail (latifundio in Alentejo (PT), large 'sporting estates' for the happy few in Scotland (UK)); new entrants depend on the willingness of these landowners to allocate their land to new farmers. Some other remote areas, such as in CEE, have transferred into a kind of company towns, with one large company landholder consolidating lease rights, which is not only holding the land, but also the other main sources of employment in the region and whose management has very tight connections with the political leaders of the local authorities.

1 Introduction

1.1 The RURALIZATION project

The RURALIZATION project aims to look at ways to overcome rural decline issues that support rural regeneration and generational renewal. The empirical focus of the project is to develop, assess and disseminate novel instruments, strategies and policies that cater for rural regeneration, in relation to the **future dreams of rural youth**, facilitating **rural newcomers, succession** and **new entrants into farming** and by addressing the issue of **access to land**. RURALIZATION will also carry out a **trend analysis** to uncover relevant trends for rural regions. This knowledge base will culminate in generating effective policy tools, and through this RURALIZATION aims to contribute to the development of a **new rural frontier** that provides **exciting opportunities to new rural generations** for social and economic sustainability and to realise their dreams in a rural context. Overall, RURALIZATION develops a novel perspective for rural areas to trigger a **process of ruralisation as a counterforce to urbanisation.**

One of the main issues that new generations in rural areas face is to get access to land. In relation access to land, the RURALIZATION project has four main lines of research and innovation. Firstly, the projects studies legal and policy arrangements. This is done, both at a general level for all EU member states, and more in depth for several legal and policy arrangements. Secondly, the project analysis and develops innovative practices. Here both already existing practices, developed by members of the Access-to-land-Network and others will be analysed, and new innovative practices will be developed. Whereas legal and policy arrangements are primarily the work of national and local authorities, these practices are aften led by NGOs and other agencies that do not wait until the government comes with something decent, but take the initiative, usually with local partners, to provide access to land. Thirdly, and that is where this report is about, there is the issue of land markets and land holdings. In many contexts, land markets seem not to be favourably in providing access to land for new generations; this report analysis the developments of land markets and land holdings to analyse the ways in which land markets may or may not cater for access to land for new generations. Fourthly, and finally, focus group discussions will be held to study whether the practices developed in the second part of this work package may provide solutions in specific local contexts.

1.2 Report structure

Next to this report (part A), the deliverable includes also a short hand out (part B) with the main results. The outcomes and topic of this report has been discussed in an expert meeting on October 15th 2020[2] (see Appendix).

[2] With presentations of: Robert Levesque, AGTER, France; Jason Loughrey, Teagasc, Ireland; Gianluca Brunori (joined later during meeting), University of Pisa, Italy (H2020 DESIRA Project); Mark Redman, Highclere Consulting, Romania (H2020 MOVING Project); Ferenc Buzás (with assistance of Laszlo Posta), University of Debrecen, Hungary; Andreas Tietz, Thünen Institute, Germany and Minko Georgiev (with assistance of Dafinka Grozdanova), Agricultural University - Plovdiv, Bulgaria. The following presenters of the expert meeting on legal and policy arrangements did also participate in this expert meeting: Evelin Jürgenson, Estonian University of Life Sciences, Estonia; Martin Hvarregaard Thorsøe, Aarhus University, Denmark; Coline Perrin, INRAE, France; Anka Lisec, University of Ljubljana, Slovenia and Lucia Palšová, Slovak University of Agriculture in Nitra, Slovakia.

This report (D6.3 Part A) provides an overview of key concept based on literature (section 2), an explanation of the methodology used (section 3), a more specific analysis of data and reports across the EU (section 4), and analysis of developments in selected remote and rural areas (section 5) and a discussion and conclusion (section 6).

2 Key concepts and theory of land markets in relation to access to land

2.1 Theory of land markets in relation to access to land

2.1.1 Markets as organisational form

Markets can be seen as a specific form of organisation (Fligstein, 1996). Property depends on the state, that is, 'States provide rules and courts so that market actors can engage in exchange and be able to try and construct stable markets.' (Fligstein and Merand, 2002, 10). According to Fligstein (1996) the social institutions necessary to make markets are (1) property rights, (2) governance structures, (3) conceptions of control, and (4) rules of exchange.

Property rights are about social relationships that define who can claim proceeds; 'the constitution of property rights is a continuous and contestable political process' (Fligstein, 1996, 658). Property can be conceptualised as a 'web of interests', i.e., 'a set of interconnections among persons, groups, and entities each with some stake in an identifiable (…) object, which is at the center of the web. All of the interest-holders are connected both to the object and to one another' (Arnold, 2002, 333). In this web there is also (1) an object (2) persons, groups and entities, (3) relationships between (1) and (2) and (4) the relationships amongst these persons groups and entities (compare Korthals Altes and Ploeger, 2010). In this web of interests, new generations searching for access to land may play a role.

Governance structures are about 'the general rules in a society that define relations of competition, cooperation, and market-specific definitions' (Fligstein, 1996, 658). of the organisation of property. They define legal and illegal forms and can take the form of both laws and 'informal institutional practices' (Fligstein, 1996, 658).

A third element in the organisation of markets are conceptions of control. These 'refer to understandings that structure perceptions of how a market works and that allow actors to interpret their world and act to control situations. A conception of control is simultaneously a worldview that allows actors to interpret the actions of others and a reflection of how the market is structured' (Fligstein, 1996, 658). Conceptions of control are market specific and reflect 'principles of internal organization (i.e., forms of hierarchy), tactics for competition or cooperation, and the hierarchy or status ordering of firms in a given market' (Fligstein, 1996, 658).

Finally, markets are organised by rules of exchange. These there are the rules that 'define who can transact with whom and the conditions under which transactions are carried out' (Fligstein, 1996, 658).

In this line of thinking, markets depends on the state: 'States provide rules and courts so that market actors can engage in exchange and be able to try and construct stable markets.'

(Fligstein and Merand, 2002, 10). This is one of the explanations why in the EU there is a wide variety of land and property markets.

One of the aims of the European Union is to organise a single European market. According to Fligstein and Mara-Drita '… a single market implies rules that (1) produce a well-defined system of property rights, (2) sanction certain forms of competition and cooperation, and, (3) minimize the cost of transaction between economic units' (Fligstein and Mara-Drita, 1996, 17). Member states were, however, not very eager to give-up their powers relating to property rights, rules of exchange and governance structures. The most acceptable solution was that the EU policies relating to the single market focused on opening the market by changing the rules of exchange (Fligstein and Mara-Drita, 1996). An example of these rules of exchange is the mutual recognition of rules relating to goods (Fligstein and Merand, 2002), which involves that a good that fits the rules of one of the member states, may be sold in all other member states. European regulations regarding these goods, such as toys, and food prevented a race to the bottom regarding recognition of minimum standards. (Fligstein and Stone Sweet, 2002).

Member states have not provided EU competence on definitions of property rights to the EU. The Treaty of the Functioning of the European Union (Part of Lisbon Treaty) states (as was in the former article 295 of the Treaty of Rome) 'The Treaties shall in no way prejudice the rules in Member States governing the system of property ownership." (EU, 2010, article 345). This does not involve that the EU has no impact on property law (Korthals Altes and Ploeger, 2010), '…because the workings of the internal market are immune from the article 295 proscription" (Sparkes, 2007). This effect make a fit to economic theory on transactions: a 'transaction is not essentially an exchange of commodities but of property rights over commodities' (Webster, 2009, 478) and, therefore, changing rules of exchange may affect property rights and their organisation within the member states.

Decisive to the emerging single market on property rights was the freedom of capital that has been implemented based on the Maastricht Treaty:

> 'Residents of the EU are free to move capital across the internal market. Such a movement of capital is involved in a sale and purchase of land, and when a cross-border element is involved in this the freedoms of the EU treaty comes in play." (Korthals Altes and Ploeger, 2010, 559-560).

There is a lot of capital accumulated in land and property. Restrictions on the use of this capital are being considered as contrary to the freedom of capital. Recently the European Commission (EC, 2017a) has published an interpretative communication indicating the demarcation within which member states may organise their land markets. Such an interpretation is not formally legally binding in the sense that the European Court of Justice (ECJ) must interpret it as a source of law, but it does bind the EC in its role as law enforcement agency in so far as the interpretation is in conformance with EU law (ECJ, 2010, paragraph 47; 2014, paragraph 51). The interpretative communication may have a direct impact on activities of the Commission in infringement cases.

In this interpretation the Commission indicates that the acquisition of farmland 'falls within the remit of EU law' (EC, 2017a, 5) as 'Intra-EU investors enjoy the fundamental freedoms, first and foremost the free movement of capital and the freedom of establishment. These freedoms are integral parts of the internal market where goods, persons, services and capital can circulate freely.' (EC, 2017a, 5) Limits of the acquisition of farmland, are so limitations of these fundamental freedoms and it is therefore that the EU has competence in this. The Commission stresses that the European market has also benefits for local communities, especially because it allows access to finance and the market in general (EC, 2017a). The commission also indicates that limitations on these freedoms can be allowable, as

> '…EU law also recognises the specific nature of agricultural land. The Treaties allow restrictions on foreign investments in farmland where they are proportionate to protect legitimate public interests such as preventing excessive land speculation, preserving agricultural communities or sustaining and developing viable agriculture.' (EC, 2017a, 5)

In other words, preserving agricultural communities, which may be one of the aim or rural planning, is a legitimate interest that may justify limitations on the fundamental freedoms including the free movement of capital. This freedom may be the movement of capital to acquire a large land portfolio, or the freedom of establishment, such as starting a big farm without involving the local community.

All, in all, this provides both an explanation of the differences between member states within the EU, they have their own rules and governance structure relating to property rights and these matter as they are part of the market as organisation, as they explain some common characteristics as brought being forward by the European integration, which is a process. Enacting that there is freedom of capital does not mean that this is implemented overnight. Organisation of a market takes time and effort. The European Commission has a rather small government apparatus and is so dependent on the ways Member States are active in their market.

Another example of the organisation of a market is the organisation of land markets in Central and Eastern Europe after 1989. There were not only differences in the way how rural land was collectivised in the socialist era, but there have also been large differences in the ways how the market has been reconstructed after 1989 (Deininger, 2002; Swinnen and Vranken, 2005; van Dijk, 2007; Spoor, 2012). There are not only differences in the methods chosen, but also in the way it resulted in a well-functioning land market. This is important as,

> '…the ability to increase agricultural productivity and rural welfare will hinge on the scope for improving the functioning of land and factor markets in rural areas. These markets are still far from perfect, and the experience of established large farms and their bosses under the socialist environment may provide them with substantial advantages in access to the sources of political power and actual inputs, as compared to newly created and inexperienced individual farmers.' (Deininger, 2002, 995)

So, there are links between the definition of property rights, governance arrangements, conceptions of control. A specific issue that is at stake many contexts is land fragmentation. This is one of the key concepts that will be discussed in the next section.

2.1.2 Land as specific good

In classic economic literature there is a substantial amount of analysis of land as specific good. Based on this, often a distinction is made between land and improvements of the land. The amount of land is fixed and it is immovable. So many economic insights that relate towards production are not valid for land. In relation to improvements there is the possibility to produce, extra qualities, such as infrastructure, buildings, irrigation works, which after they have been realised may become insuperable of the land, resulting in that these investments are locational fixed.

Alexander (2014) distinguishes the following special characteristics:

- *Substitutability*, the possibility to substitute a product for another. This is often limited, due to the specific location of land. In Dutch there is a saying: 'The land of the neighbours is only for sale once' (*De grond van de buren komt maar één keer te koop)*, this is a one-off opportunity, indicating the limited substitutability of land.
- *Limited resource*. Land is not only globally, but also locally a limited resource
- *Investment asset*. Land is not only used for direct use, but is also an investment asset that agents use to speculate on price development. Here there is a difference between land and, e.g., diamonds or gold: 'in these markets there is no public interest in intervention because society does not suffer any consequences from speculation" (Alexander, 2014, 536). This comes to the next aspect.
- *Public interest*. Land uses may be a public good. Often there are externalities involved in specific land uses. These externalities can be both positive (like a nice view over land) as negative (like nuisance).
- *Transaction costs* is a final point mentioned. Although transaction costs are a general feature of markets and the height is depended on the way the market is organised. The specific nature of land makes that transaction costs can be considerable. Selling property often takes time, much more time than selling stocks on the exchange market. In some cases there are costly due diligence mechanisms involved in property transactions (Seuren, 2018). One way to avoid these transaction costs, especially to accommodate property as investment asset, is by an 'indirect' land fund, a Real Estate Investment Trust (REIT), which are funds noted at the stock exchange that own property. In this way investors can swiftly buy and sell land. In practice this is more dominant in 'urban' property, like offices and retail. However, there are also farmland REITs (Serrano, 2019). In this way investors have easier access to land, but which may, however, not result in a more 'equitable access to land' (Serrano, 2019, 611), such as, for new generations in farming.

It is the interplay of these characteristics that make that land is very different from economic commodities, which can be produced. Land can be improved, but not produced. However, improvement of land involves that capital and labour used to improve the land are attached to the land and cannot be easily traded without the land itself. By improvement they are

attached to the land and cannot be traded to other places. There are also many institutions around land markets, which are of importance to understand the development of land markets (Woestenburg *et al.*, 2014), that is, land prices can be better explained if the institutional context is taken into account.

Land fragmentation and consolidation

A very specific element in which some of these aspects come together is in land fragmentation. Here issues of transaction costs, issues of limited resource, substitutability, investment asset and public interest may come together. The term fragmentation has a negative connotation, but some fragmentation is needed. After all, for access to land new generations are searching to get access to their own 'fragment' of the land market. Land markets must allow a certain 'fragmentability' of land. Fragmentation must fit to the local context of rural development. In relation to this concept various types of fragmentation can be distinguished (Sabates-Wheeler, 2002; van Dijk, 2003b; Hartvigsen, 2014; Jürgenson and Rasva, 2020; Ntihinyurwa and de Vries, 2021), including the following ones.

1. Area per landowner, that is, areas in which landowners own in average 2 hectare of land are more fragmented than areas in which owners own 50 hectares.
2. Area per user, i.e., land is less fragmented if a land user has accumulated lease rights from many owners, and more fragmented if one big landowner has provided leases to many small-holders.
3. The division of land rights, i.e., land is more fragmented if there are more rights established on the same parcel. The most common is an ownership right and a lease right. Also temporary uses of pasture land can create conflicts, such as between shepherds and hunters in Romania, who were competing to the use of the same land (O'Brien and Creţan, 2019).
4. The division of land in different, non-adjacent plots, also known as 'scattering' (Pryor, 1982). This is the traditional issue of West-European land consolidation, which solution may so not fit to meet other types of fragmentation (van Dijk, 2007). It is about farmers who own several, non-adjacent plots.
5. The fragmentation of activities. Sabates-Wheeler (2002) use the term fragmentation to indicate situations in which there is a distinction between land holdings and other means of agricultural production. Under the heading of 'social fragmentation', she addresses the generational issue, as:

> '…many people who have gained ownership to land through recent land reforms are not the most appropriate people to farm it. That is, there has been a separation of those who own the land from those who are most able to work it. […] Village demography is characterized by the elderly and infirm, and urbanites that have been restituted land since the communist time often have no desire to use it. […] Furthermore, people who have worked for decades on a collective farm but had given it no land might get nothing at all. Restitution for some thus means deprivation for others. The result has been conflicts among kin, among members of different ethnic groups, between villagers who had land before and those who did not, and between village residents who

remained in the village and those who emigrated to a "better" life in town.' (Sabates-Wheeler, 2002, 1008)

This issue may likewise occur if there is such a variety of land uses in an area that there is no need for a common infrastructure. Or to put it the other way around, if in an area many landholders have joint interests, clusters can develop that are of added value for the farmers and other people in the region. Most extreme example are agro-industrial horticulture areas (Hoffman and Loeber, 2016; Egea *et al.*, 2018), but also elsewhere regional agricultural specialisation may result in the development of specific infrastructures that are of added value. If there is however a dichotomy between a few large-scale farms and many smaller farms, who have few in common, there is hardly any added value between these: a socio-economical fragmentation.

6. The division of holders or 'co-ownership fragmentation' (Ntihinyurwa and de Vries, 2021). Although land may not be fragmented, the holdership may. For example, in the case that land is held by undivided heirs, decision power on the land can be very fragmented. Especially in those CEE member states in which land restitution took place to the heirs of the original owners, plots of land are held by many different owners. For example, in Bulgaria, land was, after the Communist era, privatised to the original owners, which made it often necessary to subdivide the land to the heirs of the original owners. For example, Bulgarian Land Law has used minimum parcel sizes '0.3 ha for a field and 0.1 ha for orchards, vineyards and pastures. The consequence is that co-ownership emerged, when heirs cannot divide their land because of these restrictions. Parcels can be owned by several dozens of co-owners, all having to consent on sale of the parcel as well as the price.' (van Dijk, 2003a, 74). This results in high transaction costs, which can even exceed the land value; the fragmentation of holders have so resulted in a 'total loss' of the land value, i.e., the costs of bringing the parts together, such as, finding all co-owners who do not all live locally and getting them to agree on a deed, are higher than the value of the 'repaired' good. In these circumstances other ways to use the land will be sought and the division of co-owners will remain or will even grow through new inheritances of the rights. Without 'repair' no transactions that need full consent of the owners, can take place, which has so a large impact on the land market.

Since 1989 many pathways in the field of land fragmentation, land consolidation and land reform has been followed in various countries, or even regions, in the CEE area (Pašakarnis and Maliene, 2010; Hartvigsen, 2014). Many phenomena have been discussed as part of land fragmentation. Relevant is that situations in land markets may develop slowly. These slow processes are not unique to the CEE or EU context, but also the land reforms in the 1940s in Japan and Korea have been still of relevance for rural development decades later (Parker and Amati, 2009; Korthals Altes and Im, 2011; Burmeister and Choi, 2012).

In this line of thinking fragmentation maybe even used to address the access to land, the fragmentation between land and new generations. The question is whether the use of land fragmentation for all these phenomena will help to achieve clarity or it will result in misunderstanding a same concept is used for many phenomena (Hartvigsen, 2014). Opposite to fragmentation is the concept of consolidation, which may also have these various

dimensions as indicated in land fragmentation. Two decades ago, scholarly authors (Sabates-Wheeler, 2002; van Dijk, 2003b) have been critical on the use of formal land consolidation methods to address the mismatch between land ownership, land use, village life and rural development. Their pessimism, has proved to be right in many contexts. Most notably is that fragmentation and consolidation can happen together at the same time. The reports on land grabbing in Romania show on the one hand a large fragmentation in rights of ownership and a consolidation in land use (Szocs *et al.*, 2015). This issue can also be seen in the Ukraine in which 93% of the land of an 'agricultural enterprise' (Popov *et al.*, 2019) is leased land. Transaction costs relating to formal land transaction, including land administration have a large impact on the operation of these land markets (Popov *et al.*, 2019). Ownership of land and providing access to land for the 'right' people can also be part of national policies, such as in Hungary, in which, according to Gonda '… agriculture has been instrumentally used by the Orbán regime to both please and control its oligarchs by making them owners of the land' (Gonda, 2019, 610) in a novel privatisation process.

Two decades ago Sabates-Wheeler (2002) showed some optimism about the possibilities of informal arrangements to 'provide temporary relief from some of the major constraints hampering the agrarian sectors in most Eastern European countries' (p. 1016) It may be that this temporary relive has lost its powers in some CEE contexts. In the RURALIZATION project reflection and development takes place of a wide range of bottom-up innovations and initiatives to provide access to land for new generations in the EU, which may help to facilitate these. Another report (D6.1, see also www.ruralization.eu) published parallel to this one presents the first results.

Also outside the context of CEE, many issues of land grabbing has been observed and discussed (Kay *et al.*, 2015; Franco and Borras, Eds. 2013). Generally there is a trend of farmland concentration, which is of concern to many actors, including the European Parliament (EP, 2017b). Land privatisation has also been a strong movement in Western Europe. According to Christophers (2018) this has resulted in a *New Enclosure* of public land in the UK, which included not only urban land, but also land in rural communities and land used for forestry. Next to concentration in the agricultural sector, there is a use of land for artificial uses, such as urban areas, transport infrastructure and energy. In relation to the transfer of land used to produce food to land for fuel, the EU has issued a directive[3] to set limits to this as there is no climate gain in producing food in less sustainable manners to compensate for the disposition of food production in more sustainable places. This issue of displacement of land for food for other functions and the potential negative effects on climate gases is, however, not limited to disposition for the production of green fuels, but can also happen if land is taken for other non-food producing uses.

This consolidation in land use, comes to the expense of a wider distance between local rural development and the actual production on the land. The development of land markets and land holdings id so a complex issue in which many phenomena happen at the same time.

[3] Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (Text with EEA relevance), *Official Journal of the European Union*, L 239, p. 1–29. July 2019 the European Commission has requested 8 Member States to enact these 'EU rules on indirect land use change' (https://europa.eu/rapid/press-release_INF-19-4251_en.htm)

Hold out, speculation, option value

As indicated by Alexander (2014), land is used as investment asset. People hold land to speculate on price development. Urban development has, in addition, a specific investment feature: it is a real option. In practice the transfer of land from rural to urban is a one-directional movement. It is one-directional, because the extra investments – the improvements – in land during a development process are tight to the soil and cannot be made liquid again, apart from selling the land. The value of building materials after demolishment is usually a fraction of the investment made during construction. This one-directional feature makes that development of land is a real option (Titman, 1985). The value of an option is usually higher than the underlying value of the asset. There is a chance that the underlying value goes up, so there is value in waiting to develop land. Option values are higher in more volatile markets. The more uncertainty there is on future value development, the higher the price of an option. In urban regions this volatility is expected to be higher than in more declining rural regions, in which upward potential of property prices is lower. This makes that even if a potential big gain can be realised by developing land, developments may not commence as this gain is not running away, which results in land hoarding by development companies (Murray, 2020); a political response is than often to designate more land for development, which does not result in more house building (Davy, 1996), but has a negative effect on rural land markets and the opportunities for new generations of farmers to get access to land. The transfer to an urban densification policy in order to limit urban spawl is however no such an easy solution (Debrunner *et al.*, 2020) as the designation of extra land for urban development appears to be.

If such an option price can be attached to the land economically driven landowners will not take actions, such as selling the land for a rural price, which makes that this option will be destroyed. The potential of urban development will, in this way, result in less rural land market transactions. After all: 'The supply price is the seller's minimum asking price' (Hurlburt, 1958, 161), and this price will be based on potential urban use.

Development pressures in relation to fragmentation, may result in the issue of hold outs in the case that a consolidation of the land is needed to cash the development value. The extra value resulting from assembling these property rights is known as synergistic value or marriage value (Sim *et al.*, 2002; Kien Hwa, 2008; Boydell and Baya, 2011). Theory and game simulations (Goswami *et al.*, 2017), have shown that a more than proportional amount of the synergistic value goes to the last landholder that is consolidated to the area. This holdout issue may consequently fuel suburbanization, as development initiative does not take place in the urban areas (Miceli and Sirmans, 2007; Isaac *et al.*, 2016). Initiative does not pay (Korthals Altes, 2019), because not the first entrants to a land assembly are rewarded, but the ones that come in last. These hold-outs are a specific issue of market failure, which adds to the costs of overcoming issues of fragmentation.

Supply and demand curves, volume of transactions, price, access to land

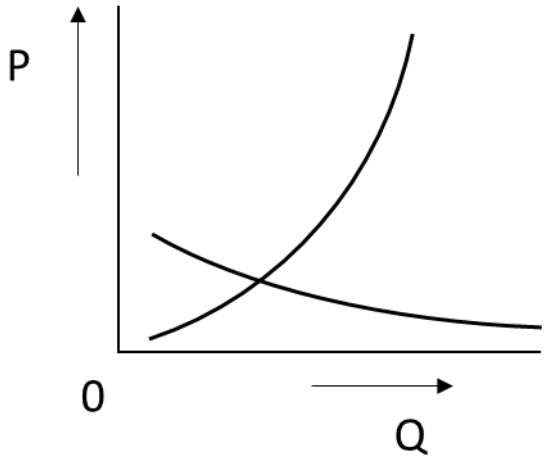


Figure 1 Supply (rising)and demand (descending) curves of rural land relating to prices (P) and quantities (Q) of supply and demand

The market situation as sketched can be illustrated with supply and demand curves (Figure 1). The quantity (Q) of supply is limited as the area of land is limited and no extra land can be produced. Most of the supply becomes available at prices (P) that are much higher than what current demand may offer. Most of demand is for land which is below the current market price (were curves cross) and is so not resulting in a market transaction. The issues of transaction costs, including fragmentation, make it more difficult to come to a transaction and causes that the actual crossing of the curves, moves to the left in Figure 1, i.e., even less transactions take place. This is an issue for new generations that aim for access to land as they may demand land for a lower price than the market currently supplies.

Most agricultural land markets have a low 'land mobility' the number of transactions is low. This can be explained by the specific situation on the land market, as explained above, and the practice of family farming in which land is transferred between generations in a family and not sold on the open market. This low mobility of land, in relation to specific localised nature of data and context, makes that methods of analysis as the hedonic price analysis, which are used in, for example, the housing market, face a shortage of data (Valtiala, 2020). It is so difficult to analyse the agricultural land market that researchers in Finland sighed recently: 'Perhaps, agricultural land market is not a competitive market at all' (Valtiala *et al.*, 2019, 14). Although the researchers had access to the not openly available transaction data from the national land survey, it was impossible to find a sufficient economic rationale in the price development to ascertain that the market was guided by the laws of competitive markets.

3 Methodology

3.1 NUTS 3 data collection

For this task data is collected from different sources, to allow for a regional analysis of land markets. Here a first emphasis was on EU wide regional data (Table 1). Most of the data is from EUROSTAT. However, the EEA has some very relevant insights in land cover statistics (Figure 2), including land cover flows. There is a tight relationship between land market developments and land use changes.

EUROSTAT does not cover regionalised land price data for all member states. So additional sources have been gathered for these Member States (Table 2). Although definitions of land prices may be different than what EUROSTAT uses – there is for example no differentiation between forests and agricultural areas in the Austrian figures , it provides more insight than no data at all. In addition, it provides relative differences of regions within a Member State.

Data provider	Data	Level
European Environmental Agency (EEA)	Land cover and change 2000-2018 (EEA, 2019)	NUTS 3
EUROSTAT	Population, *including development, age structure, gender* [demo_r_pjanind3; demo_r_gind3]	NUTS 3
	Gross regional product, purchasing power [nama_10r_3gdp]	NUTS 3
	Agricultural land prices by region [apri_lprc]	NUTS 2
	Agricultural land renting prices for one year by region [apri_lrnt]	NUTS 2
	Farm indicators by agricultural area, type of farm, standard output, sex and age of the manager [ef_m_farmang]	NUTS 2
	Land use: number of farms and areas of different crops by agricultural size of farm (UAA) [ef_oluaareg]	NUTS 2
Farm accountancy data network (FADN)	Economic size. labour input (paid and unpaid), Utilised Agricultural Area (UAA) Rented UAA, rent paid, decoupled payments received, depreciation, book value land, permanent crops & quotas (FADN, 2020)	FADN region (Figure 3)
Quality of government Institute	Quality of government, 2017, 2013 2010	NUTS 1/NUTS 2

Table 1: EU wide data sources for regional analysis

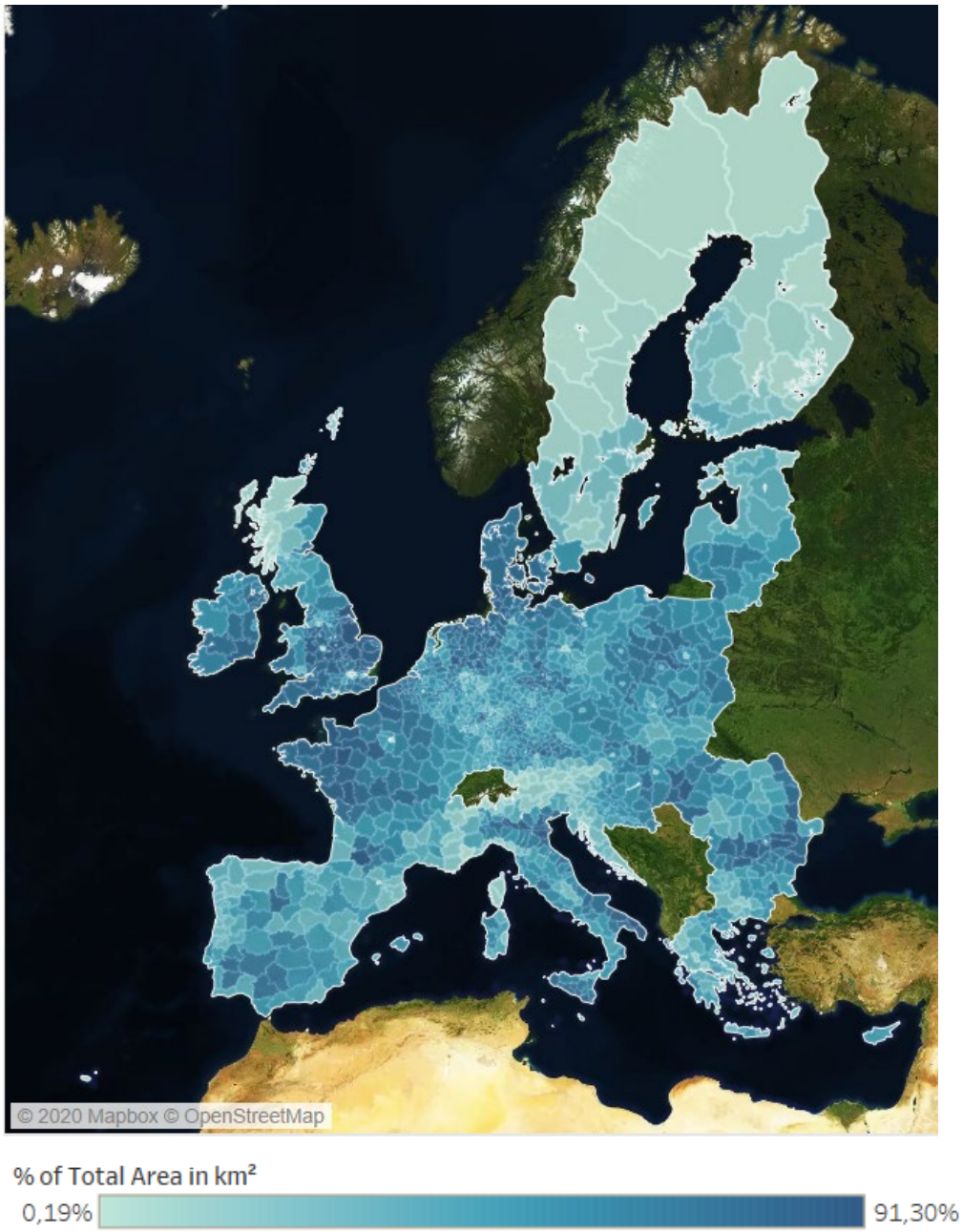


Figure 2 Percentage of agricultural land use per NUTS 3 area in 2018 (EEA, 2019)

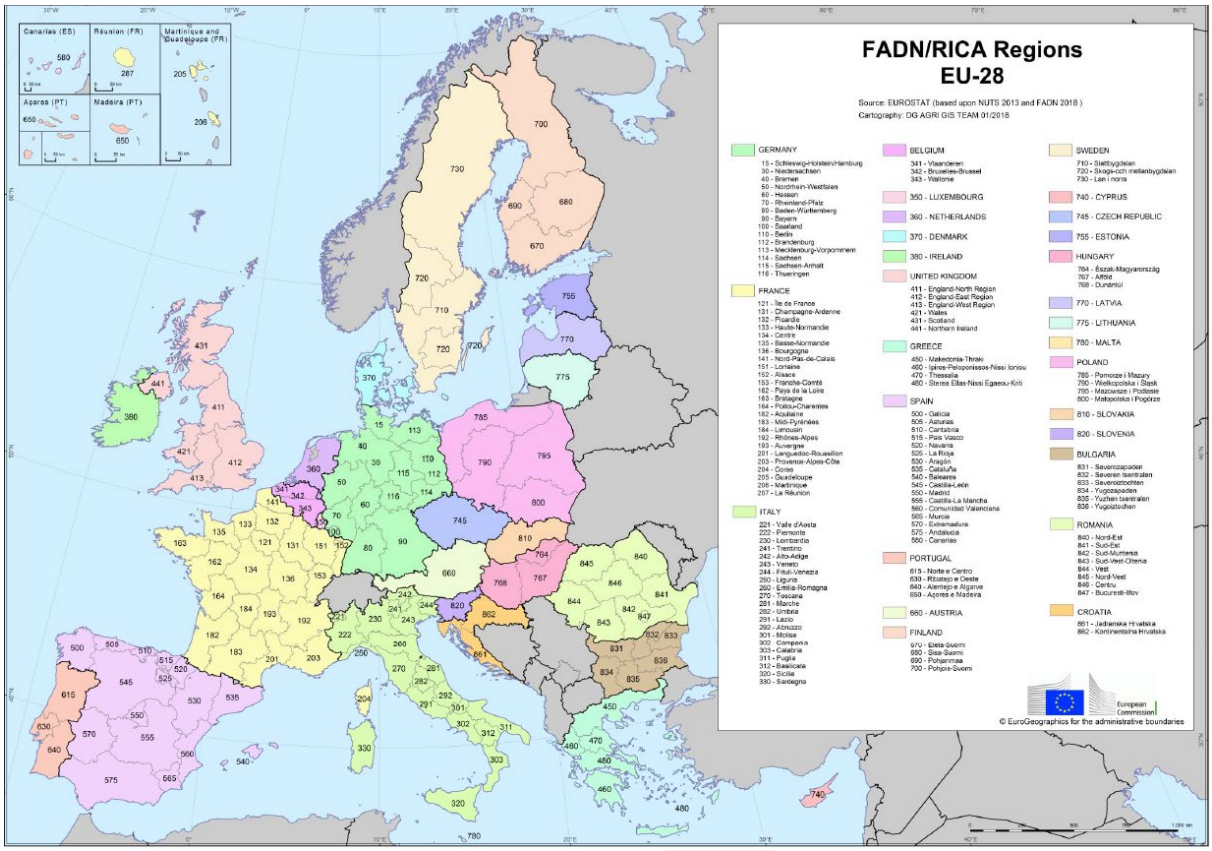


Figure 3 FADN regions (FADN, 2018)

Data provider	Data	Level
Arbeitskreis der Oberen Gutachter-ausschüsse, Zentralen Geschäftsstel-len und Gutachterausschüsse in der Bundesrepublik Deutschland (AK OGA)	German land prices (AK OGA, 2019)	NUTS 3
Estonian Land Board	transaction database, transactions with arable land (Estonian land board, 2020)	NUTS 3
IMMOunited	Austrian land prices (IMMOunited, 2020)	LAU2[4]
Notaris.be	Belgian land prices (Notaris.be, 2019)	NUTS 2

Table 2: Additional national regional land price data

Next to data, also previous regional classifications have been sued, such as the urban-rural classification of EUROSTAT (Table 3). In section 3.2 the use of the classifications will be explained.

[4] The median price of LAU2 (local administrative units) within a NUTS 3 area have been used to present the NUTS 3 land price. In this way outliers have limited impact on the price

Classifications	On	Level
EUROSTAT	Island regions (EUROSTAT, 2019b).	NUTS 3
	Mountainous regions (EUROSTAT, 2019b).	NUTS 3
	Urban, Intermediate, rural (EUROSTAT, 2019b).	NUTS 3
	Close to the city, remote (Dijkstra and Poelman, 2008)	NUTS 3
Quality of Government Institute	Classification of QoG (Charron *et al.*, 2019b)	NUTS 1/NUTS 2

Table 3: Regional classifications used

3.2 Typology of regions

Previously many typologies have been developed, such as, in the EDORA project (Copus and Noguera, 2010; Copus, 2013) and EU FP6 Specific Targeted Research Project FARO-EU (Foresight Analysis for Rural Areas Of Europe) (van Eupen *et al.*, 2012).These typologies have not been focused on the analysis of rural land markets. Some of them have not been very stable, i.e., the EDORA update (Copus, 2013) shows quite a different picture of performance as the original one (Copus and Noguera, 2010);so it can be expected that the 2020 picture will differ widely again.

Therefore, a novel typology has been developed at the level of NUTS-3 regions. In total there are 1348 NUTS 3 regions (Table 4). There are considerable differences in the average population of NUTS-3 regions between Member States. The Member State with the largest population (Germany) has relatively small NUTS-3 areas. These German regions are much smaller than in, for example, France, Italy, Poland or Spain, which results in that, quantitatively, Germany dominates the number of NUTS-3 areas (Table 4).

There is a group of NUTS-3 regions that we do not analyse further because there is hardly any or no agricultural or even rural land market to be analysed. Examples are NUTS-3 regions in Paris, the NUTS-3 areas in Inner London, Athens, Riga but also Ceuta and Melilla in Spain and many German NUTS-3 areas as, many towns and cities and the surrounding countryside are different NUTS-3 areas in Germany. This is defined as regions with artificial land uses are over 50% (A: 115 regions) or artificial land uses are below 50% but agricultural area is below 2000 ha (B: 12 regions) (based on EEA 2018 land use data: CORINE at NUTS 3 area level (EEA, 2019)).

Member State	All		No or few rural land		Other NUTS 3 areas	
	NUTS areas	Average population	NUTS 3 areas	Average population	NUTS 3 areas	Average population
AT	35	253,108	1	1,897,491	34	204,744
BE	44	260,353	1	1,215,290	43	238,145
BG	28	250,001			28	250,001
CY	1	875,899			1	875,899
CZ	14	760,700	1	1,308,632	13	718,551
DE	401	207,030	46	401,409	355	181,843
DK	11	527,826	2	666,076	9	497,103
EE	5	264,964			5	264,964
EL	52	206,242	4	625,031	48	171,343
ES	59	795,543	2	84,759	57	820,483
FI	19	290,417			19	290,417
FR	101	663,494	4	1,707,164	97	620,456
HR	21	194,107			21	194,107
HU	20	488,638	1	1,752,286	19	422,130
IE	8	613,030			8	613,030
IT	110	548,723	1	873,935	109	545,740
LT	10	279,418			10	279,418
LU	1	613,894			1	613,894
LV	6	319,995	1	632,614	5	257,471
MT	2	246,780			2	246,780
NL	40	432,054	1	872,211	39	420,768
PL	73	520,176	6	855,910	67	490,110
PT	25	411,065			25	411,065
RO	42	462,249	1	1,829,897	41	428,892
SE	21	487,152			21	487,152
SI	12	173,409			12	173,409
SK	8	681,303			8	681,303
UK	179	372,330	55	397,866	124	361,004
Total	1348	380,914	127	525,163	1221	365,910

Table 4 NUTS-3 Areas and 2019 Population (EUROSTAT)

Another specific group are the Outermost regions. These are in France: the 5 NUTS-3 regions of Guadeloupe, Martinique, Guyane, La Réunion and Mayotte, in Portugal: the 2 NUTS-3 regions of Azores and Madeira and in Spain: the 7 NUTS-3 regions of the Canary Islands (El Hierro, Fuerteventura, Gran Canaria, La Gomera, La Palma, Lanzarote, Tenerife). Except Guyane, these regions are all islands. The regions also differ. Tenerife (950 thousand inhabitants, Gran Canaria (865 thousand inhabitants) and La Réunion (858 thousand inhabitants) are classified as urban, but, for example, the Canary Island of El Hierro (11 thousand inhabitants) is rural. These 14 regions have specific arrangements for agriculture and regional development funding and they do not receive decoupled payments (DP) as part of the Common Agricultural Policy (CAP). The impact of the CAP on land markets is in Outermost regions different from other regions. Moreover, the location may have specific land market contexts. A large variety within this group is expected.

For the resulting group of regions, which includes 99.7% of EU agricultural and forest areas (Table 5) a typology is developed.

Regions	NUTS3 areas		Population	Land	Artificial surfaces	Agriculture	Forests and transitional woodland shrub
No or few rural land	127	9.4%	13.0%	0.5%	5.9%	0.2%	0.1%
Outermost regions	14	1.0%	1.0%	0.2%	0.3%	0.1%	0.1%
Other	1207	89.5%	86.1%	99.3%	93.7%	99.7%	99.7%
Total	1348	100%	100%	100%	100%	100%	100%

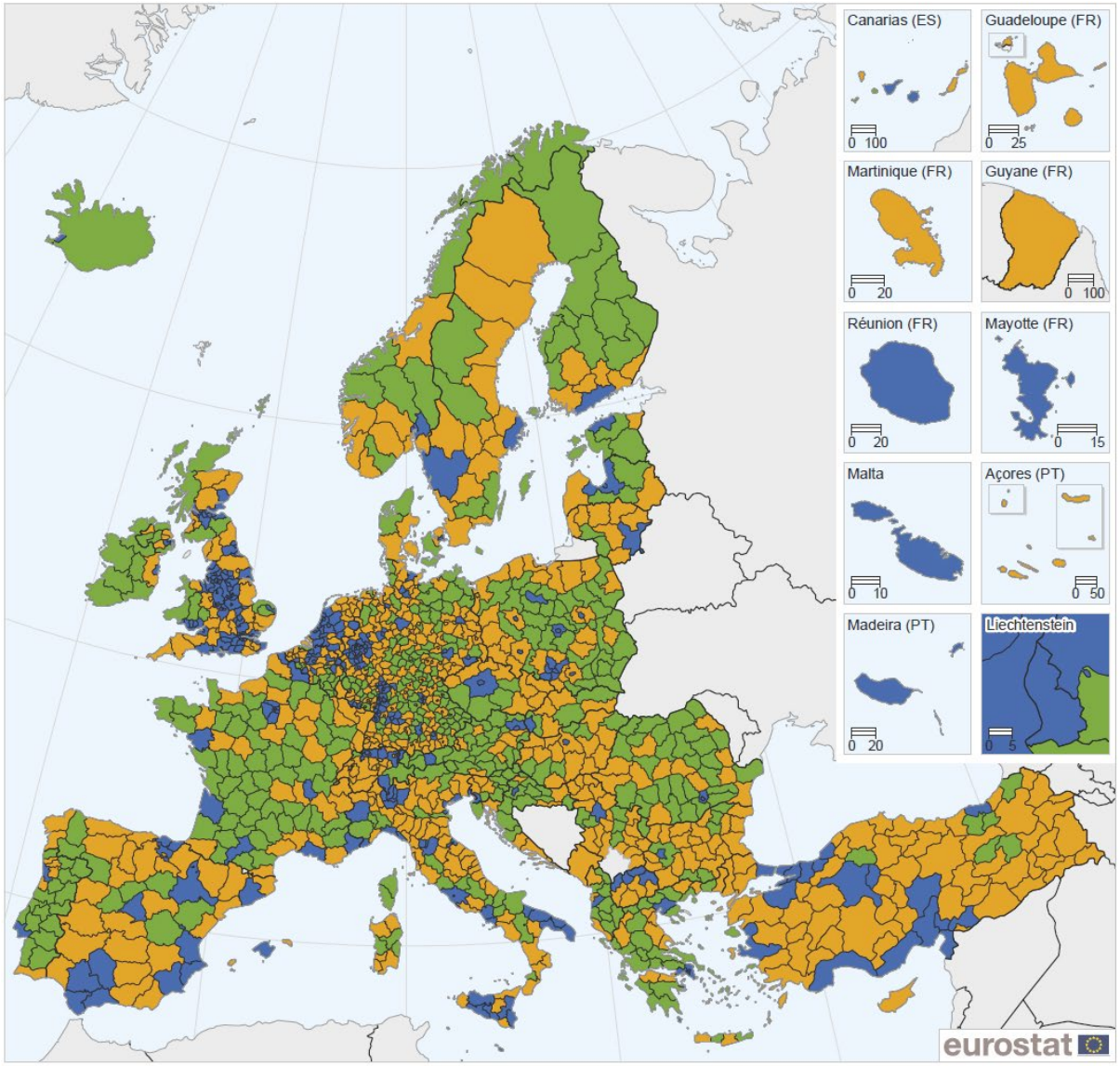
Table 5 Groups of NUTS-3 regions and the allocation of 2019 population (EUROSTAT) and 2018 land use (EEA, 2019).

In the following typology the following criteria will be used.

- The EUROSTAT classification of NUTS-3 regions as urban, intermediate or rural.
- The EUROSTAT classification of NUTS-3 regions as remote or close to the city.
- The EUROSTAT classification of NUTS-3 regions as having over 50% of its territory in a mountainous area.
- The ratio of decoupled payments (DP) and rent. This is based on the level of FADN regions (a regional division of the EU based on the Farm Accountancy Data Network). It is based on the ration (using FADN data) of decoupled payments per hectare utilised agricultural area (UUA) and rents per rented UUA. This ratio can be low <0.95, medium 0.95≤DP/rent≤1.59, or high >1.59) (FADN, 2020).
- The quality of government (QoG) based on the 2017 regional survey of the quality of government institute. This QoG can be high >0.524, medium –0.669≥QoG≥0.524, or low <–0.669. The boundaries of division are based on clusters 1 and 2, 3 and 4 and 5 and 6 in a report of the Quality of Government Institute of the University of Gothenburg (Charron *et al.*, 2019b).

EUROSTAT's Classification of NUTS-3 regions as urban, intermediate and rural (Figure 4) is based on the concentration of the population (EUROSTAT, 2019b). Basically, the classification, firstly, classifies 1-km2 grid cells as being part of urban clusters (contiguous cells with over 300 inhabitants per square kilometre with at least 5,000 inhabitants in total) or rural (the other grid cells), and, secondly, evaluates which share of the population lives in urban clusters. If over 80% of the population lives in urban clusters, the region is predominantly urban, between 50% and 80% of population in urban clusters, the region is intermediate and below 50% the region is rural (see for more details: EUROSTAT, 2019b). There are two main adjustments in this typology. First, small NUTS-3 regions (<500 km2) are combined with neighbouring regions, and second, NUTS-3 regions including a large city are classified as intermediate, if over 25% of the population in an otherwise rural region lives in a city of over 200,000 inhabitants, or urban, if over 25% of an otherwise intermediate region, lives in a city of over 500,000 inhabitants (EUROSTAT, 2019b). Note that this classification does not say anything about the presence of rural land; it is about where the people live. An urban NUTS-3 region may, in theory, have a lot of rural land with rural communities present. The location of this rural land in an urban NUTS-3 region (in which over 80% of the population lives in an urban cluster or where there is a city of over 0.5 million people, has, of course, impact on the rural land market. In urban NUTS-3 areas there will be much more pressure for accommodating urban functions,

displacing rural functions. This may impact land price directly, but also may more indirectly impact the willingness to sell land for a price based on rural land use. So, access to land for new farmers may become difficult. In rural regions this effect will be less.



Note: based on NUTS 2016 and GEOSTAT population grid from 2011, additional data from Columbia University, Center for International Earth Science Information Network - CIESIN (2015): GHS population grid.

Source: Eurostat, JRC and European Commission, Directorate-General Regional and Urban Policy and Directorate-General Agriculture and Regional Development

Figure 4 Urban-Rural Typology (EUROSTAT, 2019b)

The EUROSTAT classification of NUTS-3 regions as remote or close to the city is based on travel time. A NUTS-3 region is close to a city as over 50 percent of the population can drive within 45 minutes to a city of at least 50,000 inhabitants (Figure 5). Other regions are remote (Dijkstra and Poelman, 2008).

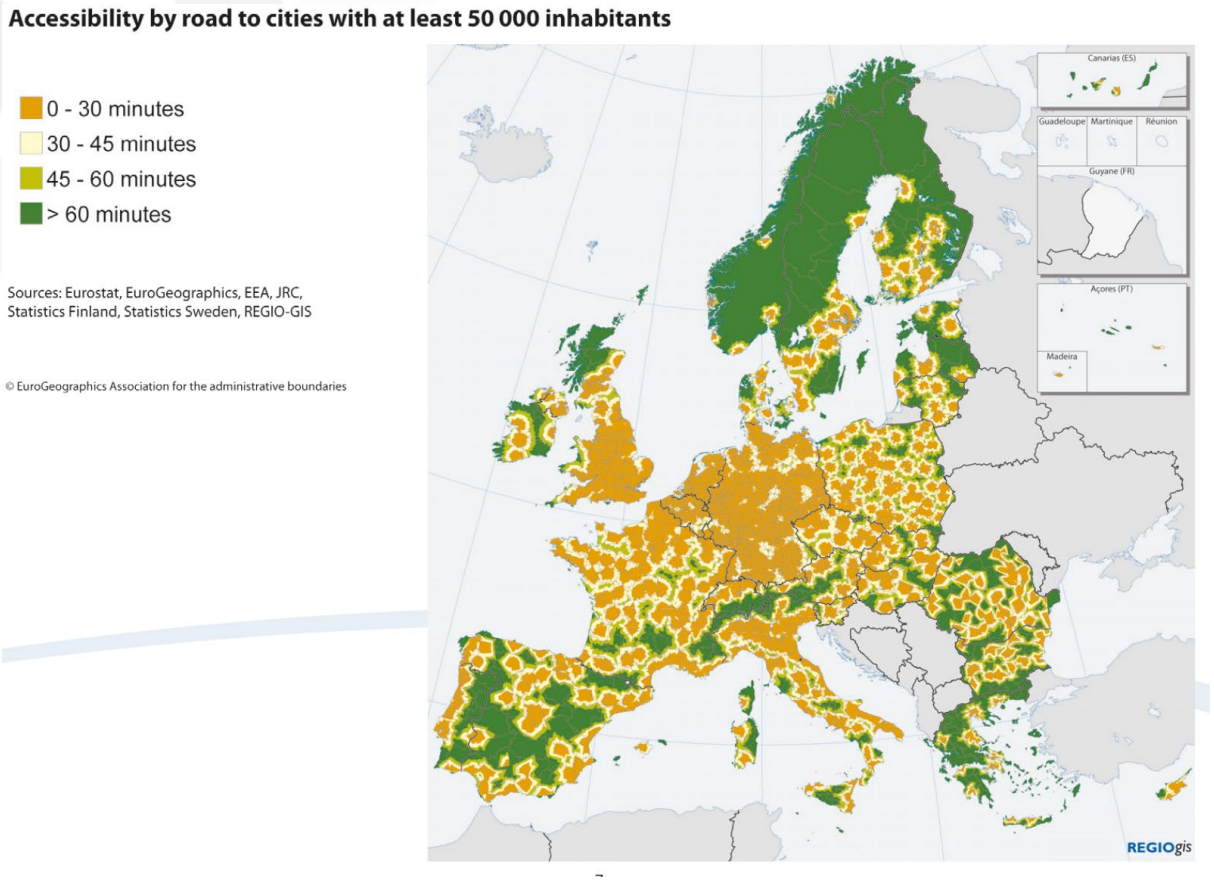


Figure 5 Remoteness (Dijkstra and Poelman, 2008)

In EUROSTAT's mountainous regions classification, there are 4 categories: non-mountainous regions, regions in which over 50% of the area is of mountainous topography (Box 1), regions in which over 50% of the population lives in mountainous areas, and regions in which population and area are both over 50% in topographically mountainous areas (EUROSTAT, 2019b). As the typology is used for analysing rural land markets, our main interest is in the mountainous area and we will so focus on the difference between regions in which over 50% of the area is mountainous and other regions (Figure 6).

‘• areas with elevation ≥ 2 500 m — all areas are considered mountainous (included within the mountain areas delimitation);
• areas with elevation 1 500 m - < 2 500 m — areas within a 3 km radius of a DEM point that have a slope > 2 degrees are considered mountainous;
• areas with elevation 1 000 m - < 1 500 m — at this altitude areas have to meet at least one of two criteria:
  • areas within a 3 km radius of a DEM point that have a slope > 5 degrees are considered mountainous;
  • areas that are less steep may still be considered mountainous if the elevations encountered within a 7 km radius of a DEM point vary by at least 300 m;
• areas with elevation 300 m - <1 000 m — are considered mountainous if the elevations encountered within a 7 km radius of a DEM point vary by at least 300 m;
• areas with elevation < 300 m — for each point of the DEM, the standard deviation for the elevations of eight cardinal points surrounding it (north, northeast, east, south-east, south, south-west, west and north-west) is calculated; if the standard deviation is greater than 50 m, then the landscape is considered sufficiently undulating to be mountainous (despite its low elevation).’

Box 1: Definition of mountainous topography using a digital elevation model (DEM) (EUROSTAT, 2019b, 109)

The classification of mountainous area is taken into account as traditional agricultural systems in mountainous areas have often been dissolved (MacDonald *et al.*, 2000). Some of these areas face abandonment. A recent study has investigated the risks of NUTS 2 areas to face abandonment, but they have not studied abandonment itself (Terres *et al.*, 2015). MacDonald at al. found in an analysis of 24 mountainous case study regions that ‘at the regional level of analysis, 21 out of 24 areas cited abandonment of farmland, at a variety of scales and degrees of severity, as one of the main pressures on the environment’ (MacDonald *et al.*, 2000, 52). More partially abandonment is refraining from the use of remote grazing land or the transfer of steep lands from agriculture to forest land. These case study areas are not all defined by NUTS 3 but often based on the mountain area. Other case studies have shown that even after decades of abandonment, anthropogenic remnants can be found in the mountain landscape (Latocha *et al.*, 2019). In Slovakia about 80% ‘of the area of abandonment of arable land and grasslands was found in the mountains’ (Pazúr *et al.*, 2014, 126). Many mountainous areas have made a shift to an economy of tourism. Note that a large share (nearly half) of the remote NUTS 3 areas is mountainous. There are however more mountainous areas that are close to the city than that are remote. The definition of close to the city is based on that a majority of the population of the NUTS 3 areas is within commuting time of a city. Within a mountainous area there may be natural barriers that may make that there are large differences in commuting time within the region.

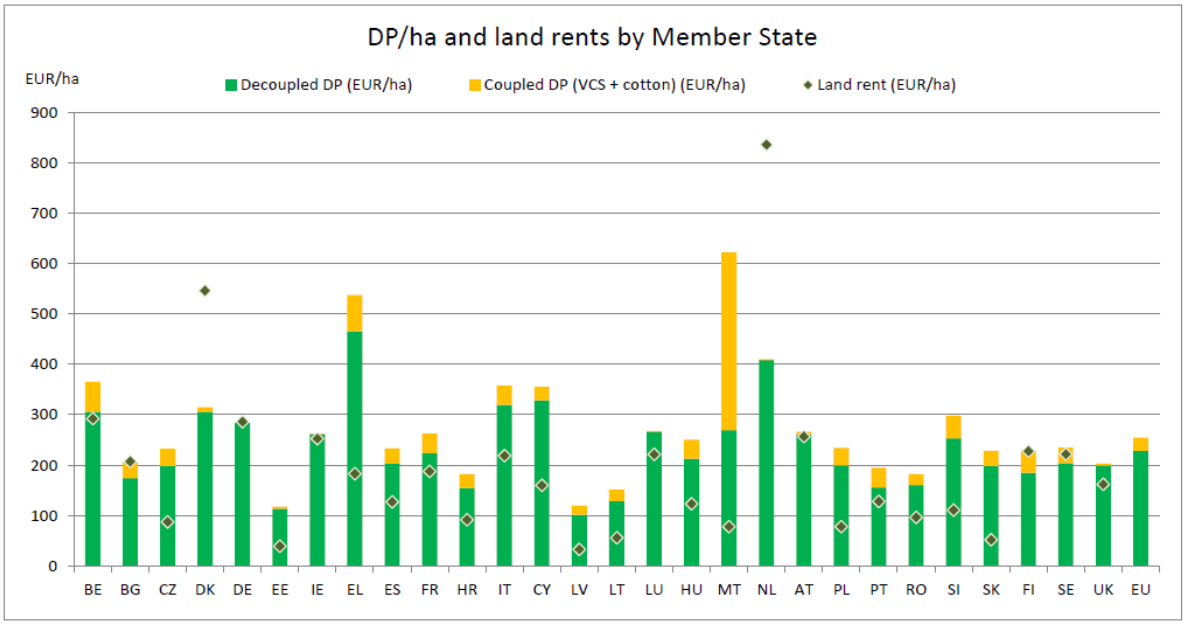
Figure 6 Mountainous NUTS-3 regions (over 50% of the area)

Payments from the Common Agricultural Policy capitalise in land values (Ciaian *et al.*, 2010; Ciaian *et al.*, 2014; Ciaian *et al.*, 2018). Next to high land values, the CAP also contributes to late retirement (Dwyer et al., 2019). After all, holders of agricultural land who keep the land in good agricultural and environmental condition are eligible for the decoupled payments of the current CAP (Brady et al., 2017). Even with less labour put in the land, the decoupled payments, often in combination with state pensions, may provide a living wage to older farmers (Dwyer et al., 2019). The CAP is in this way not only a solution for the stagnation of generational renewal but also a cause of it.

The way the CAP impacts on land markets depends on the conditions of the land market in relation to CAP entitlements. Land market conditions may depend on national regulations, regional land market conditions and regional differences in the distribution of CAP-funds. It is complex to measure the specific regional distribution of CAP funding (Bonfiglio *et al.*, 2016). The EU's accounting mechanisms are not primarily set up with statistical objectives in mind. Furthermore, final data is only available after the closure of a period of the multiannual framework. This is not unique to the CAP; also the regionalisation of how financial instruments in EU regional policy has been allocated to which NUTS 2 regions can only be established using several assumptions (Wishlade *et al.*, 2019). The allocation of CAP funding to different regions is quite consistent over time. With the introduction of decoupled payments, members states have chosen models that subsidies stayed the same either per farm ('historical model'} or per region ('regional model') or a system combining these models (Ciaian *et al.*, 2018). In all of

these cases, the regional distribution shows a high consistency over time and is continuation of previous funding based on production.

The impact of the Common Agricultural Policy on land markets may be different based on the relationship between decoupled payments and rent (Figure 7, Figure 8). Decoupled payments are especially relevant as these are allocated based on upkeeping land in a decent shape. The land does not have to produce any crops. The FADN dataset, which uses FADN regions as underlying regionalisation is used to establish this.



Sources: 2016 AGREX for DP, 2016 CATS for PEA and 2015 FADN for land rents.

Note: (DP: direct payments; VCS: voluntary coupled support) VCS: 'a production-limiting scheme that can only be granted to a list of sectors and productions in sectors or regions where specific types of farming or specific agricultural sectors particularly important for economic, social or environmental reasons undergo certain difficulties.' (EC, 2018, 13)

Figure 7 Decoupled payments (DP and rent per Member State (EC, 2018, 13)

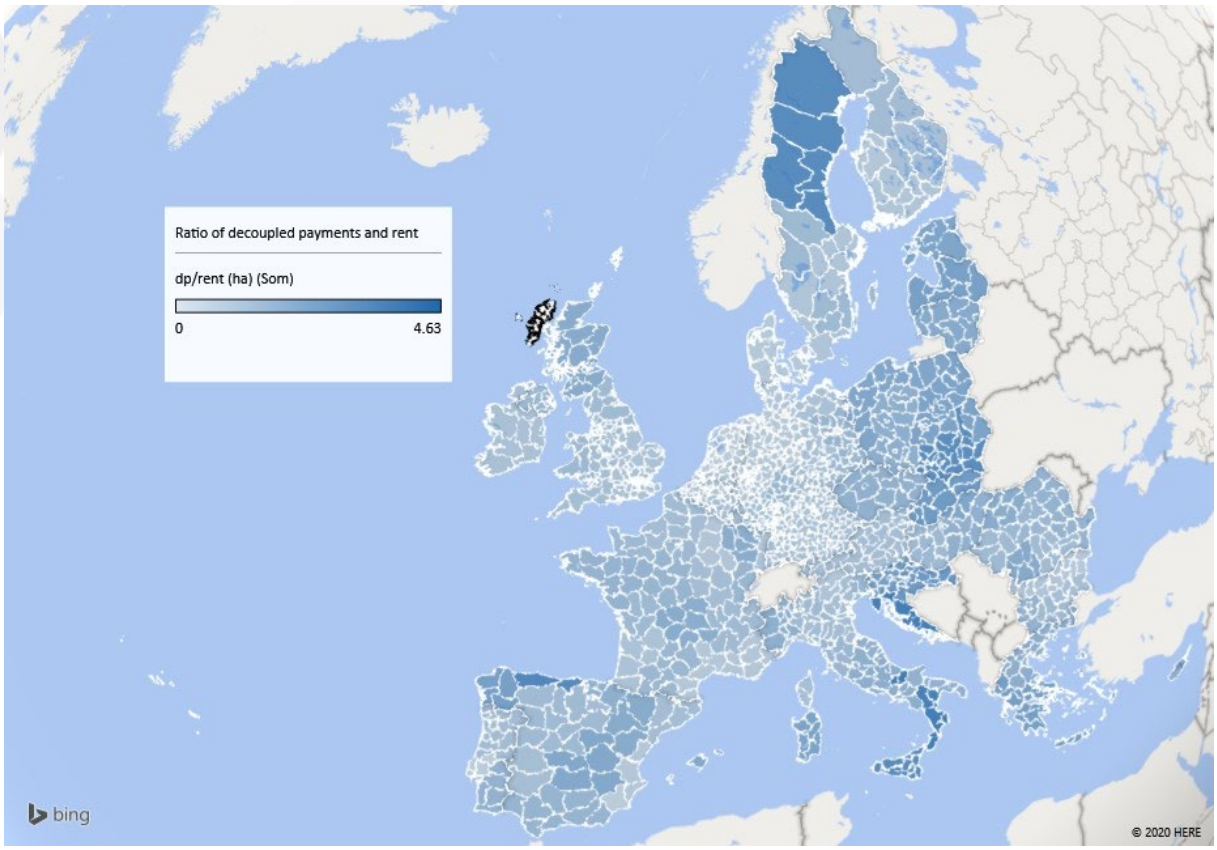


Figure 8 Ratio of decoupledpayments and rent (FADN)

A Quality of government indicator is used based on the survey of the Quality of Government institute performed in 2017 (Charron *et al.*, 2019a). Previous surveys have been performed in 2013 and 2010. The data is regional, but at NUTS-2 or NUTS-1 levels (Figure 9). It enables to consider regional differences in Quality of Government, which especially in some larger Member States can be considerable. This measure is taken into account, because the functioning of land markets and the way how CAP-contributions impact land markets may work-out differently in different contexts of quality of government.

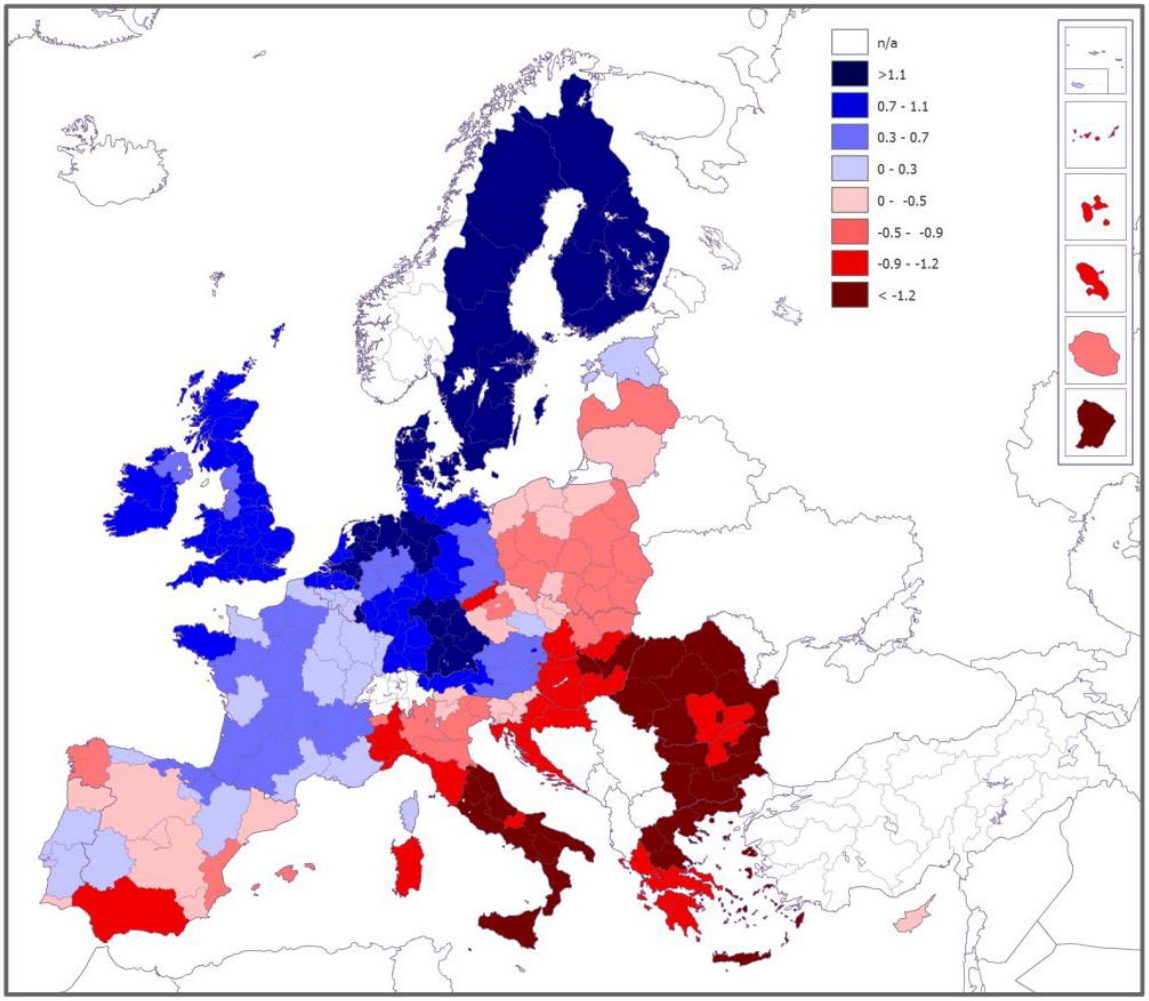


Figure 9 Quality of Government (in EQI) in the EQI 2017 survey (Charron et al., 2019b, 32)

Based on the criteria described above regions can be classified. If all criteria would be crossed many potential types of areas would occur. This could go up to 108 (=3 (urban/intermediate/rural) *2 (close to the city or remote) *2 (mountainous or not) *3 low, medium or high rate of decoupled payments to rent) *3 (low, medium or high quality of government)). However, not all of these exist (there are by definition no urban-remote regions), but, moreover, some of the differences may not explain differences in land markets. Not all of these combinations are conceptually necessary for the analysis of land markets.

In relation to the urban-intermediate-rural classification and the classification close-to-the-city versus remote, the areas will be grouped in 4 categories: 1. Urban, 2. Intermediate, close to the city, 3. Rural close to the city and 4 Remote (this can be both intermediate and rural).

EUROSTAT uses a population grid to define the difference between intermediate and rural areas. In intermediate regions between 50% to 80% of the population lives in population concentrations of over 5,000 inhabitants, defined as contagious grid cells with a population of over 300 inhabitants per km². In remote intermediate areas (Box 2), there are no big cities as if most of the population is within commuting distance of a city over 50,000 inhabitants, it is no longer remote. Remote intermediate areas are, in this way, remote areas of small towns. For the rural land market – and this is where the analysis is about – there is so no major city

influence, nor easy access to a large urban labour market. It includes islands, mountain areas, remote coastal areas and the most Northern region of Sweden. For the typology they will be grouped with remote rural areas.

BG312	Montana	ITC14	Verbano-Cusio-Ossola
BG313	Vratsa	ITC20	Valle d'Aosta/Vallée d'Aoste
BG333	Shumen	ITC44	Sondrio
BG413	Blagoevgrad	ITF62	Crotone
EL413	Chios	ITG14	Agrigento
EL421	Kalymnos, Karpathos, Kos, Rodos	ITG16	Enna
EL511	Evros	ITG29	Olbia-Tempio
EL521	Imathia	ITI45	Frosinone
EL532	Kastoria	LT028	Telsiu apskritis
ES422	Ciudad Real	LT029	Utenos apskritis
ES431	Badajoz	LV003	Kurzeme
ES432	Cáceres	PT11C	Tâmega e Sousa
ES531	Eivissa, Formentera	SE221	Blekinge län
ES533	Menorca	SE311	Värmlands län
FI1C4	Kymenlaakso	SE321	Västernorrlands län
FI1C5	Etelä-Karjala	SE332	Norrbottens län
HR034	Sibensko-kninska zupanija	SI044	Obalno-kraska
HR037	Dubrovacko-neretvanska zupanija	UKF24	West Northamptonshire
HU322	Jász-Nagykun-Szolnok	UKK30	Cornwall and Isles of Scilly
HU332	Békés	UKM62	Inverness & Nairn and Moray, Badenoch & Strathspey

Box 2 Remote Intermediate NUTS 3 areas (excl. Outermost regions and regions with no or few rural land))

Combining these regions with the mountainous regions classifications provides an overview of population and land uses (Table 6). This overview shows that Intermediate areas close to the city (40.4%) and Rural areas close to the city (30.1%) cater for most of the agricultural land. Remote areas are the largest group in forests. The overview shows that many remote areas are mountainous, but also that there are even more mountainous areas in intermediate areas close to the city. It also shows that pasture and mosaic farmland have relative a larger share in more remote, more mountainous areas.

Urban, rural, close, remote	Mountainous	NUTS3 areas		Population	Land	Artificial surfaces	Agriculture	*Arable land & perma-nent crops*	*Pastures & mosaic farmland*	Forests and transitional woodland shrub
Urban	Total	248	20.5%	36.5%	10.4%	24.8%	11.7%	*12.3%*	*10.7%*	7.3%
	<50% area	208	17.2%	28.5%	7.6%	20.4%	9.1%	*9.4%*	*8.6%*	5.1%
	>50% area	40	3.3%	8.0%	2.8%	4.4%	2.6%	*2.9%*	*2.1%*	2.3%
Inter-mediate close to the city	Total	492	40.8%	39.7%	36.8%	42.5%	40.4%	*43.7%*	*35.3%*	34.1%
	<50% area	367	30.4%	27.9%	25.2%	31.7%	30.3%	*34.0%*	*24.3%*	22.0%
	>50% area	125	10.4%	11.8%	11.6%	10.8%	10.2%	*9.7%*	*10.9%*	12.1%
Rural close to the city	Total	298	24.7%	16.8%	24.8%	22.3%	30.1%	*28.0%*	*33.3%*	22.5%
	<50% area	237	19.6%	13.5%	19.7%	18.5%	26.0%	*25.2%*	*27.3%*	16.3%
	>50% area	61	5.1%	3.3%	5.1%	3.9%	4.1%	*2.8%*	*6.1%*	6.3%
Remote	Total	169	14.0%	7.0%	28.0%	10.4%	17.8%	*16.0%*	*20.7%*	36.0%
	<50% area	88	7.3%	4.2%	19.5%	6.9%	12.8%	*12.3%*	*13.6%*	26.5%
	>50% area	81	6.7%	2.8%	8.5%	3.5%	5.0%	*3.7%*	*7.1%*	9.5%
Total		1207	100.0%	100.0%	100.0%	100.0%	100.0%	*100.0%*	*100.0%*	100.0%

Note: percentages refer to the total of 1207 regions and do not include Outermost regions and regions with no or few rural lands. This has especially impact for population and artificial surfaces (Table 5).

Table 6 Division of NUTS 3 regions population, land and land uses by the classification of regions as urban/rural/remote and mountainous area.

This results in the following overview (Table 7 Number of NUTS 3 regions) of the regions exclusive regions with no or few rural land and outermost regions) based on the criteria set above. The population (Table 8), area (Table 9) and agricultural land area (Table 10) of these regions varies.

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	<50% area	100	49	12	2	16	14		4	11
	>50% area	3	7	4	4	5	1	3	4	9
Intermediate close to the city	<50% area	166	71	10	6	29	41	5	15	24
	>50% area	17	17	1	5	16	17	3	13	36
Rural close to the city	<50% area	81	40	10	5	35	37	2	7	20
	>50% area	3	23		2	5	11		3	14
Remote	<50% area	14	13	6	2	8	18	5	4	18
	>50% area	2	7	4	4	9	6		4	45

Table 7 Number of NUTS 3 regions

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	<50% area	49.6	17.1	4.3	4.9	23.2	8.7		4.5	13.6
	>50% area	0.5	3.6	2.4	7.0	7.9	1.0	1.3	3.2	8.6
Intermediate close to the city	<50% area	41.6	16.5	3.6	4.7	17.2	21.6	1.3	5.7	11.1
	>50% area	3.0	6.3	0.2	3.2	8.5	11.1	0.5	6.3	13.1
Rural close to the city	<50% area	12.8	6.3	4.7	1.5	9.7	15.4	0.2	2.6	6.3
	>50% area	0.3	3.6		0.7	1.0	2.7		0.8	5.4
Remote	<50% area	3.7	2.9	0.7	0.3	2.1	3.4	0.7	1.1	3.5
	>50% area	0.2	0.6	0.5	0.6	2.0	1.3		0.8	6.6

Table 8 Population (in million inhabitants)

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	<50% area	12982	3762	1651	809	3564	4103		3680	2634
	>50% area	89	832	796	3222	1278	1727	387	1215	2595
Intermediate close to the city	<50% area	28320	11237	10371	3466	11533	25512	2071	7533	9638
	>50% area	1797	4493	764	2658	8915	11023	770	7734	12229
Rural close to the city	<50% area	17708	10826	6145	2142	14234	22046	545	3438	8440
	>50% area	232	5243		1141	1838	4532		1378	7684
Remote	<50% area	8244	28691	14009	691	8610	14743	1621	2014	6041
	>50% area	196	2128	8958	2256	4588	3084		2159	13503

Table 9 Area of NUTS 3 regions (in 1,000 ha)

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	<50% area	5838	2496	1017	305	1932	2062		2574	1824
	>50% area	40	299	219	1327	321	1003	65	556	1321
Intermediate close to the city	<50% area	15502	6250	1914	1881	7971	13977	1486	4321	6697
	>50% area	637	1490	186	680	3688	4319	302	3470	5404
Rural close to the city	<50% area	10441	4456	4259	1086	9963	13512	361	2256	5230
	>50% area	69	1904		150	607	1618		611	3132
Remote	<50% area	3990	1843	669	383	5015	7487	1055	1270	3646
	>50% area	69	235	440	410	1927	1251		662	4959

Table 10 Agricultural land in 2018 (In 1,000ha)

There are 60 cells with values in the regions (4 empty cells). In the typology some of the cells will be merged if for the sake of the analysis the differences between these regions are less relevant for the specific type (Table 11) for each type a specific code will be used (Table 12, Table 13, Figure 10).

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	Combined	103	56	16	6	21	15	3	8	20
Intermediate close to the city	<50% area	166	71	10	6	29	41	5	15	24
	>50% area	17	17	1	5	16	17	3	13	36
Rural close to the city	<50% area	81	40	10	5	35	37	2	7	20
	>50% area	3	23		2	5	11		3	14
Remote	<50% area	14	13	6	2	8	18	5	4	18
	>50% area	2	7	4	4	9	6		4	45

Table 11 Combining regions in different types and number of NUTS 3 regions

Urban, rural, close, remote	Mountainous	High QoG			Medium QoG			Low QoG		
		ratio DP/Rent			ratio DP/Rent			ratio DP/Rent		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
Urban	Combined	U-C-H-L	U-C-H-MH		U-C-M-A			U-C-L-A		
Intermediate close to the city	<50% area	I-N-H-L	I-N-H-MH		I-N-M-A			I-C-L-LM		I-C-L-H
	>50% area	I-M-H-A			I-M-M-A					
Rural close to the city	<50% area	RC-N-H-L	RC-N-H-MH		RC-C-M-LM		RC-C-M-H	RC-C-L-A		
	>50% area	RC-M-H-A								
Remote	<50% area	RE-C-H-A			RE-C-M-A			RE-N-L-A		
	>50% area								RE-M-L-A	

Note: The classifications or Urban, Intermediate close to the city, Rural close to the city and remote is based on EUROSTAT's classification. Remote includes Rural and Intermediate remote areas. The classification of Mountainous is based on EUROSTAT. The Quality of Government is based on the 2017 survey of the Quality of Government Institute (Charron *et al.*, 2019a; Charron *et al.*, 2019b). An index of above 0.524 is high, below –0.669 is low, medium is in between. The ration of decoupled payments and rent is based on FADN data over 2017. If the relation between DP per hectare utilised agricultural area (UUA) and rent per hectare rented UUA is below 0.95 the ration DP/rent is low, if it is above 1.59 it is high, in between it is medium.

Table 12 Codes for types

	Urban, Intermediate, Rural, Remote	Mountainous	Quality of Government	Ratio of Decoupled Payments and rent
U-C-H-L	Urban	Combined Mountainous and non-Mountainous	High QoG (>0.524)	Low (<0.95)
U-C-H-MH	Urban	Combined Mountainous and non-Mountainous	High QoG (>0.524)	Medium + High (≥0.95)
U-C-M-A	Urban	Combined Mountainous and non-Mountainous	Medium QoG (–0.669≥QoG≥0.524)	All
U-C-L-A	Urban	Combined Mountainous and non-Mountainous	Low QoG (<–0.669)	All
I-N-H-L	Intermediate-Close to the city	less than 50% of the area	High QoG (>0.524)	Low (<0.95)
I-N-H-MH	Intermediate-Close to the city	less than 50% of the area	High QoG (>0.524)	Medium+High (≥0.95)
I-M-H-A	Intermediate-Close to the city	over 50% of the area	High QoG (>0.524)	All
I-N-M-A	Intermediate-Close to the city	less than 50% of the area	Medium QoG (–0.669≥QoG≥0.524)	All
I-M-M-A	Intermediate-Close to the city	over 50% of the area	Medium QoG (–0.669≥QoG≥0.524)	All
I-C-L-LM	Intermediate-Close to the city	Combined Mountainous and non-Mountainous	Low QoG (<–0.669)	Low+Medium (≤1.59)
I-C-L-H	Intermediate-Close to the city	Combined Mountainous and non-Mountainous	Low QoG (<–0.669)	High (>1.59)
RC-N-H-L	Rural - Close to the city	less than 50% of the area	High QoG (>0.524)	Low (<0.95)
RC-N-H-MH	Rural - Close to the city	less than 50% of the area	High QoG (>0.524)	Medium+High (≥0.95)
RC-M-H-A	Rural - Close to the city	over 50% of the area	High QoG (>0.524)	All
RC-C-M-LM	Rural - Close to the city	Combined Mountainous and non-Mountainous	Medium QoG (–0.669≥QoG≥0.524)	Low+Medium (≤1.59)
RC-C-M-H	Rural - Close to the city	Combined Mountainous and non-Mountainous	Medium QoG (–0.669≥QoG≥0.524)	High (>1.59)
RC-C-L-A	Rural - Close to the city	Combined Mountainous and non-Mountainous	Low QoG (<–0.669)	All
RE-C-H-A	Remote Rural and Intermediate areas	Combined Mountainous and non-Mountainous	High QoG (>0.524)	All
RE-C-M-A	Remote Rural and Intermediate areas	Combined Mountainous and non-Mountainous	Medium QoG (–0.669≥QoG≥0.524)	All
RE-N-L-A	Remote Rural and Intermediate areas	less than 50% of the area	Low QoG (<–0.669)	All
RE-M-L-A	Remote Rural and Intermediate areas	over 50% of the area	Low QoG (<–0.669)	All

Note: there are also 14 Outermost regions (OUT) and 127 regions for which rural land markets are not analysed as they have no or few rural land (NO/FEW RL)

Table 13: Typology codes explained

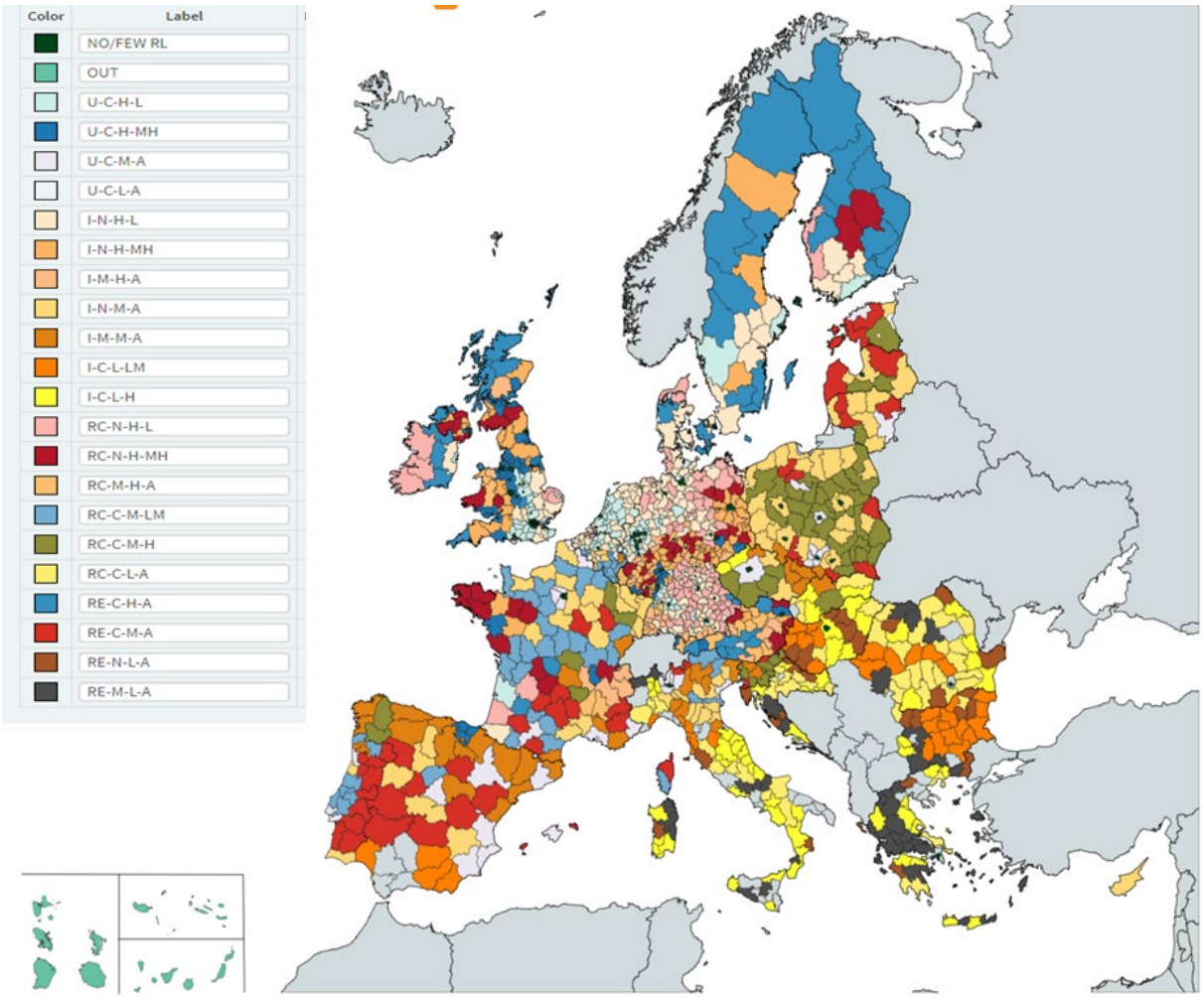


Figure 10 Typology of NUTS-3 regions based on [Urban, Intermediate, Rural-Close-to-the city, REmote] – [Mountainous,Non-mountainous, Combined] – [High, Medium or Low quality of government] – [Low, Medium or High ratio between decoupled payments and rent]

Type	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK	MS per type	Regions per type
NO/FEW RL	1	1			1	46	2		4	2		4		1		1			1		1	6		1				55	15	127
OUT										7		5											2						3	14
U-C-H-L		8				44					1	1			1						21				2			25	8	103
U-C-H-MH	3					20				3		2																44	5	72
U-C-M-A		4			1			1		7		7				9	1			2		8	2						10	42
U-C-L-A			1						4	4			1			19								1			1		7	31
I-N-H-L		14				106	5				4	1			1						17				7			11	9	166
I-N-H-MH	2					52						2						1							3			21	6	81
I-M-H-A	5					24						4																2	4	35
I-N-M-A		4		1	2			1		5		17				12	5		2			25	2					11	76
I-M-M-A		1			4					14		5				7						2	2			2	1		9	38
I-C-L-LM			14							4				6		6								6					5	36
I-C-L-H			2		2				10				5	5		27								6			3		8	60
RC-N-H-L						70	1				2	2			3						1							2	7	81
RC-N-H-MH	6					25					2	9																8	5	50
RC-M-H-A	10					12						2																2	4	26
RC-C-M-LM		12								1		23				4							7						5	47
RC-C-M-H					4			1		2		4					1		1			26				8	1		9	48
RC-C-L-A			2						3				7	2		10								20			2		7	46
RE-C-H-A	8					2	3				10	2			3										9			9	8	46
RE-C-M-A								2		10		11				1	3		2			6	10			2			9	47
RE-N-L-A			5						4				5	6		3								4					6	27
RE-M-L-A			4						27				3			11								4					5	49
MS in # types	7	7	6	1	6	10	4	4	6	11	5	17	5	5	4	12	4	1	4	1	4	6	6	7	4	3	5	10	28	

Table 14 Allocation of types over EU member states and UK

Table 14 Allocation of types over EU member states and UK shows that that the new types (apart from the Outermost Areas), can be find in at least 4 Member States. Most prolific are the Intermediate-Non-Mountainous, Medium QoG-All ratios DP/Rent (I-N-M-A) in 11 Member States and Urban-Combined-Medium QoG-All ratios DP/Rent (U-C-M-A) in 10 Member states. Note that both of these types have not the most NUTS 3 regions. Most regions can be found in types in which many German NUTS 3 regions can be found, like the Intermediate-Non-Mountainous-High QoG-Low ratio DP/Rent (I-N-H-L) type, which has 166 regions in 9 Member States of which 106 regions in Germany alone.

The overview per Member State (Table 14) shows that France has the highest regional diversity with 17 types of regions. Other countries with large diversity are Italy (12 types), Spain (11 types) and Germany and the UK (both 10 types).

4 Analysis of results at level of EU, Member states and groups of regions

4.1 Quantitative differences between types of regions

Some key data on population and land use can be found in Table 15

Type	Population (mln.)	Artificial land (1000 km2)	Agricultural land (1000km2)	Forests and transitional woodland shrub (1000km2)
NO/FEW RL	66.7	13.2	4.0	2.1
OUT	4.9	0.7	2.9	1.9
U-C-H-L	50.1	18.3	58.8	42.0
U-C-H-MH	27.5	9.7	40.3	12.6
U-C-M-A	52.6	16.0	69.5	40.8
U-C-L-A	31.1	7.5	63.4	21.3
I-N-H-L	41.6	20.6	155.0	90.7
I-N-H-MH	20.1	10.3	81.6	93.5
I-M-H-A	9.6	4.6	23.1	30.3
I-N-M-A	43.5	23.9	238.3	120.4
I-M-M-A	22.8	9.5	86.9	87.8
I-C-L-LM	13.8	8.1	95.8	57.9
I-C-L-H	24.1	11.2	121.0	62.7
RC-N-H-L	12.8	7.5	104.4	52.1
RC-N-H-MH	11.0	7.3	87.2	59.7
RC-M-H-A	4.0	2.4	19.7	24.2
RC-C-M-LM	12.9	8.6	118.1	53.9
RC-C-M-H	18.2	10.6	151.3	94.7
RC-C-L-A	15.4	10.1	115.9	74.5
RE-C-H-A	8.6	7.2	72.5	371.9
RE-C-M-A	9.6	5.8	164.7	118.2
RE-N-L-A	5.3	4.5	59.7	23.2
RE-M-L-A	7.5	4.3	56.2	60.2
Total	513.5	221.8	1990.3	1596.6

Table 15 Key data on types (EUROSTAT and EEA)

More specific differences in land use are presented in Table 16. It shows, as expected, large differences in artificial land uses as percentage of the area. The gradient of urban (largest percentage) via remote and rural close to the city to remote (lowest percentage) is as expected. It shows that mountainous regions usually have a smaller percentage of arable land and crops than other regions. Remarkable is that the percentages of pastures and mosaic farmland are (except for the regions with no or few agricultural lands and the remote regions with high QoG, i.e. northern Nordic areas which are covered by forests) quite constant

between 14.2% and 28.6 %, which outliers are both in urban regional types. It also shows that forests are a considerable land use in almost all types of regions.

	Artificial surfaces	Arable land & permanent crops	Pastures & mosaic farmland	Forests and transitional woodland shrub	Natural grass-land, heath-land, sclerophyllous vegetation	Open space with little or no vegetation	Wetlands	Water bodies
NO/FEW RL	66.1%	11.2%	9.0%	10.3%	0.9%	0.2%	0.4%	1.9%
OUT	6.9%	7.2%	20.1%	18.4%	13.4%	33.4%	0.5%	0.1%
U-C-H-L	14.0%	26.9%	18.1%	32.1%	0.9%	0.3%	0.9%	6.7%
U-C-H-MH	13.7%	28.6%	28.6%	18.0%	6.6%	1.0%	2.6%	0.8%
U-C-M-A	10.9%	33.1%	14.2%	27.7%	11.1%	1.2%	0.6%	1.3%
U-C-L-A	7.1%	44.2%	16.2%	20.2%	8.2%	2.7%	0.5%	0.9%
I-N-H-L	7.3%	36.0%	18.8%	32.0%	0.9%	0.2%	1.0%	3.9%
I-N-H-MH	4.8%	20.3%	17.5%	43.3%	6.0%	0.5%	4.2%	3.5%
I-M-H-A	6.5%	10.1%	22.6%	43.0%	10.0%	4.8%	1.6%	1.4%
I-N-M-A	5.9%	42.6%	16.3%	29.7%	3.3%	0.3%	0.6%	1.4%
I-M-M-A	4.2%	23.6%	14.9%	38.9%	15.2%	2.5%	0.1%	0.6%
I-C-L-LM	4.5%	38.4%	14.5%	32.0%	8.1%	1.1%	0.4%	1.0%
I-C-L-H	5.1%	38.6%	16.8%	28.7%	7.7%	1.6%	0.5%	1.0%
RC-N-H-L	4.2%	32.6%	26.3%	29.4%	1.1%	0.5%	4.3%	1.5%
RC-N-H-MH	4.3%	23.7%	27.7%	35.2%	3.4%	0.1%	1.1%	4.6%
RC-M-H-A	4.4%	11.6%	24.4%	44.2%	11.2%	2.7%	0.8%	0.7%
RC-C-M-LM	4.5%	34.2%	26.8%	27.8%	3.6%	2.3%	0.2%	0.6%
RC-C-M-H	4.0%	35.7%	21.2%	35.6%	1.8%	0.2%	0.6%	0.9%
RC-C-L-A	4.7%	35.6%	18.4%	34.7%	4.2%	1.1%	0.2%	1.2%
RE-C-H-A	1.2%	5.1%	6.5%	59.8%	7.6%	2.9%	10.1%	6.8%
RE-C-M-A	1.7%	26.7%	21.8%	34.8%	11.3%	2.1%	0.6%	1.0%
RE-N-L-A	4.6%	44.6%	17.1%	24.0%	3.8%	0.6%	2.8%	2.5%
RE-M-L-A	2.7%	18.7%	17.2%	38.4%	18.4%	3.5%	0.2%	0.8%
Total	5.1%	27.9%	17.6%	36.5%	6.6%	1.5%	2.3%	2.5%

Table 16 Land use per type of region (in 2018, based on EEA Corinne data)

There are also ways to look at inequality within regions. Here the GINI index is often used (Kay *et al.*, 2015; EP, 2017a). At the level of the EU agricultural land holdings are very inequal with a GINI index of 0.81 in 2016. A GINI index of 0 means that all are equal and of 1 that it is completely unequal. Although there are large movements in land holdings in the EU (the number of farmers decreased between 2005 and 2016 with 28.7% (EUROSTAT)), this index is quite stable (Source authors based on EUROSTAT
Table 17) as there is a kind of balance between the outflow of very small farmers and the concentration of land in the hands of a few very large farmers. In this method less small land holdings means less inequality and more large farmers means more inequality. At the regional level the inequality of land holdings is smaller. This can be explained by an example. The most equal region in the EU in relation to land holdings is the Região Autónoma da Madeira (PT) with a GINI of 0.14. On Madeira 98.5 % of the farmers hold land smaller than 2 hectare and they own together over 85% of the land. The average size of a farm is 0.4 ha, which is by far

the smallest average farm size of all EU NUTS 2 regions. Another rather equal divided region is the NUTS 2 region of Fryslan in the Netherlands. The GINI is 0.39. The average farm is here 50.9 hectare, which in the EU context is slightly above the average region (48.0 hectare) and above median (5/8 of the regions have a smaller and 3/8 of the regions have a higher average farm size). In Fryslan, 25% of the farmers hold 30 to 50 hectare and 35% hold 50 to 100 hectare. In their own context, these regions are so quite equal. Taken together, they are very unequal with many farmers with small holdings on Madeira and farmers with predominantly large holdings in Fryslan. There is so inequality between regions. The conditions, including climate and soil and institutional context, for farming on Madeira and in Fryslan are also quite different and it is so not so relevant to compare small landholdings on Madeira with large land holdings in Fryslan. The intraregional differences are much more important. The same works for the total of the EU: there is in general less inequality within regions than at the level of the EU (Table 17). However, there exist also regions that are so inequal that they are more unequal internally than the EU as a whole.

To put it differently, if a regional GINI is 0, all farmers in this region hold the same area of land, i.e., the regional average. If the GINI in a region is close to 1 almost none of the farmers hold the regional average area of land, but most of the farmers hold very small areas and most of the land is hold by a few farmers. The average farm size is different between EU regions, which is expressed by a higher GINI for the EU as a whole as for the average NUTS-2 region (Table 17).

	GINI EU as a whole	Average GINI NUTS 2 region	Number of farmers (million)
2005	0.81	0.64	14.2
2007	0.81	0.63	13.6
2010	0.82	0.62	12.0
2013	0.82	0.62	10.7
2016	0.81	0.62	10.2

Source authors based on EUROSTAT

Table 17 Development of GINI landholder rural land in the EU

There are considerable differences between the types of regions in relation to internal inequality (regional GINI), the development of this inequality and the average size of agricultural land holdings (Table 18). Note, that this average size hardly exists in areas with a high GINI. Only in areas with a low GINI, there are many farmers that hold about the average farm size. Table 18 also shows that in some types of regions, especially remote regions, intermediate and rural regions in areas with low quality of government and outermost regions, inequality was growing, but that in others it did not grow. The regions in which inequality has been growing tend to be more inequal than the regions in which inequality has been decreased. So there seems to be a divergence between inequal regions that become more inequal over time and less inequal regions that become more equal over time. This is measured over a, regarding structural land market changes, relatively short time of 11 years, but it may be a more continues development as it can be expected that remote regions, because of lack of alternatives, and regions with low quality of government, because of the institutional context, are less resilient to land grabbing.

Type	Regional GINI	GINI (2005=100)	Average farm size (ha)
NO/FEW RL*	0.59	94.6	61.7
OUT	0.70	102.1	6.9
U-C-H-L	0.55	94.2	54.9
U-C-H-MH	0.56	94.2	79.4
U-C-M-A	0.65	98.1	46.5
U-C-L-A	0.72	98.8	14.3
I-N-H-L	0.52	96.7	76.2
I-N-H-MH	0.56	93.0	104.8
I-M-H-A	0.57	95.9	60.3
I-N-M-A	0.63	97.5	42.3
I-M-M-A	0.67	97.0	44.3
I-C-L-LM	0.84	101.6	20.3
I-C-L-H	0.75	102.0	21.8
RC-N-H-L	0.50	99.5	94.2
RC-N-H-MH	0.52	97.4	81.9
RC-M-H-A	0.56	96.2	57.1
RC-C-M-LM	0.50	93.6	75.0
RC-C-M-H	0.58	93.3	35.9
RC-C-L-A	0.74	105.8	12.4
RE-C-H-A	0.56	107.0	56.0
RE-C-M-A	0.69	100.1	42.0
RE-N-L-A	0.81	105.1	15.8
RE-M-L-A	0.74	112.8	9.2
Total (weighted)	0.63	98.8	49.0

* Result not reliable

Table 18 Regional GINI in 2016, development of GINI since 2005 and average farm size per type of region, weighted for the agricultural area of the region

4.2 Land use

An important contextual factor for land markets are changes in land use. Changes in land use often have relationship with land market transactions. A different use of land involves in many cases a different user of the land. Differences between regional types in land use are relevant.

In all types of regions there has been a substantial relative growth of artificial surfaces (Table 19). Although relative to the existing artificial areas, this growth was lowest in regions with no or few agricultural lands, this is relative to the total area, still substantial as there are so few non artificial areas left in these regions, and probably part of the growth of artificial areas found its way to regions close to these areas. The median value is lower than the average value indicating that in many regions the values are low, in some of these regions the share of artificial land is almost 100%, and so the growth is concentrated in the regions with still a little non-artificial land. It also shows that although remote regions may face population decline, this does not result in a lower relative growth of artificial areas. In remote regions the relative

growth of artificial areas tends to be a little higher than rural areas close to the city. One of these types has even the highest relative growth of artificial surfaces of all types distinguished, which relates to several regions in Spain and Portugal that have shown a large sprawl of economic sites and infrastructure. However, the remote - non-mountainous – low quality of government (R-N-L-…) areas show relative a small growth of artificial areas. Notably is also the high growth in Outermost regions. As the EEA land use data do not cover the French outermost regions, this is mainly the Canary Island (ES) the Azores and Madeira (PT), areas which host many tourists. The impact of the relative growth of artificial areas on land for farming and forestry depends also on the share of artificial land

Region type	**Area of artificial surfaces relative to total area (average per type)**		**Development of artificial surface area between 2000 and 2018**	
	average	median	average	median
NO/FEW RL (no or few rural land)	69.3%	67.4%	1.4%	0.72%
OUT* (outermost regions)	6.2%	5.4%	10.9%	9.19%
U-C-H-L	23.1%	21.3%	5.2%	3.63%
U-C-H-MH	20.4%	18.2%	3.8%	2.61%
U-C-M-A	18.1%	15.8%	7.5%	5.64%
U-C-L-A	10.1%	7.4%	8.5%	6.07%
I-N-H-L	12.9%	9.5%	5.4%	4.19%
I-N-H-MH	12.1%	9.4%	4.4%	2.90%
I-M-H-A	7.1%	7.1%	3.1%	2.60%
I-N-M-A	8.0%	7.0%	8.2%	6.51%
I-M-M-A	5.8%	5.1%	11.0%	7.08%
I-C-L-LM	5.3%	5.3%	5.7%	2.99%
I-C-L-H	5.0%	4.5%	6.2%	5.23%
RC-N-H-L	7.1%	5.5%	5.3%	4.66%
RC-N-H-MH	5.6%	5.4%	5.2%	3.37%
RC-M-H-A	5.2%	5.1%	3.3%	2.27%
RC-C-M-LM	6.0%	5.0%	7.1%	5.14%
RC-C-M-H	4.2%	3.7%	5.6%	4.74%
RC-C-L-A	4.5%	4.5%	5.9%	3.70%
RE-C-H-A	2.6%	2.1%	8.5%	6.49%
RE-C-M-A	2.3%	1.7%	13.3%	6.87%
RE-N-L-A	4.8%	5.1%	3.6%	2.42%
RE-M-L-A	2.7%	2.5%	9.7%	6.35%
Total average per region	15.4%	7.1%	5.9%	3.97%
Total average	5.0%		6.1%	

*Without the French outermost regions

Table 19 Artificial land use and growth per type of region (EEA, 2019)

The fact that there is a large difference in the share of artificial area average per region and the EU average can be explained by the fact that guidelines for the definition of NUTS-3 regions suggest a certain size of the population per region. Densely populated regions, with a high share of artificial land, are a lot smaller in territory, than regions with a low population

density. These differences in territory have, consequently, impact on the comparison of regional shares of forests and nature and of the share of agricultural areas.

The EEA (2019) makes a distinction of land cover flows between urban sprawl (leading towards both continuous and discontinuous urban fabric) and sprawl of economic sites and infrastructure, the latter includes land take for industry, retail, roads, railroads, ports, airports, mineral extraction sites, dump sites, etc.. Remarkably is that the latter type of sprawl takes much more land than urban sprawl (Table 20). Most sprawl takes place in urban and intermediate areas. In some remote and rural close to the city areas, the share of urban sprawl in the land take by sprawl is smaller than in other types of regions. In relation to effects on land markets, the monetary value gain by a change of land use to economic sites and infrastructure will be in many cases, less than with urban sprawl. The compensation for infrastructure works is usually based on the current value of the land plus a compensation for ending current activities and not based on higher urban land values. So, this has a different impact on the land market.

Region type	Urban sprawl	Sprawl of economic sites and infrastructure	Sprawl 2000-2018 (ha)
NO/FEW RL	30.9%	69.1%	22,298
OUT	41.5%	58.5%	7,224
U-C-H-L	26.7%	73.3%	102,973
U-C-H-MH	19.9%	80.1%	48,858
U-C-M-A	21.9%	78.1%	142,275
U-C-L-A	22.9%	77.1%	69,313
I-N-H-L	28.8%	71.2%	122,537
I-N-H-MH	18.6%	81.4%	70,226
I-M-H-A	33.4%	66.6%	17,309
I-N-M-A	22.8%	77.2%	187,452
I-M-M-A	17.1%	82.9%	81,199
I-C-L-LM	12.7%	87.3%	46,593
I-C-L-H	19.3%	80.7%	61,979
RC-N-H-L	31.9%	68.1%	46,173
RC-N-H-MH	34.8%	65.2%	48,175
RC-M-H-A	20.9%	79.1%	11,454
RC-C-M-LM	26.8%	73.2%	55,466
RC-C-M-H	10.5%	89.5%	60,445
RC-C-L-A	15.1%	84.9%	38,697
RE-C-H-A	22.6%	77.4%	56,761
RE-C-M-A	10.2%	89.8%	62,052
RE-N-L-A	10.2%	89.8%	14,792
RE-M-L-A	11.0%	89.0%	36,054
Total	21.9%	78.1%	1,410,305

Table 20: Breakdown of sprawl between 2000 and 2018 per type of region (based on EEA, 2019)

There has been a decline of agricultural area between 2000 and 2018 (Table 21). Only one type of regions, the remote areas in high QoG regions, see in average a growth of agricultural

used land. However, the median value is still a decrease so most of these regions, the agriculture area is going down. The regions where this growth occur are located in Finland (growth of agricultural area of over 7% can be found in Keski-Pohjanmaa, Kainuu and Pohjois-Pohjanmaa), Sweden and the UK (in the Highlands and Islands of Scotland). As all of these regions are located in the far North of Europe, this may relate to climate change, making it more feasible to farm as climate change may make the growing season longer. After all, this is a type of region in which the share of agricultural land is relatively low. Most areas are being classified as forests and natural areas. The relative decline is largest in more urban regions and relatively small in more rural and remote regions. So, these figures per type, do not show a large tendency of land abandonment in rural remote areas. To establish this, a more focused analysis is necessary (see also section 5.1 Remote regions of this report and Table 22), as this is probably more a local, rather than regional, phenomenon.

Region type	**Agricultural area relative to total area**		**Development of agriculture area between 2000 and 2018**	
	average	median	average	median
NO/FEW RL (no or few rural land)	17.7%	17.0%	-3.7%	-1.93%
OUT* (outermost regions)	23.3%	20.0%	-1.5%	-0.34%
U-C-H-L	54.3%	57.7%	-1.9%	-1.18%
U-C-H-MH	52.1%	49.8%	-1.0%	-0.86%
U-C-M-A	45.6%	48.0%	-1.7%	-1.38%
U-C-L-A	52.9%	54.9%	-1.1%	-0.80%
I-N-H-L	62.6%	64.6%	-1.0%	-0.59%
I-N-H-MH	54.0%	52.6%	-0.7%	-0.48%
I-M-H-A	35.5%	35.6%	-0.5%	-0.38%
I-N-M-A	59.3%	61.5%	-1.0%	-0.77%
I-M-M-A	39.3%	37.5%	-0.7%	-0.65%
I-C-L-LM	51.8%	51.4%	-0.3%	-0.27%
I-C-L-H	54.1%	55.8%	-0.6%	-0.42%
RC-N-H-L	61.1%	63.9%	-0.6%	-0.42%
RC-N-H-MH	59.1%	59.4%	-0.2%	-0.27%
RC-M-H-A	35.9%	35.3%	-0.2%	-0.24%
RC-C-M-LM	57.9%	61.1%	-0.3%	-0.31%
RC-C-M-H	57.2%	59.0%	-0.4%	-0.36%
RC-C-L-A	55.2%	54.9%	-0.4%	-0.23%
RE-C-H-A	29.4%	15.7%	0.5%	-0.08%
RE-C-M-A	46.0%	43.2%	-0.4%	-0.25%
RE-N-L-A	61.6%	60.9%	-0.3%	-0.20%
RE-M-L-A	36.5%	34.1%	-0.3%	-0.24%
Total average per region	**49.4%**	50.8%	**-1.0%**	-0.52%
Total average	45.0%		-0.6%	

*Without the French outermost regions

Table 21 Agricultural land use and growth (EEA, 2019)

Within the agricultural sector, remote areas show larger dynamics than other areas (Table 22). Relative to the agricultural land use, these regions have not only high scores for the withdrawal from farming, which includes land abandonment, but also the conversion from

other land uses towards agriculture and the internal agricultural conversions. Internal agricultural conversions include land use changes, such as, from fields to pasture land or from fields to permanent crops (like olive trees). The conversion from other land uses towards agriculture 'hides' so the issue of land abandonment if only the development of the total area of agricultural land use is considered. If some areas convert from agriculture to forest and other areas convert the other way around the net conversion may be zero, but a lot has been going on in the diverse localities where this has occurred. In fact, remote areas are so, relative to other areas, more dynamic in land uses. Exchanges take place between forests and nature areas and agriculture. These dynamics do appear at a much lower scale in regions close to the city than in remote regions. Agricultural internal conversions are also high in medium and low quality of government regions, especially in respect to intermediate and urban regions. Land dynamics in remote regions is in this group remarkably low. The question is whether these changes of land use all have a land market effect. After all, in many remote regions farmers traditionally also hold both forest and farmland as part of a diversified land portfolio. In relation to changes in land use in more urban and intermediate regions, it might be so, the data does not provide this information, that these issues relate to enlargement of scales of farming as part of a process of consolidation of land holdings.

Type of region	Agricultural area in 2018	Agriculture internal conversions 2000-2018		Conversion from other land cover to agriculture 2000-2018		Withdrawal of farming 2000-2018	
	ha	ha	%	ha	%	ha	%
NO/FEW RL	404,050	1,373	0.34%	1,552	0.38%	588	0.15%
OUT	287,436	1,087	0.38%	1,170	0.41%	481	0.17%
U-C-H-L	5,877,573	11,435	0.19%	8,973	0.15%	11,148	0.19%
U-C-H-MH	4,031,082	4,962	0.12%	5,686	0.14%	2,736	0.07%
U-C-M-A	6,949,678	111,748	1.61%	14,852	0.21%	15,026	0.22%
U-C-L-A	6,340,798	126,912	2.00%	31,185	0.49%	5,502	0.09%
I-N-H-L	15,502,166	83,355	0.54%	13,515	0.09%	24,414	0.16%
I-N-H-MH	8,164,388	20,481	0.25%	9,229	0.11%	3,925	0.05%
I-M-H-A	2,312,721	4,447	0.19%	1,162	0.05%	454	0.02%
I-N-M-A	23,828,230	240,103	1.01%	36,126	0.15%	71,567	0.30%
I-M-M-A	8,686,663	113,416	1.31%	20,832	0.24%	10,463	0.12%
I-C-L-LM	9,579,119	154,798	1.62%	46,671	0.49%	19,563	0.20%
I-C-L-H	12,101,518	115,622	0.96%	14,660	0.12%	53,141	0.44%
RC-N-H-L	10,440,933	89,806	0.86%	14,562	0.14%	31,135	0.30%
RC-N-H-MH	8,715,141	19,099	0.22%	13,157	0.15%	7,667	0.09%
RC-M-H-A	1,973,111	2,204	0.11%	1,133	0.06%	241	0.01%
RC-C-M-LM	11,805,935	23,232	0.20%	9,277	0.08%	8,394	0.07%
RC-C-M-H	15,129,722	125,497	0.83%	10,746	0.07%	36,203	0.24%
RC-C-L-A	11,588,823	57,452	0.50%	9,171	0.08%	32,081	0.28%
RE-C-H-A	7,246,133	75,541	1.04%	51,619	0.71%	28,454	0.39%
RE-C-M-A	16,472,795	320,830	1.95%	81,398	0.49%	84,888	0.52%
RE-N-L-A	5,971,394	51,248	0.86%	11,463	0.19%	22,110	0.37%
RE-M-L-A	5,620,003	10,668	0.19%	8,982	0.16%	6,203	0.11%
Total	**199,029,412**	**1,765,316**	0.89%	**417,121**	0.21%	**476,384**	0.24%

Table 22 Agricultural land use and land conversions to farming, within farming, and withdrawal from farming between 2000 and 2018 (EEA, 2019)

The most divers picture is provided by the development of forests and natural areas (Table 23). The general picture is that there is a decline at EU level, but a small growth in the average regions. This can be explained by the fact that in some regions that had hardly any natural land, nature has grown substantially. The high average figure of the U-C-H-L group is based on growth in a few regions. One of these regions is Oost-Zuid-Holland (located in the 'Green Heart' of Holland). Here, the area of nature has grown over 500% between 2000 and 2018. This can be explained by the very low level of 2000. Such an outlier has a large impact on the average. The median figures provide so a better indication of what happens with most of the regions.

The large difference between the total average per region and the total average can be explained that EU regions with a lot of nature tend to be larger than regions with a few regions as population size and not the size of the area is more important in defining the size of the regions. A case in point are the remote regions in the North of Europe (many of them are in RE-C-H-A), which are very large in size and have so a large share of the EU's natural areas.

Region type	Area of forests and nature relative to total area		Development of area of forest and nature area between 2000 and 2018	
	average	median	average	median
NO/FEW RL (no or few rural land)	11.4%	6.89%	-0.7%	0.00%
OUT* (outermost regions)	70.1%	70.14%	-0.5%	-0.64%
U-C-H-L	19.0%	13.69%	6.0%	0.00%
U-C-H-MH	23.5%	19.41%	0.6%	0.00%
U-C-M-A	34.1%	31.64%	-0.6%	-0.19%
U-C-L-A	35.9%	32.63%	-0.6%	-0.14%
I-N-H-L	21.9%	16.81%	0.1%	-0.01%
I-N-H-MH	31.1%	33.86%	-0.2%	-0.02%
I-M-H-A	55.7%	55.97%	-0.1%	-0.06%
I-N-M-A	30.6%	30.23%	0.0%	0.02%
I-M-M-A	54.1%	55.60%	-0.2%	-0.14%
I-C-L-LM	41.7%	40.65%	0.0%	-0.04%
I-C-L-H	39.7%	37.51%	0.4%	-0.05%
RC-N-H-L	29.3%	28.05%	1.2%	-0.02%
RC-N-H-MH	32.9%	33.78%	-0.1%	-0.03%
RC-M-H-A	57.9%	57.39%	-0.1%	-0.04%
RC-C-M-LM	35.3%	33.34%	-0.3%	-0.06%
RC-C-M-H	37.3%	32.59%	0.1%	0.08%
RC-C-L-A	38.9%	40.70%	0.4%	-0.03%
RE-C-H-A	56.2%	68.65%	0.5%	-0.12%
RE-C-M-A	50.3%	50.26%	0.0%	-0.01%
RE-N-L-A	30.4%	32.31%	0.7%	0.00%
RE-M-L-A	59.6%	61.35%	-0.2%	-0.11%
Total average per region	**32.8%**	30.62%	**0.5%**	-0.04%
Total average	43.6%		-0.1%	

*Without the French outermost regions

Table 23 Use of land for forests and nature and growth (EEA, 2019)

4.3 Land prices

Land price data must be handled with greatest care. Many of the data are gathered from a higher level of abstraction at the size of NUTS 2 regions, which may include urban regions, rural regions and intermediate NUTS 3 regions at the same time. As EUROSTAT does not has the possession over land market data in all Member States, additional data has been gathered for most of the missing countries. Although these data, such as for Germany and Austria is available at the level of NUTS 3 regions, it uses slightly different definitions of what an agricultural land price is. In all cases, the data are sanitised to exclude family transactions or non-agricultural transactions, but the way this has been done is not in all cases beyond discussion. In some cases, this may be done by excluding outlier prices, which may, however, be agricultural transactions. There is, a large difference between types of land. The price for posh vineyards in France is much higher than for other agricultural land, but it is an agricultural land price. Therefore, median land prices are used as this limits the effect of outliers.

Notwithstanding these issues, an overview (Table 24) of land prices per type of region can be provided.

Type of regions	Median land price	Average land price
NO/FEW RL	€ 25,647	€ 35,326
OUT	€ 133,863	€ 75,518
U-C-H-L	€ 53,773	€ 51,078
U-C-H-MH	€ 22,790	€ 24,871
U-C-M-A	€ 11,845	€ 21,049
U-C-L-A	€ 34,381	€ 32,800
I-N-H-L	€ 34,999	€ 44,668
I-N-H-MH	€ 14,999	€ 16,070
I-M-H-A	€ 26,300	€ 34,999
I-N-M-A	€ 7,426	€ 14,158
I-M-M-A	€ 12,973	€ 18,319
I-C-L-LM	€ 5,066	€ 12,700
I-C-L-H	€ 21,089	€ 21,020
RC-N-H-L	€ 34,999	€ 42,601
RC-N-H-MH	€ 14,999	€ 13,956
RC-M-H-A	€ 22,790	€ 24,110
RC-C-M-LM	€ 7,130	€ 14,090
RC-C-M-H	€ 9,102	€ 10,308
RC-C-L-A	€ 5,009	€ 13,935
RE-C-H-A	€ 18,210	€ 20,026
RE-C-M-A	€ 7,130	€ 8,365
RE-N-L-A	€ 5,284	€ 8,012
RE-M-L-A	€ 17,850	€ 18,278
Total per region	**€ 22,440**	**€ 27,235**

(AK OGA, 2019; Eurostat, 2019a; Notaris.be, 2019; Estonian land board, 2020; IMMOunited, 2020)

Table 24 Land prices per type

The high median land price in Outermost regions can be attributed to the fact that most of these regions (7) are located at the Canary Islands and that the Canary Islands, with fertile volcanic land in a warm climate, have the highest land prices (at NUTS 2 level) in the EU. So, this median land price is the price at the Canary Islands. The French outermost regions have much lower prices (ranging from 3.2%, at Guadeloupe, to 8.4%, at La Réunion, of the price at the Canary Islands), and the prices paid in the Canary Island have no relevance for other Outermost regions. In many situations, variety rules. Land markets are based on local contexts and these differ largely. Just as between neighbourhoods in urban areas, there are differences between land prices within regions as many regions show a variety in their internal geography, such as between mountains and plains, soil conditions, solar orientation of hill sides, access to markets. However, there seems also to be national patterns of land prices (Table 25).Some member states, such as France or many countries in CEE have relative to other Member States low prices, others, i.e., the Netherlands, Denmark, Ireland, Italy, Slovenia and the UK, have relatively high prices, and a third group, with Greece, Spain and Sweden, has large regional differences in which most expensive regions have land prices of about 10 times as high as

lowest priced regions. Regional differences, high price of farmland on specific islands in Greece and Spain or the strong climatological differences between the North and South of Sweden play a role in this. The relationship between land prices and access to farming for new generations is a complex one. Poland has, for example, higher land prices than France, but has a much younger population of farmers.

Member state)	Land price (€ per hectare)	Region with lowest price (€ per hectare	Region with highest price (€ per hectare
Bulgaria	5,011	1,017	6,938
Czechia	7,572	6,748	8,179
Denmark	17,690	14,614	25,757
Estonia	3,174	3,174	3,174
Ireland	27,457	22,361	28,711
Greece	12,750	6,008	55,515
Spain	13,023	6,769	133,863
France	6,020	2,530	12,620
Croatia	3,285	3,178	5,629
Italy	42,569	23,002	55,797
Latvia	3,856	3,856	3,856
Lithuania	3,890	2,504	4,061
Luxembourg	35,110	35,110	35,110
Hungary	4,632	2,944	5,284
Netherlands	70,320	52,925	104,281
Poland	10,318	5,756	14,166
Romania	4,904	3,841	5,718
Slovenia	18,460	15,167	36,359
Slovakia	3,432	2,402	4,162
Finland	8,380	5,987	9,508
Sweden	8,845	1,697	17,767
United Kingdom	23,155	18,210	32,345

Note: EUROSTAT does not publish regional land price data on Austria, Belgium, Cyprus, Germany, Malta and Portugal

Table 25 Land price differences in Member States in 2018 (EUROSTAT, 2020)

The EUROSTAT data for rented properties provide less insight as more Member States and regional differences, such as for France, are missing. However, also here large differences between Member States can be observed. The price for one year of rent of the most expensive region of Flevoland (The Netherlands) is 50% higher than for full ownership in the most low-priced region of Yugozapaden (Bulgaria) (Table 26). Note that there are also other sources of regional data of the actual rent paid by farmers in relation to rented utilized agricultural area in the FADN-data. The EUROSTAT and FADN data are in some cases different for the same regions as the definition of what is measured is not the same. FADN measures the rent actual farmers pay and the rented area they have. EUROSTAT reflects the market rent. Farmers that have a secured tenure position may pay less than the current price on the open market. Also, in the market some regions may be more dominant than the regions where most farmers

work, that is, the geographies of new rental market transactions and current rental practices may be different.

Member state	FADN data	EUROSTAT data		
	Paid rent per rented utilized agricultural area (€ per hectare)	Rent for one year (€ per hectare)	lowest priced region (€ per hectare	highest priced region (€ per hectare
Belgium	324	n.a.	n.a.	n.a.
Bulgaria	231	256	153	358
Cyprus	161	n.a.	n.a.	n.a.
Czech Republic	123	114	98	125
Denmark	626	545	379	597
Germany	348	n.a.	n.a.	n.a.
Estonia	52	60	60	60
Ireland	314	300	250	328
Spain	131	154	103	1,119
France	190	144	144	144
Croatia	84	70	67	71
Latvia	43	62	62	62
Lithuania	66	100	99	109
Luxembourg	265	256	256	256
Hungary	139	164	119	201
Malta	106	83	83	83
Netherlands	1245	832	705	1,572
Austria	269	291	183	401
Poland	99	173	109	322
Portugal	148	n.a.	n.a.	n.a.
Slovakia	71	54	37	74
Slovenia	106	n.a.	n.a.	n.a.
Finland	266	235	143	299
Sweden	222	150	27	297
United Kingdom	166	n.a.	n.a.	n.a.

Table 26 One year rent per member state (EUROSTAT, 2020; FADN, 2020)

Standard deviations are not shown in Table 24 (price differences between regions may not have a normal distribution either), but these are high, the difference between median values and average values shows that the outcomes must be interpreted with care. It shows, moreover, the variety of rural land markets in the EU. The underlying differences are large and the data are often gathered at a high level of regional abstraction. NUTS 2 regions include many different locations and types of rural land. This roughness of the statistical data makes that a quantitative analysis would not bring much added value. For these kinds of analysis, such as, a hedonic price analysis of rural land (Woestenburg *et al.*, 2014; Mela *et al.*, 2016), transaction data is usually used, but the EU is much too large and to diverse in relation to land markets, data sources and land market institutions to qualify as background for a single study using hedonic analysis of land transactions. The hedonic analysis based on land transactions faces issues, including the question how to filter-out transactions within the family, which

often do not reflect an open market price, the way how land and properties on this land can be distinguished (prices with or without farm buildings and other improvements; which might be addressed by having perfect data), issues (and expectations) of urban and infrastructure development that may have impact on the price of specific plots of land, and the difference between the economic transaction (the deal, which may be broader than just a land transaction, that is closed between parties on a certain date) and the legal transaction (the transfer of land in the land register on a later date). One of the ways, this is done is by getting the lowest prices (family transactions), highest prices (urban transactions or high prices buildings) and too small transactions (no agricultural plot) out of the analysis, but this is often arbitrary, resulting in a selective sample of the transactions in which certain transactions that are not based on the market price are still in (family transactions with farm buildings), and others are out (more marginal land or high quality horticultural land). The result is so that many studies cope with 'unobserved heterogeneity and omitted variable bias' (Ritter *et al.*, 2020, 8), which makes it a complex issue to interpret outcomes.

Results from hedonic price analysis within a single region show that the cultivation system used has significant impact on land value (Sardaro *et al.*, 2021). Grape producers using more intensive cultivation systems, do not only get higher prices grapes, but combine a negative impact on the environment with higher land prices: so, the polluter does not pay, but pollution pays as intensive cultivation practices that harm the environment result in a higher land value (Sardaro *et al.*, 2021). Other studies show a large variety in the relationship between parcel size and land price (Ritter *et al.*, 2020). Here, both the agricultural efficiency of large parcels versus the diminishing returns of extra land for some high-intensity uses, which may not all be purely agricultural, plays a role.

4.4 Family farm and gender in access to land

The family farm plays a large role in farming in the EU. Both in practice as in the visions of Member States and the European Parliament (EP, 2017b) of the future of farming in the EU. Family farms, are no kind of real estate agents, actively trading to make speculative gains on the land and property markets, but for the family farm, access to land is a necessary asset to farm. The most important transactions in such a context of family farming is the transfer of the farm towards a new generation, which is no market transaction and which is excluded from land price statistics as published by EUROSTAT and other statistical organisations. Land value is than the burden that the new generations of farmers must bear to compensate their previous generation and their siblings if the farm is not fragmented over several siblings. To the positive side, the land value may, in some cases, be used as a collateral for investment in renewal of the farm, that is, to farm differently than previous generations have done.

State	Share of farm land managed by sole holder, spouse or family member of holder				
	2016	2013	development 2013=100	Region with largest share (2016)	Region with lowest share (2016)
Austria	91.8%	87.1%	105.4	95.2%	61.9%
Belgium	82.5%	85.0%	97.0	93.8%	33.5%
Bulgaria	45.0%	37.9%	118.6	69.9%	37.0%
Croatia	78.1%	66.8%	116.9	83.1%	77.1%
Cyprus	84.9%	87.1%	97.4	84.9%	84.9%
Czechia	29.9%	30.4%	98.6	43.%%	21.4%
Denmark	89.9%	92.1%	97.6	91.4%	87.2%
Estonia	35.0%	44.3%	79.1	35.0%	35.0%
Finland	80.4%	82.2%	97.7	83.3%	79.3%
France	36.6%	37.7%	97.1	88.4%	20.8%
Germany	63.6%	64.9%	97.9	92.9%	20.0%
Greece	99.4%	69.2%	143.8	99.9%	98.6%
Hungary	58.0%	53.0%	109.5	65.2%	47.4%
Ireland	98.7%	90.1%	109.5	99.2%	98.3%
Italy	92.4%	89.1%	103.7	99.3%	59.6%
Latvia	87.8%	85.0%	103.2	87.8%	87.8%
Lithuania	86.3%	86.7%	99.6	86.3%	86.3%
Luxembourg	88.0%	84.9%	103.7	88.0%	88.0%
Malta	95.4%	94.6%	100.9	95.4%	95.4%
Netherlands	93.4%	94.1%	99.2	97.7%	86.4%
Poland	91.4%	90.6%	101.0	99.1%	75.4%
Portugal	63.6%	64.1%	99.2	95.9%	47.2%
Romania	62.9%	55.6%	113.0	80.3%	32.9%
Slovakia	19.8%	19.3%	102.5	21.8%	16.8%
Slovenia	94.7%	94.6%	100.1	96.4%	94.0%
Spain	70.9%	66.5%	106.6	84.7%	60.0%
Sweden	69.0%	70.8%	97.4	78.0%	57.5%
United Kingdom	82.1%	72.5%	113.3	99.3%	60.7%
Total	68.0%	65.0%	104.7	99.9%	16.8%

Table 27 Share of farms managed by sole holders or family members (EUROSTAT, ef_mp_manleg, 2020)

EUROSTAT statistics show, however, very large differences between member states in relation the share of land that is managed by sole holder in the family, the spouse of the holder or another member of the family (Table 27). About two third of land is managed by families. Family farming has the lowest percentages in Central Eastern Europe, which includes the East of Germany, but with exception of the member states in which small farms were not nationalised or collectivised during communist times, that is, Poland, Slovenia and Croatia. Large percentages of family farms can also be found in Latvia and Lithuania, this may relate to the fact that in land restitution not only ownership rights have been redistributed to former owners, but also user rights to current users, which involved that the mismatch between land rights of those who owned the land decades ago and the current rural population, which included decedents of landless farmers, has been addressed (Giovarelli and Bledsoe, 2001).

Outside CEE there is an exceptional low share in France[5]. In France there is a difference between the North of France (including Loire and Lorraine), were the share of land managed by families is even smaller than the average, the South of France, where it is about 50/50 between families and others and the islands of Corse, Guadeloupe and La Reunion where families manage most of the land. As France is such a specific example in its geographical context, a longer time series of the development of the share of utilised agricultural area held by natural persons (which includes the small group of farm managers who are not a family member of the holder) are presented in Figure 11. It shows a general decline of relative land area of holdings by natural persons in almost all French regions between 2005 and 2016. In some regions, like Champagne-Ardenne and Picardie a rather small minority of farmland is held by natural persons. Almost all regions have moved towards less land held by natural persons. Again, the outermost regions and Corse provide a different picture. The low percentage of France may relate to land market regulations that are mainly focussed on regulating family farming – including a pre-emption right of the SAFER for the sale of an entire farm –, but do not regulate partial transactions, such as transactions of shares, in commodified properties. This difference (see also D6.2) may incentivise landholders and buyers (see French-Property.com, 2020) to seek for opportunities to step out of the regulated sector. After all, the regulations are not mend to support the interests of the owners, but of the farmers in a local context of rural development (Léger-Bosch *et al.*, 2020) and in many contexts it can be expected that loopholes in regulations will be used.

[5] The region in Belgium with only 33.5% of the land managed by the holders and their families is Brussels, which is an outlier of limited agricultural relevance.

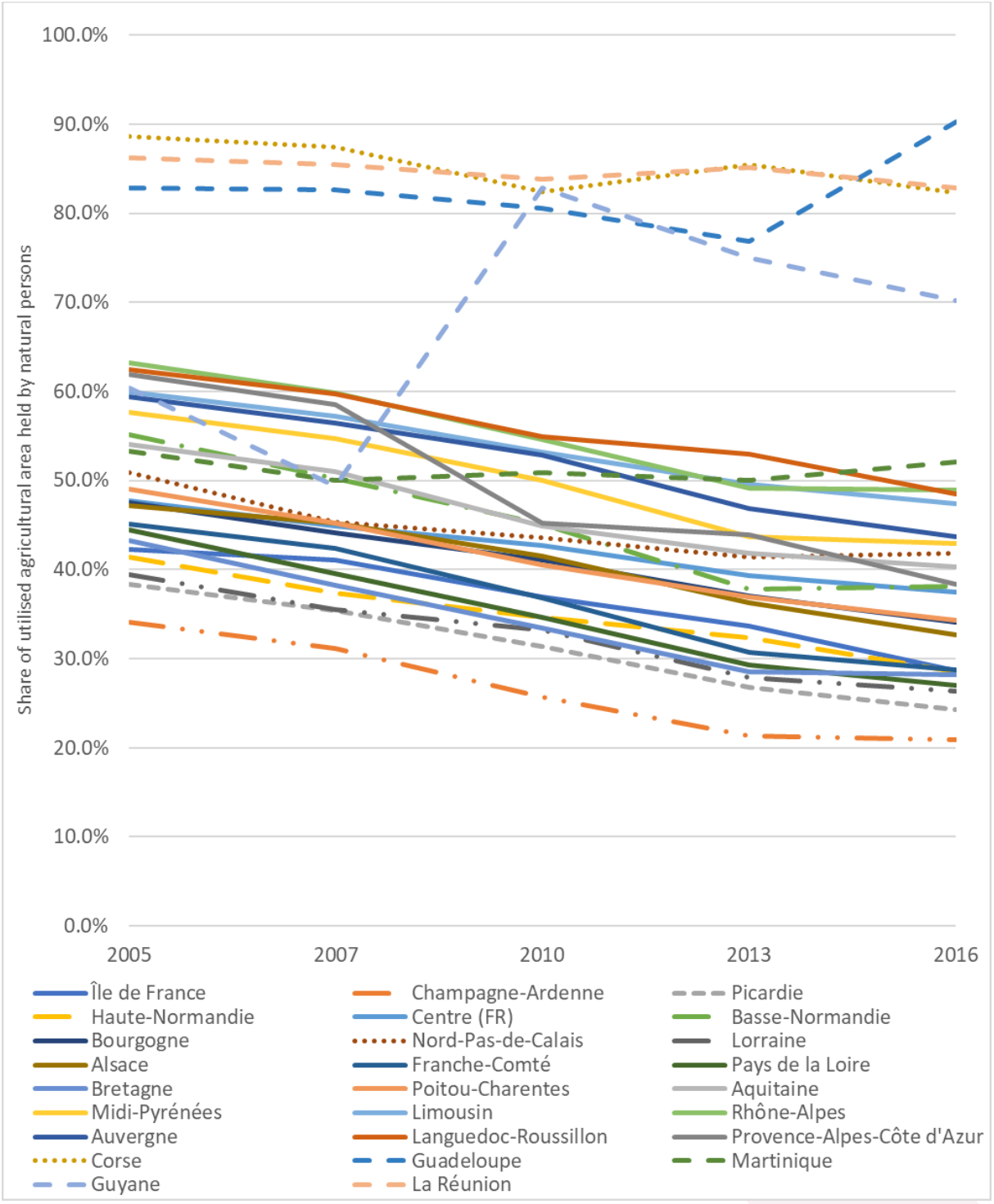


Figure 11 Development of share of utlised agricultural area held by natural persons in French NUTS 2 regions (EUROSTAT, ef_m_farmleg)

In Portugal and Spain, the percentage of farmland managed by families is lowest in the areas with large social rural inequality (such as, Alentejo, Andalucía and Extremadura) and in the capital regions. The, relative to its neighbouring countries, relative low percentage (69% see Table 27) of family controlled holdings in Sweden, may relate to the long Swedish history of large land holdings in noble estates, which has not been broken by revolutions or land reforms (Gary and Olsson, 2017).

In family farming, the market is not the most dominant factor in generational renewal, but the tradition of the continuation of farms within the family line. For centuries, this has been a rather masculine tradition in which sons inherited the farms and daughters were going to live at the family farm of their husbands (Morell, 2013). In a review article on gender identity of European family farming, Brandth (2002) has characterized the situation as of family farming as a practice of passing on farms from fathers to sons as follows:

> 'This practice has ensured that farms are owned and controlled by men. Women have weak access to property and occupational resources, but farmers' wives gain rights to the farm property if widowed. Women's most common point of entry into farming is through marriage, by becoming a farmer's wife. Hence, their occupational role is not a result of choice, but of marriage. Family farming is patriarchal; the male farmer is head of the farm family and the family farm and makes the relevant decisions. He is the farm's public face, and he participates in agricultural organisations and forums. Family farming is based on the labour force of family members with the allocation of tasks being fundamentally gendered. Women are responsible for care and household tasks and this task allocation has been regarded as a 'natural' distribution of work on the basis of certain gender specific attributes. The work for which women are responsible, is done in the private confines of the home, in the shadow of privacy. No value is put on it as it is unpaid and publicly unrecognised. Women also perform productive work on the farm though the type of tasks they do varies considerably. Women are adaptable and flexible as work force and for this reason are often regarded as the farmer's helper or assistant. Women on farms have a great workload, a 'double burden', with little return. The survival of the farm is the prime interest of all the family members. This unites them against external threats be it natural, political or economic forces that might lead to farm crises. Women identify with the farm first and see other threats as more overriding than their own oppression as women.'(Brandth, 2002, 184)

Although Brandth (2002) refers to studies on 'detraditionalisation' (such as by Bryant, 1999), there is not much evidence that traditional gender roles has been changed in the last decades (Franić and Kovačićek, 2019). Even after formal inheritance laws have changed, gender roles in family farming stayed traditional, such as in Norway, where 40 years after introduction of a law allowing equal access of first daughters and sons to inheritance of the family farm, only 14% of the farmers are women (Heggem, 2014). The EUROSTAT figures on land holdings in Europe also suggest that only 14% (13.7%) of the EU's farmland was held by women in 2016. Note that of the farms held by farm managers under 40 years of age, the percentage land by females is only 13.3%.; so new generations are, to put it mildly, not making a large difference in ensuring a gender shift in EU farming. There is only one, predominantly urban, region, Stockholms län, in which women under 40 held as many farms as their male counterparts. Their farms are, however, considerable smaller: the females hold only 29.9% of the land held by farmers below 40 years of age in this region. One of the main ways for women to become holder of farmland is by demise of their spouse. In the age above 65, woman have a higher percentage than younger generations, because they live longer than men. Critics indicate that 'the patriarchal transfer from father to son in Ireland is remarkably resilient' (Shortall, 2017, 182). So, authors analysing the family farm can also be critical on it as a context in which very

traditional gender roles and family relationships are reproduced and shielded off from a society that has moved beyond these traditions. As Shortall indicates, '…whilst the cultural hegemonic beliefs about women in Irish society have changed significantly there has been less rapid change in the dominant beliefs, practice and culture concerning women's position in agriculture.' (Shortall, 2017, 189) The family farm is in this way a patriarchal institution: 'While gender roles have changed and continued, these have been reconstituted in ways that demonstrate the commitment to maintaining the institution of the family farm.' (Shortall, 2017, 190) According to such a critical view: 'The business viability of agriculture depends on the exploitation of family members, particularly women.' (Shortall, 2015, 718) Institutional change, including on gender roles, may be necessary to ensure generational renewal in rural areas. The idea of the RURALIZATION project is that it is key to provide opportunities to new generations in rural areas. As the opportunities in family farming are very much based on traditional gender roles, this may result in that women continue to search their opportunities in urban areas, which may hamper the perspective for rural development. The regional figures of land holdings, show that women are only in a minority of case registered as holder of the land. Moreover, also in younger generations, women hold only a small percentage of the land. Land markets are so predominantly transactions between masculine parties, showing that access to land is more an issue for women than for men. However, there are not many specific issues in this field according to Ball, 'but largely missing from the literature is research that focuses on women farmers' access to and use of basic resources—land, labour, and physical or financial capital' (Ball, 2020, 157).

As family farming is such an established tradition, and is still shaped in a patriarchal way, also other actors and institutions around the land market, such as banks, real estate agents, selling parties, expect that males are the one operating on land markets, providing extra barriers for women to access to land (Reigada *et al.*, 2020). In a Pennsylvania (USA) survey 64% of the female farmers responded that 'women producers are not taken as seriously as men producers' (Barbercheck *et al.*, 2009, 6), which was a considerable or moderate issue to make a farm a success. It was the largest impediment to make a farm a success mentioned in the survey (Ball, 2020).

As the land value of the farm is the largest asset of a farm, financially, the land market has a major role on the way how transfer within the family farm proceeds.

Differences within Europe have existed in relation to the importance of the unity of the farm. The rough picture is that in the North of Germany and Nordic countries farms were not split at inheritance, which usually involved that other siblings must be compensated by the sibling taken over the farm. The size of this compensation differed (Morell, 2013). In the Netherlands, only a few regions close to the German border had this practice of 'unigeniture' (De Haan and Hoppenbrouwers, 1998, 345), by which the farm was not divided. In general, there were substantial regional differences, not only in relation to the transfer of the farm, but also the position of the longer living partner, sometimes laid down in substantial marriage contracts (De Haan and Hoppenbrouwers, 1998). For many life events different arrangements were made (Figure 11), but the order of events often did not happen as neat as suggested as many parents did not live until the marriage of their children and many children passed away before coming to age. Moreover, anticipations took place, i.e. '*post mortem* transfers were often

already arranged as part of transfers *inter vivos*' (De Haan and Hoppenbrouwers, 1998, 342). In practice many of the arrangements and traditions were a split on fragmentation of farmland and worked towards reconsolidation in case of premature deaths.

'stage'	'modality of transfer'
marriage	endowment = (?) cession (provisional or definitive)
retirement	exchange of inheritance against maintenance
dead of 1st parent	division of estate (provisional, conditional, partial?)
dead of 2nd parent	settlement of estate

Figure 12 Stages in life and modalities of transfer (De Haan and Hoppenbrouwers, 1998, 341)

A strong impact has the Roman law principle of the 'portio legitima', meaning that every offspring has a legitimate right to a certain share of the inheritance (De Haan and Hoppenbrouwers, 1998; Domingo, 2017). Based on this principle, in the East, farms were traditionally split over male siblings, resulting in a fragmentation of farm ownership (Morell, 2013). In practice, many regional and cultural differences existed within the West and the East, such as, that the German farmers in settlements in the East of Europe did not split their farms (Morell, 2013). There were also differences in the position of the older generations and the moment they were transferring the farm and their position in the household. In some contexts the older farmers staid in charge, until close to their passing away, in others they would retire and move to a separate housing unit on the farm and having a more supportive role to the new generation (Morell, 2013).

Remarkably enough is that the diversity of inheritance laws do not result in very different outcomes in relation to gender (Shortall, 2015); they may relation to different outcomes in relation to fragmentation, which is another aspect to be discussed. So, if the outcomes are independent of specific regulations, a full solution will be probably be not achieved by adapting new regulations; more may be needed.

In all EU, context, the development of national codes, societal developments, equal gender laws and the emergence of other sources of income next to agricultural practice had their impact on transformation of farms over generations and the access to land. Many authors describe that there is a difference between the law on paper and the way how land is transferred between generations in practice. The already mentioned practice of tendency of male succession of the farm is just one of the examples (Heggem, 2014). The current institutions on the land market provide, in practice, unequal access to land for females compared to males. This does not mean that access to land is easy for males, but just that it is even more difficult for females.

This issue shows that markets are not the only aspect that counts in access to land. In the family farming context of the EU (about two third of the land is managed by families: Table 27), traditions and practices within the family context are also of relevance

4.5 Conclusion

There are large differences between rural areas and within areas. Key figures in the land market show large differences between the types distinguished. Differences relate to economic context institutional setting and the type of rurality that can be found. Based on land cover data developments in land uses can be monitored and show a decrease of farmland and increase of artificial areas. Most growth of artificial areas on rural land is not the development of housing, but land take for infrastructure and economic sites, especially in more rural areas this is the dominant force in land take. Remarkably is that quantitatively, at the level of the regional types land abandonment is still a relatively minor force. However, at the level of specific rural communities this may different. For this a more focused analysis at the level of specific land markets and regions is necessary.

Land price data exists, but must be gathered from different sources and show a large variety. The statistical data are at a too high level of abstraction to explain these differences. More focused studies based on market transaction may provide extra insights.

Last but not least, most of the succession in family farming takes place within the family. In this process markets play a limited role, but traditions do. In these traditions traditional gender roles are still dominant. Farm succession to females stays far behind the traditional father-to-son succession. So, next to land markets also traditions may provide an extra barrier or opportunity to provide access to land for new generations, especially for those who, by tradition, have more difficult access to land.

5 Analysis of results within remote and rural regions

For rural regeneration, the developments in remote regions and rural regions are most important as these are the regions that are most prone to the issue of rural decline. A more specific analysis of developments in land markets and land holdings, based on literature, in these regions will be provided in this section.

5.1 Remote regions

Remote regions are of prime concern for the RURALIZATION project as this are the regions in which the issues of rural regeneration are most pressing. As these areas are not in the vicinity of cities, opportunities must be found in the region itself. In remote regions the GDP per head of the population is about 2/3 of the EU average, the population is declining, whereas the EU in total has still some growth, the median population is a little higher than the EU average and the growth of median age between 2014 and 2019 is higher than in the EU average. For all those figures remote areas are in a more challenging position than rural areas close to the cities.

Here, a distinction can be made between remote areas in regions with a High Quality of Government, and other remote regions. These regions have a 15% higher GDP per inhabitant, than the EU average, there regions show population growth between 2014 and 2019, and although the median age is a little higher than the EU average the upward development of median age has been a little lower than the EU average. So, rural regeneration seems to work better here than in other remote areas.

5.1.1 Remote regions – Combined mountainous and non-mountainous - High QoG – All ratios of DP/Rent (RE-C-H-A)

In this type there are 46 regions in 8 Member states (Box 3): Finland (10 regions), Sweden and the UK (both 9 regions), Austria (8 regions), Denmark and Ireland (both 3 regions) and France and Germany (both 2 regions). In many of these areas, agriculture (or in some cases even forestry) is challenging through a mountainous or Nordic location.

AT124 Waldviertel; AT212 Oberkärnten; AT222 Liezen; AT226 Westliche Obersteiermark; AT321 Lungau; AT322 Pinzgau-Pongau; AT333 Osttirol; AT334 Tiroler Oberland; DE225 Freyung-Grafenau; DE229 Regen; DK014 Bornholm; DK022 Vest- og Sydsjælland; DK041 Vestjylland; FI194 Etelä-Pohjanmaa; FI1C4 Kymenlaakso; FI1C5 Etelä-Karjala; FI1D1 Etelä-Savo; FI1D3 Pohjois-Karjala; FI1D5 Keski-Pohjanmaa; FI1D7 Lappi; FI1D8 Kainuu; FI1D9 Pohjois-Pohjanmaa; FI200 Åland; FRI14 Lot-et-Garonne; FRI22 Creuse; IE041 Border; IE052 South-East (IE); IE063 Midland; SE212 Kronobergs län; SE213 Kalmar län; SE214 Gotlands län; SE221 Blekinge län; SE311 Värmlands län; SE312 Dalarnas län; SE321 Västernorrlands län; SE322 Jämtlands län; SE332 Norrbottens län; UKF24 West Northamptonshire; UKK30 Cornwall and Isles of Scilly; UKL11 Isle of Anglesey; UKM61 Caithness & Sutherland and Ross & Cromarty; UKM62 Inverness & Nairn and Moray, Badenoch & Strathspey; UKM63 Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute; UKM64 Eilean Siar (Western Isles); UKM65 Orkney Islands; UKM66 Shetland Islands

Box 3 RE-C-H-A (Remote Rural and Intermediate areas—Combined Mountainous and non-Mountainous—High QoG (>0.524)—All DP/Rent)

Many of the regions in this type have a very low population density. In fact, eight of the ten regions with lowest population density in the EU are of this type. This includes the regions in North of Sweden and North and East of Finland (Lappi has with 1.8 inhabitants per square kilometre the lowest density) and some regions in Scotland. There are only two regions in this group that have a higher than the EU average population density: Cornwall and Isles of Scilly, and West Northamptonshire (both UK). The generally low density of the regions adds to the remote location to expect a very low urban impact on the land market. The growth of artificial land is in these regions, consequently, not dominated by urban residential sprawl but by the sprawl of economic sites and infrastructures. Examples are Norrbottens län (4239 hectare of economic and infrastructure sprawl), Inverness & Nairn and Moray, Badenoch & Strathspey (3041 hectare) and Lappi (2171 hectare) in which substantial sprawl of economic sites and infrastructures was between 2000 and 2018. The very large iron ore mining area in Kiruna (Norrbottens län) has for example a substantial impact on land use and life in the area (Nilsson, 2010).

In the very low-density areas, agriculture is a relatively small part of land use. In Lappi it is only 0.6% of the area; in 30 of the 46 regions of this type it is (far) below 25%. Outside the areas in Finland and Sweden, this is for example also the case in the Tiroler Oberland (5.1%) in Austria. In the remote regions in Denmark, France, Ireland and England and Wales and the Waldviertel region in Austria, agriculture is the most important land use with over 50% up to nearly 85% of the area. These areas have less than 10% of the territory of this type, but over 60% of the agricultural land use area. The type of agricultural land use (arable land versus pastures) differs per region, i.e., the Irish regions more pasture, the Danish regions more arable land. In the other regions, natural land uses, including forestry, are dominant.

The Austrian regions with low percentage of agricultural land are also the regions with the highest agricultural land prices in this type. This may relate to the scarcity of farmland in the valleys, and the pressures for touristic uses in the Alps (Tiroler Oberland has the highest prices). The lowest prices, both in sale and rent (€ 27 to € 54 per hectare per year) can be found in the North of Sweden, an area where about 2/3 of the farmers rent. With a GINI of 0.58, landholdings in these types are generally less unequal divided than in average EU regions. This is remarkable as in the other types of remote regions landholdings are much more unequal. There also exceptions: in the regions in Scotland, Tirol, and the North of Sweden landownership is more inequal than average.

Studies on three specific areas will be used to consider issues more in depth. That is the traditional land relationships in Scotland (5.1.1.1), the specific position of Sami in the North of Nordic Europe (5.1.1.2) and the shielded land market at the Åland Islands (5.1.1.3).

5.1.1.1 Scotland: Large landowners, small tenants

The 'Highland Clearances' by which many people were displaced from the highlands by the landowners in the 18th and 19th century have still a certain traumatic influence on discussion of land today (Glass *et al.*, 2019).

Scotland has a different system of property law than England and Wales, where many feudal elements have been abolished by Cromwell in the seventeenth century (Steven, 2004). In

many areas in Europe this happened also gradually, or instantly in Napoleonic times. However, in Scotland, some elements of feudalism has survived and have been formally abolished at 28th of November 2004 (Reid, 2003; Steven, 2004) by the 'The Abolition of Feudal Tenure etc (Scotland) Act 2000' (ASP, 2000). Owners could put affirmative obligations, 'real burdens', on tenants as part of their property right. In non-feudal property relationships, it is possible to restrict rights or to oblige tenants to accept certain uses by others, but owners cannot force tenants to work for them as part of the tenancy relationship, i.e., to oblige tenants with a real burden. In Scotland, this happened in ground leases, but also in sales the seller could put a real burden on the land, which resulted that many land holdings had a 'multiplicity of superiors' (Steven, 2004, 3) who could demand compensation payments if their vassals did not perform their burdens. Although this abolishment, was in many cases, a case of legal principle, it illustrates the conventional land tenure relationships in Scotland. The feudal origin did also survive in the law of succession (Reid, 2015), which is of course highly relevant for transfer of property between regeneration: 'Current law is suited to succession in a feudal system' (Anderson, 2011, 75). This conventionality has not only survived in law, but also in land market relationships, in which the situation is not changed fundamentally in 2004.

Scotland can be seen as an archetype of traditional land relationships with a few large landowners and many small tenants (Christophers, 2018). In 1872, 90% of Scotland was owned by 1380 private owners; in 2012, 60% of Scottish rural land had only 963 landowners (Elliot *et al.*, 2014, 162). In the history of Scotland, the interest of landowners often preceded that of the populations, such as, large scale land acquisitions by 19th century 'industrial magnates' who converted 'sheep farms […] to sporting estates managed for the shooting of deer and grouse as the primary land use' (Glass *et al.*, 2019, 8). In the Highlands and Islands there are still many 'shooting estates' of over 4,000 hectare and a lot of land is concentrated in a few even larger estates (Glass *et al.*, 2019). There is a large continuity in landownership and few transactions (Thomson *et al.*, 2016). The large inequality of landownership in Scotland, which has been analysed by various authors (Wightman, 2013, 1st ed. 2010; Thomson *et al.*, 2016; Glass *et al.*, 2019), has this also a counterpart in landholdings (which also includes tenants who are using the land). Only 17% of the farmers hold a farm over 100 hectares, but these large farms are good for over 89% of the agricultural area. Inequality of land ownership is in Scottish remote regions with a GINI of 0.77 much higher than the average region in the EU and higher than all other regions of its type. This inequality is also growing (in 2005 it was 0.74). This is the case in most of the remote regions. Studies indicate that in the last decades there has been a 're-concentration of landownership' (Elliot *et al.*, 2014, 163) and there are example of people consolidating land to a very large extent. The Land Reform Review Group (established by the Scottish Government in 2012) was very critical about the lack of data and studies on specific landownership patterns (Elliot *et al.*, 2014).

More recently scholars from Scotland's Rural College have prepared a report on 'The effects associated with concentrated and large-scale land ownership in Scotland' (Glass *et al.*, 2019) in response to a call for evidence by the Scottish Land Commission. Currently three quarter of the agricultural land is owner occupied and there has been a consolidation to bigger farms. Next to this, there is also in the last two decades a '**Growth in community ownership of land**, some major purchases (often in conjunction with environmental organisations) of private estates, often where there have been issues between the local communities and landowners.

Continued growth in area owned by environmental organisations, with some rationalisation of the area owned by the state' (Glass *et al.*, 2019, 10). The percentages of land owned by communities 3.1% and environmental organisations 2.5% in 2014 is still modest (Glass *et al.*, 2019, 12). In farmland: 'In recent years, the profile of rural landowners has shifted, with family farmers and life-style buyers joined by a range of institutional investors.' (Glass *et al.*, 2019, 17) This may negatively the potential for rural regeneration for small scale farmers: 'The treatment of land as a financial asset by institutional investors drives up demand and prices, causing new patterns of exclusion, potentially limiting access to land by local family farmers.' (Gallent *et al.*, 2018, 16) The issue of access to land for new entrants is an area of concern for the Scottish Land Commission (McKee *et al.*, 2018).

A very specific access-to-property aspect mentioned in a Scottish study (with 4 out of 6 case studies in remote areas) on 'The impact of diversity of ownership scale on social, economic and environmental outcomes' is the access to affordable housing: 'Lack of affordable housing (to buy or rent) is one of the factors that focus group participants in all case studies said led to out-migration of younger families.' (Thomson *et al.*, 2016, 50) This was amplified by the fact that there was a mismatch between locations with available affordable housing and locations with employment opportunities.

5.1.1.2 Sami

The Northern regions in Sweden and Finland, just as the adjacent areas in Norway and Russia, are the home of Sami who practice a traditional form of reindeer husbandry (Sara, 2019).

> 'As the situation stands today, the land and the way of life of the Sami people are under constant threat. The reindeer economy is especially endangered by competing land use. All three Nordic states have to be held responsible for the fact that they have reduced the grazing lands of the Sami reindeer herds through national exploitation of natural resources and through development projects.' (Carstens, 2016, 88)

This relates not only to mining explorations at which decision making Sami communities were not well involved, but Sara (2019) also found studies that indicated that Sami were not consulted in decisions on wind power plants and decisions to protect state-owned forests in Sweden. The potential construction of an Arctic Ocean Railroad in Finland may also impact the area. High costs and fierce Sami opposition have resulted in a standstill of this project (Nilsen, 2020). Recently the Swedish Supreme Court has ruled that hunting and fishing rights North of the agricultural boundary in Norrbottens län rest with the Sami communities and not with the county administrative board as was stated in the Reindeer Husbandry Act of 1886 because the Sami already exercised these rights, at least, since the mid-1700s (Ravna, 2020).

In Finland 90% of the Sami homelands are owned by the state (Carstens, 2016; Sara, 2019). The way, and legislation governing it, how the state allocates these lands is so of eminent importance. Most young Sami live currently outside the traditional Sami homelands and debates about Sami rights also includes discussions on who have access to land:

> 'Those living outside the Sami homeland claim that the existing legislation violates their right to transfer cultural heritage to next generations, since they are denied

> access to ancestral land where they could engage in traditional livelihoods. ' (Sara, 2019, 130)

The issue of access to land for rural newcomers is so also an issue for Sami returning to their homeland. More generally it can be said that in political debate land is central.

> 'Land use interests dominate in the discussion (…), as land is increasingly a scarce resource evoking competition between, for example, businesses like forestry, the extractive industry and transport, the state, municipalities, local entrepreneurs and other local people that all want their share of land use and see the realisation of the rights of the Sami as a threat to their own rights.' (Sara, 2019, 175)

So, not only land is a scare resource in the least dense-populated region of the EU (1.8 inhabitants per km2), but also the issue of access to land for new generations is of importance. Political decision making is central here. Traditional agents promoting other interests had much better access to policy making than the Sami communities and step-by-step actions are taken to change this. However, this is a slow process.

5.1.1.3 Åland Islands

A very specific remote area are the Åland Islands, which is an autonomic region in Finland of about 6,000 islands halfway the Bothnic (Suksi, 2011; Joenniemi, 2014). In all regional Quality of Government surveys by the QoG Institute, the quality of government scores of this region are way higher than in any other region in Europe (Charron *et al.*, 2015). Åland is 'an outlier at the top of the index ranking' (Charron *et al.*, 2019b, 31), which is exceptional as Finland itself is already one of the 'top performers' (Charron *et al.*, 2019b, 36) amongst the EU member states; these top performers show few regional variation. It is a small region, with just under 30 thousand inhabitants, the population is growing and the GDP per head is higher than in any other remote region. Over 80% of the land has naturel land uses and just over 15% is in use for agriculture; in the last decade, many smaller farms have stopped and there is a growth of larger farms, but overall, the GINI decreased from 0.48 in 2015 to 0.43 in 2016; so, it has become more equal. In 1921, when the League of Nations decided that the Åland Islands should remain with Finland, it got a series of guarantees to prevent Finnishization, including the preservation of its Swedish language (Joenniemi, 2014; Simolin, 2018; Williams, 2018). As part of the cultural protection a specific set of land rules were established:

> 'When landed estate situated in the Aaland Islands is sold to a person who is not domiciled in the Islands, any person legally domiciled in the Islands, or the Council of the province, or the commune in which the estate is situated, has the right to buy the estate at a price which, failing agreement, shall be fixed by the court of first instance (Häradsrätt) having regard to current prices.' (League of Nations, 1921, 701)

This pre-emption right still exists today in a form that people from outside the Åland Islands must apply for permission for any land purchase or lease, and has, as established principle of international law, been approved as an existing derogation of the EU single market regime at the accession of Finland to the EU (Williams, 2018). At the time of establishment '…the League of Nations experts that promoted the Åland regime predicting that its maintenance would

require the development of a quasi-autarkic system in which the maintenance of Åland identity would come at a significant economic opportunity cost in the form of restricted access to outside investment and labour' (Williams, 2018, 51-52). Changes in autonomic status of the Åland Islands can only occur with consent of the regional parliament (Joenniemi, 2014; Simolin, 2018). The regulations have been developed since 1921 to close loopholes, such as constructions to leave the land to non-resident heirs and long-term leases. Critics find that the rules provide 'excessive discretion and arbitrariness' (Williams, 2018, 78), that is, the criteria for getting access to land for potential new Åland inhabitants are too vague and there is too much discretion for the regional authority (Suksi, 2011).

The effect of the regime has been that Aland has witnessed a completely different development than other Swedish spoken minority regions.

> 'By virtue of its "firm" territoriality, including the ability to limit mobility from the mainland via devices such as the land acquisition rules, and its physical remoteness as an archipelago, Åland has effectively remained outside of mainland Finland's demographic trends.' (Williams, 2018, 75)

This also mend to forego on opportunities, as there were in the 1950s, to establish a large shipbuilding yard by a Finnish company. This was not approved.

> 'There is little doubt that the land rules have contributed, as part of the broader minority protection regime, to the cultural aim of maintaining the Swedish language and nationality on Åland. […] Although the Åland minority protection regime will continue to raise human rights concerns, it appears to have been effective in discouraging the mass immigration of Finnish speakers to the archipelago.' (Williams, 2018, 77)

In current EU law, under stringent defined conditions, a pre-emption right to local acquirers can be established. The European Commission has issued an interpretative communication on the acquisition of farmland and EU law, in which it is indicated that the highest possible care is needed for privileges to local acquirers. In some cases, this may be allowable, for example to pursue objectives

> '…as increasing the size of land holdings to develop viable farms in local communities, or preserving a permanent agricultural community. At this level, the condition is that the privileges have to reflect the socioeconomic aspects of the intended objectives. This could be the case if pre-emption rights are granted to local farmers to address land ownership fragmentation, for instance, or if other special rights are given to locals to accommodate concerns resulting from their geographical situation (for example, less developed regions)' (EC, 2017a, 17)

However, it is questionable whether establishing such a limitation on the freedom of capital can be based on cultural policy. In a Belgian case, the Advocate General of the European Court of Justice concluded the following on an anti-gentrification policy aiming to preserve the Flemish nature of communities around Brussels. 'It is clear that such an objective cannot be regarded as an overriding reason in the public interest' (AGECJ, 2012, paragraph 34). The

policy has been nullified (Korthals Altes, 2015). If, for example, conditions not only provide privileges to locals in a challenging socioeconomic position, but also to other persons who do not need special protection, because they have the means to buy land, the measure can be disproportionate (ECJ, 2013; Korthals Altes, 2015). Furthermore, too much discretion is not allowable (EC, 2017a). This means that it will not feasible to copy the Åland system, which is based on international law preceding the EU (League of Nations, 1921), to other EU regions.

In ***Conclusion*** it can be established that access to land for new generations in remote rural regions of areas of high QoG areas is not easy at all. Often land use, is fitted to specific conditions of these areas, which may not support intensive agriculture. Specific conflicts and solutions regarding competition for land can be found. The outcomes vary largely between regions in which, such as in Scotland, economic powers have dominated, regions, such as in the North of Nordic areas, where national political decisions on the exploitation of the area has not always involved the local population, and a specific island region in which, as response to a political border conflict, a specific solution has been found in international law. Generally, in these regions, inequality is less than in regions with a lower quality of government. So, some protection of weaker parties is effective, which may help new generations to find their ways.

5.1.2 Remote regions—Combined Mountainous and non-Mountainous—Medium QoG—All ratios of DP/Rent (RE-C-M-A)

In the RE-C-M-A France (11 regions) Portugal and Spain (each 10 regions) are the largest contributors. However there also regions in CEE, i.e., in Poland (6), Lithuania (3) Estonia, Latvia and Slovenia (each 2). Furthermore, there is one region in Italy (Box 4).

RE-C-M-A (Remote Rural and Intermediate areas—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—All DP/Rent)
EE004 Lääne-Eesti; EE006 Kesk-Eesti; ES242 Teruel; ES411 Ávila; ES417 Soria; ES419 Zamora; ES422 Ciudad Real; ES423 Cuenca; ES431 Badajoz; ES432 Cáceres; ES531 Eivissa, Formentera; ES533 Menorca; FRC14 Yonne; FRF24 Haute-Marne; FRJ14 Lozère; FRJ21 Ariège; FRJ22 Aveyron; FRJ24 Gers; FRJ25 Lot; FRK12 Cantal; FRL01 Alpes-de-Haute-Provence; FRL02 Hautes-Alpes; FRM02 Haute-Corse; ITC44 Sondrio; LT027 Taurages apskritis; LT028 Telsiu apskritis; LT029 Utenos apskritis; LV003 Kurzeme; LV008 Vidzeme; PL219 Nowotarski; PL523 Nyski; PL618 Swiecki; PL637 Chojnicki; PL811 Bialski; PL821 Krosnienski; PT11C Tâmega e Sousa; PT11D Douro; PT11E Terras de Trás-os-Montes; PT16G Viseu Dão Lafões; PT16H Beira Baixa; PT16J Beiras e Serra da Estrela; PT181 Alentejo Litoral; PT184 Baixo Alentejo; PT186 Alto Alentejo; PT187 Alentejo Central; SI033 Koroska; SI044 Obalno-kraska

Box 4 RE-C-M-A (Remote Rural and Intermediate areas—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—All DP/Rent)

Most of the regions face population decline. Especially in Lithuania and Latvia this is strong to over 10% between 2014 and 2019 is some of the regions. Strong exception to this is Eivissa, Formentera (Ibiza) in which population growth was almost 10% and which is population is also younger than in other regions in South Western Europe. This may relate to the fact that Ibiza is a 'world reference in clubbing tourism' (Serra-Cantallops and Ramon-Cardona, 2017, 567), which is (pre-COVID19 at least) good for employment for younger generations, but at the same time, over 70% of the population is critical about the nightclub tourist sector (Serra-Cantallops and Ramon-Cardona, 2017). However, the youngest population can be found in the Polish regions.

Most regions have unequal situation relating to land holdings. Some regions in Poland, France (but not the Alpine regions) and Slovenia have more equal land holding conditions than the European average.

In 15 regions over 20% of the land is held by farms with 'farm managers' under 40 years of age. These regions are in Poland, France, Lithuania and Estonia. In the next section extra emphasis will be on remote regions in Poland (5.1.2.1), which have developed quite differently than regions in CEE in which land had been nationalised during communist rule and the region of Alentejo in Portugal (5.1.2.2), which is a region that traditionally had very large social and economic differences between a few wealthy landowners and a population of landless peasants.

5.1.2.1 Remote regions in Poland (PL219 Nowotarski; PL523 Nyski; PL618 Swiecki; PL637 Chojnicki; PL811 Bialski; PL821 Krosnienski)

In Poland there are wide regional variations in farmland ownership (Bański, 2011; Marks-Bielska, 2013). During communist time farmland stayed in ownership of family farmers. Generational transfer resulted often in a split of the farms. In most of Poland this has resulted in a fragmented ownership situation. A large exception to this was land in former German areas in the North and West. Here large state farms were founded. The state farms also grew in the border area at the Ukraine, by taken over land from Ukraine farmers moving over the border and in other areas by the exchange of land of older generations for a retirement scheme (Bański, 2011). In the areas that continued to be individual ownership, land is very fragmented.

> 'From the point of view of the average size of the parcels of land, Polish agriculture bears a resemblance to the fragmented farming going on in the post-communist Balkans. It is much less like the agriculture of such neighbouring countries as Slovakia and the Czech Republic.' (Bański, 2011, 98)

One important difference is that, because small farmers continued their ownership, there has been no restitution process of these farm lands to heirs of who owned the land in 1940s or so. During communist rule ownership rights have been 'maintained', that is, land has been transferred to new generations. There is no double fragmentation; although the land is fragmented, ownership is not: usually there is an owner of the land who has the power to act.

There are, however, regional differences in ownership structure within Poland that have been continued over time

> 'The transfer of land from the public sector to individual farmers had only a limited effect in resolving the problem of the farmland fragmentation. It was mainly the farms in the North and West that grew in size, and these had been relatively large even before the opportunity for a further expansion arose. No more major changes at all took place in the South of Poland, small or very small farms continuing to prevail there.' (Bański, 2011, 98)

In the North and West the state farms have been dissolved in the mid-nineties and ownership came in the hands of the Treasury Agricultural Property Agency (Bański, 2011).

Remarkably, is that the remote Polish regions in this group can be found in different areas of Poland. PL219 Nowotarski is in the South (at the Slovak border); Nyski is in Silesia (at the German side of the 1920 border and currently bordering the Czech Republic) Swiecki and Chojnicki are Central Northern located (at the Polish side of the 1920 border) PL811 Bialski is in the East (at the Belarus border); PL821 Krosnienski is in the South East (at the Slovak border)

So, the context of land markets differs substantially. However, two of these regions Nowotarski and Krosnienski, are in the Polish Carpathians, an area that faces farmland abandonment (Kolecka *et al.*, 2017). Farmland is being replaced by forests. This is a tendency that is happening in more European regions. The more mosaic type of landscape of the Polish Carpathians (and of many other more mountainous areas) make that this process may develop faster. It is less easy to consolidate agricultural land. There are more edges between agricultural and forest areas; which also result in the keeping the land in agricultural shape is more work, as:

> '…the proximity of forests promotes natural reforestation. In areas near trees and shrubs, seed dispersal significantly triggers the early stages of succession. In areas of less intensive use, saplings and young trees or shrubs are not constantly removed, and the vegetation density increases.'(Kolecka *et al.*, 2017, 69)

Remarkably is that this is not only an issue of remote regions, but also the rural areas close to the city may face abandonment: 'Farmlands located closer to the current provincial capital cities were more likely to be abandoned.' (Kolecka *et al.*, 2017, 69) This is explained by the fact that people that take job in the urban labour market have less time to farm, and part-time farming may become no farming especially if the relative income from farming is low; so it especially 'affects less productive areas' (Kolecka *et al.*, 2017, 69). Additionally the anticipation on urban sprawl may result in abandonment of agricultural land use (Kolecka *et al.*, 2017). The physical condition as a mountain area, seems so more important than the remoteness in the development towards farmland abandonment. Based on this it may be expected that infrastructure investments to counter remoteness, or the creation of jobs outside the agricultural sector will not stop farmland abandonment.

5.1.2.2 Alentejo

In Portugal, there are very few young farmers. In all Portuguese regions at least 50% of the farms and 30% of the land is held by farmers over 65 years of age. The old farming population is not a new phenomenon. Two decades ago Rodrigo and Moreira (2001) already analysed this issue and showed that attempt to rejuvenate the farming population by agricultural training courses did not result in many young people attending them. A 'structuralist dualism and a bifurcated landownership pattern' (Rodrigo and Moreira, 2001, 245) played a role in this. Rodrigo and Moreira (2001) especially referred to Alentejo remote regions, in which the '*latifundist* economic reality' (Rodrigo and Moreira, 2001, 245) still existed. Latifundia refers to Roman large farms, but it is a concept that is also used in broader meaning large land holdings and the inequal social structure that comes with this (Szelenyi, 2011; De Almeida, 2013). Alentejo is a region 'where land and property have historically been defining features of the socio-economic system' (Edwards, 2011, 79). There has not been much change in the structure of a few very landholders and a large majority of landless farm workers between the 18th century and 1974 (De Almeida, 2013). Alentejo is the traditional bread basket of Portugal,

and has a history of large farms with many landless labourers who lived in poor conditions (Williams, 1962; De Almeida, 2013). Up to the revolution in 1974, the traditional situation did not evolve, but flourished 'on the regime's autarkic policies shielding the agricultural sector from competition as well as the employment of low cost temporary labourers' (Edwards, 2011, 78). Furthermore, it was not necessary to invest in machinery since the labour was so cheap. After the revolution, many young people left the region leaving older generations. At EU accession, '…Alentejo's agriculture had suffered forty years of underinvestment compared to its neighbours' (Edwards, 2011, 86). According to Edwards, Alentejo is subject to

> '…a widespread view among the mostly Lisbon based elite that the regions are at the service of the nation rather than the other way round and that since Portugal is a small country regional development does not really matter' (Edwards, 2011, 80).

Due to its history, the middle class is small in Alentejo. Part of the region is not so remote as most of the region. Here some new entrants to farming operate, who usually rely on marketing to Lisbon as there is no local market for their, usually organic, products (Dolci and Perrin, 2018).

In a case study on young farmers (YF) also using a focus group (FG) the land market provides a large barrier:

> 'Access to land has been acknowledged as the most widespread barrier for YF. According to seven of the 10 interviewed, and to the consensus opinion of the FG, the land with the best soil is difficult to access by YF and remains in the hands of family farms. When such land enters the market, prices are extremely high, which is partly driven by competing demand by foreigners and national financial investment groups searching for productive and irrigated land.' (Eistrup *et al.*, 2019, 8)

Although Alentejo is dominated by large scale latifundia type of farms, there are smaller areas with smaller scale farms. These are sometimes characterised as 'lifestyle farmers' as 'production income' is not the main driver for their decisions (Pinto-Correia *et al.*, 2016). These farmers are often new entrants and are not so receptive for formal requirements including policy instruments and regulations (Pinto-Correia *et al.*, 2016). Access to land is difficult for them 'as demand for these small-scale farms is high' (Pinto-Correia *et al.*, 2017, 141) 'While the productive function of these small farms has decreased, their market value has gone up.' (Pinto-Correia *et al.*, 2017, 138).

The Alentejo NUTS 3 regions have very high scores on the EEA (2019) defined land cover flow 'withdrawal from farming' between 2000 and 2018. Baixo Alentejo has (with 25,185 hectares) the highest withdrawal from farming score of all NUTS 3 regions in the EU. Alentejo Litoral (4th), Alentejo Central (5th) and Alto Alentejo (11th) have also a high land cover flow 'withdrawal from farming'. It must be noted that Baixo Alentejo has also the highest score (of all NUTS 3 regions in the EU) on internal agricultural conversions. More refined analysis of these figures, which are based on remote sensing using satellite images, showed the following.

Almost 90% of the withdrawal from farming in Baixo Alentejo is with woodland creation. In relation to internal agricultural conversions, it is predominantly (over 43 thousand hectares

between 2000 and 2018 according to the EEA land cover statistics (EEA, 2019)) the conversion from arable land to permanent crops.

This fits to the picture of the transformation of Alentejo as previous bread basket of Portugal, towards an area with olive trees. These high dynamics in land uses are not being reflected by a high dynamic on the land market. Furthermore, due to mechanisation there is no need any more for farmworkers, so the area is facing population decline (De Almeida, 2013). There are a few new owners, urban professionals, who aim to spend some free time in the countryside. However these landowners are no longer the local elite known to the inhabitants, but pretty much ignore village life as they have an extensive network in the city (De Almeida, 2013). So, the developments in the land market are not positive in regards to both the access to land for new generations as for the revival of village live towards a new sense of place to embark on a process of ruralisation.

In ***Conclusion***, the remote regions in this type face issues of population decline and have a large inequality of landholdings. This means that most of the land is controlled by a few farms and most of the farms control few lands. In this context, continuation of farming is not self-evident, as transfer of farmland to woodlands, may develop naturally. The Alentejo region shows that large changes in land use do not always have the consequence that unequal relationships will be addressed. It is just that landowners take decisions to exploit their lands in other ways. In many of these regions, there has been a large outflux of population, which implies that new beginnings may provide new opportunities for novel types of farmers. However, access to land is not easy in this context. Having alternative farming styles without much emphasis on boosting production also means that market powers on the land market are limited.

5.1.3 Remote regions—non-mountainous—Low QoG —All ratios of DP/Rent (RE-N-L-A)

RE-N-L-A (Remote Rural and Intermediate areas—mountains < 50% of area—Low QoG (<–0.669)—All DP/Rent)
BG312 Montana; BG313 Vratsa; BG325 Silistra; BG333 Shumen; BG334 Targovishte; EL511 Evros; EL523 Kilkis; EL622 Kerkyra; EL633 Ileia; HR033 Zadarska zupanija; HR036 Istarska zupanija; HR045 Koprivnicko-krizevacka zupanija; HR046 Medimurska zupanija; HR048 Viroviticko-podravska zupanija; HU223 Zala; HU232 Somogy; HU312 Heves; HU313 Nógrád; HU322 Jász-Nagykun-Szolnok; HU332 Békés; ITF62 Crotone; ITG28 Oristano; ITI1A Grosseto; RO116 Salaj; RO212 Botosani; RO225 Tulcea; RO317 Teleorman

Box 5 RE-N-L-A (Remote Rural and Intermediate areas—mountains < 50% of area—Low QoG (<–0.669)—All DP/Rent)

Non-mountainous remote regions have often physically the potential to consolidate land. Lower Quality of government may result in that weaker parties are less well protected by the state. Based on these conditions land grabbing can be found here. Although Most of these areas are located in the South-East of Europe (Bulgaria, Croatia, Greece, Hungary and Romania) and some are in Italy. In these areas 61.7 % of the land is used for agriculture in average, which is higher than in any other type of regions. There are, however, NUTS 3 regions of other types (such as Brindisi, which is 'urban'), which have over 90% of their land in

agricultural use. The large share of agriculture is a large difference with mountainous regions, which have a much larger share of forests and nature.

Except for the regions in Bulgaria, in all regions the decoupled payments exceed the rent. Bulgaria has also the farms with the largest economic sizes. FADN data shows that the paid labour input per farm exceeds the 2 fte in these Bulgarian regions. The percentage of rented farm area is in Bulgaria, well over 80%, much higher than in the other regions.

All of these regions, but two, have a shrinking population between 2014 and 2019. Except for Kerkyra (161 inh/km2; the island of Corfu in Greece) Medimurska zupanija (151 inh/km2 Northern Croatia) and Crotone (102 inh/km2, in Calabria, Italy) densities are low.

The smallest farms are in some of the Romanian and Croatian regions. Here, hardly any paid labour is registered by the FADN data.
Land prices are generally between € 3,000 and € 6,000 per hectare. Only in Greek regions and especially the Italian regions (between € 22,000 and € 35,000 per hectare) the prices are higher.

In all regions almost all (93.89% to 99.96%) of the holdings are natural persons. However, in some of the regions more land is held by legal persons than by natural persons. This includes the 5 Bulgarian regions, but also some regions in Hungary (Somogy) and Romania (Teleorman, Tulcea). The average farm size in these regions (and some other regions in these countries) of legal persons is well over 200 hectares; in some regions it is even over 400 hectares. In the Greek regions and some of the Italian regions (Crotone, Oristano) legal persons hold 5% or less of the land. So, the picture is not everywhere the same.

In most of the regions a majority of the farmers hold less than 2 hectares of land (in all regions but Oristano a majority of the farmers hold less than 5 hectares of land), which is in strong contrast with the big size of a few other farms. In all regions the number of farmers that held less than 5 hectare and the area of farm land held by these farmers diminished since 2005. So, there is an outflux of small farmers, and a process of consolidation going on.

What is the same, however, is that the inequality of rural land ownership is above the EU average in all regions. Especially in Bulgaria, Hungary these GINI is above 0.90, which is extremely unequal. In some other Hungarian, Romanian and Croatian regions the GINI is above 0.80: so, land is divided very unequally over the farmers, which has impact on development potential.

This is the type of regions were the ratio between decoupled payments and economic size (in standard output) is the highest (18.5%) according to FADN data. These regions are so most depended on EU decoupled payments for their income. The highest share of 29% can be found in the North-East Hungarian FADN region including HU312 Heves, HU313 Nógrád and (the intermediate region) HU311 Borsod-Abaúj-Zemplén. In these regions 2/3 of the land can be found in farms over 100 hectares. Only 2.5% of the farms are over 100 hectares. However, 82.2 % of the farms are below 5 hectares, but hold only 4.8% of the land. So, in this area, which depends more on EU decoupled payments than any other region in the EU, there is a very

unequal distribution of land (a GINI of 0.90) and consequently of EU CAP grants. The number of farmers with farms over 100 hectares has been growing with 39% between 2005 and 2016. Although this development fits to the analysis of Gonda (2019), she observes that the role of EU grants is diminishing and a 'post European Magyar farmer' is developing.

> 'The post-European Magyar farmer is the oligarch, the aristocrat of a new feudal system, the neoliberal entrepreneur who will capitalize on Hungary's agricultural assets, some of its national products ('Hungarikums'), and the cheap labor force to be found in the Hungarian hinterlands, while speculating on land prices, positioning themselves in the agro-industry sector and in parallel selling plots to foreigners.' (Gonda, 2019, 617-618)

To put Gonda's analysis in other works, the CAP enabled a specific class of entrepreneurs to take-off towards a powerful position and now they are provided with this established position, they can operate independently beyond the CAP.

More fundamentally is that the issue of grants based on holding land and not on improving land, may result in incentives to held land in a way that may not support rural development nor rural regeneration. In remote regions, in which other (i.e., urban) incentives in the land market are less strong, the CAP grants may have a larger impact on development and this may not always have worked out in the way as intended by the policy makers. Especially in areas with weak quality of government major issues may occur.

Specific emphasis will be on the region of Teleorman (5.1.3.1), which is a region on the plains along the Danube in which the issues of land accumulation by large companies with close relationships with government officials plays a role. Furthermore, there is an aging population in the villages.

5.1.3.1 Teleorman in its Romanian context

In Romania a dual land market of many small holders and a few large landholders is a general issue. The 'medium-sized European farm' (Alexandri and Luca, 2019, 12) is missing in the polarised Romanian farm structure. Over 80% of the farms use over 50% of the produce for their own needs. According to EUROSTAT there are 4.2 million 'Farms whose household consumes more than 50% of the final production' in the EU, of which 3.0 million (69%) are located in Romania in 2016. Romania has about 7.5 million households (EUROSTAT, lfst_hhnhtych); so, about 40% of the Romanians is fed by their own farm. Most of the Romanian farms '…are subsistence and semi-subsistence farms, having an important role in the food security of peasant households, but a minor role in the formation of food supply crossing the chains to processors and final consumers' (Alexandri and Luca, 2019, 5). However, as indicated above, a large share of the final consumers are peasant households. So, subsistence farming plays an important role in food supply for the population. The production per hectare of Romanian small farms is, in addition, a lot larger than of the bigger farms: on 12.1% of the land, farms under 2 hectares produce 25.1% over the agricultural productivity (Miron and Lup, 2013; Varga, 2020). They use more labour-intensive ways of production, which pays off in a higher productivity per hectare. Generally, these smaller farms have a mix of crops. However, a large part of the land is held by a few very large farms, which produce a few crops on a large scale (Alexandri and Luca, 2019). The lack of diversity of crops in large

farms has been growing (Alexandri and Luca, 2019). Likewise, also the share of land controlled by these large farms is growing. In average in Romania farms held by legal persons are 175 hectares, but in two of the four regions of this non-mountainous type. Tulcea (at the Danube delta) and Teleorman (a region of plains along the Danube in the South) these legal persons owned farms are over 250 hectares in average (Note that farms held by natural persons are in average 1.3 to 2.2 hectare depending on the region). Overall, in Romania,

> 'land areas into the ownership of farmers (natural persons) decreased from 7.7 million ha in 2005 to 5.4 million ha in 2013, whereas the areas leased in by farms with legal status increased from 1.4 million ha in 2005 to 2.6 million ha in 2016.' (Luca, 2019, 5)

In the regions of this type the area of land controlled by legal persons is in Tulcea and Teleorman larger than the area held by natural persons. In the Northern regions of Salaj (Transylvania) and Botoșani (Moldova, at the tripoint with Ukraine and Moldavia) natural persons still hold about 2/3 of the land. Salaj and Botoșani, although non-mountainous in the EUROSTAT classification, follow so the pattern of their more mountainous neighbouring regions. Large scale agriculture can be found more in the plains adjacent to the Danube. The NUTS 2 region of Sud – Muntenia, in which Teleorman is located, has, on the other hand, a share of 87.2% of the farms that produce mainly products to be consumed by the own household (EUROSTAT, ef_m_farmleg). So, there is a large gap between different types of farming.

In the study on land grabbing by Szocs *et al.* (2015) 'The TOP 100 Recipients of agricultural subsidies in Romania' (pp. 25-29) is provided of these top 100, 8 recipients are located in Teleorman and 5 in Tulcea (and none in Botoșani or Salaj). The largest in these regions (and top 3 in Romania is InterAgro who held 55,000 hectare of land in Teleorman in 2014 (Szocs *et al.*, 2015). According to its presentation on their old website (Box 6) farming is just one of their lines of activities. Although, Interagro SA and Interagro SRL (InterAgro, 2020) have been in insolvency from 02.02.2016 (InterAgro, 2016b), it is currently re-opening fertilizer plants (Banila, 2020). Activities have included, utilities, such as natural gas, in the town of Zimnicea in Teleorman and the operation of a ferry across the Danube (from Zimnicea to Svishtov) and Zimnicea (about 15,000 inhabitants) seems to be transferred into a company town in which all major economic activities are owned by one company. In Romanian news messages Zimnicea is characterised as 'fieful lui' [the fief of] the president of InterAgro (Chiruta, 2014; ECONOMICA.net, 2020). Undercover reports indicate that day-workers are not properly paid by InterAgro (Chiruta, 2014). Notably is also that InterAgro have been grown based on 'State sell-offs and the privatisation of key Romanian companies' (InterAgro, 2016a). Such a growth supported by opportunities presented by the state fits with a low quality of government context in which residents perceive that there is no level playing field as the state provides to some people more chances than to others. Senior officials have been prosecuted for corruption, a case still running (Grădinaru, 2019; Romgaz, 2020), and also InterAgro has been attracting the attention of the Romanian Anti-Corruption Directorate (Roque, 2015). In this context it seems to be challenging for new generations to achieve access to land in competition with such a 'dominant force in the domestic market' (InterAgro, 2016a), who also proudly present that they have been 'harnessing and utilising the available European finance opportunities' (InterAgro, 2016b). Although land grabbing is often being qualified as foreign,

and which can be stopped by banning foreigners from access to the land market (Petrescu and Petrescu-Mag, 2018), many of the land grabbing organisations are domestic (Petrescu-Mag *et al.*, 2017). In relation to this debate, and based on experience with the Romanian context, Baker-Smith and Szocs (2016) have also developed a broader, multi-faceted, definition of land grabbing:

> 'Land grabbing can be defined as being the control (whether through ownership, lease, concession, contracts, quotas, or general power) of larger than locally-typical amounts of land by any person or entity (public or private, foreign or domestic) via any means ('legal' or 'illegal') for purposes of speculation, extraction, resource control or commodification at the expense of peasant farmers, agroecology, land stewardship, food sovereignty and human rights.' (Baker-Smith and Szocs, 2016, 2)

Having domestic ties provides relational capital that comes in good use in areas of low quality of government. Local knowledge is also necessary to convince the 'rural population (i.e., the elderly and the vulnerable)' (Petrescu-Mag *et al.*, 2017, 180) to lease their land to the mass land holder. As the base underlying the mass holdings is a very fragmented structure of ownership. However, foreign investors may provide access to capital.

INTERAGRO, a dominant force in the domestic market, is one of the largest and most influential Romanian agro-industrial and financial groups. InterAgro has succeeded in a highly competitive environment through an adaptable management policy which has consolidated the Group's long term development.
The InterAgro group has successfully invested in State sell-offs and the privatisation of key Romanian companies including: animal breeding programmes, agricultural farms, chemical plants and food production. This has been achieved through a continuous restructuring and adjustment process to the demands of the domestic and international business environment.
The core of the InterAgro group is SC InterAgro SA, a private company of Romanian - British capital, established in 1994, whose main scope of activity is the external trade of agricultural chemical fertilisers, also operating in other fields such as the cultivation of cereals, technical plants and the food industry.
The external trade was taken over by SC InterAgro SA from the mother Company, SC INTERACTION SRL - which is also a privately owned company with Romanian - British capital, established in 1991.
In 1994 the company Interaction SRL distinguished itself among the top five companies, according to the Romanian Chamber of Commerce and Industry.
Between 1994 - 2010, Romania was enveloped by a difficult economic and financial environment to which the Group has continuously responded with strategy revision and the implementation at company level of a vertical integration policy.
Utilising a global network of contacts SC InterAgro SA produced and supplied chemical fertilisers, urea, ammonium nitrate, calcium ammonium nitrate, ammonium sulphate, complex fertilisers and agricultural products.
Throughout this period, InterAgro reinvested in Romania.

Box 6 Presentation of InterAgro at its own website (InterAgro, 2016a)

InterAgro, is as mentioned, not the only organisation active in this region. Others can be found as well, including companies connected to the leader of the Social Democratic Party (PSD), and former president of the County Council of Teleorman (Dimulescu *et al.*, 2013), who has been convicted and sentenced to jail for corruption related activities including the misuse of EU funds (Deletant, 2018).

Specific for the Teleorman area is that the land has been part of the Danube's marshland until its drainage in the 1960s (Lup, 2018). These former swamps were not returned to former owners after 1989, but remained in the hands of the state which

> '…allowed for different political-mediated arrangements to be made (distribution of parcels to political clients and concessions accorded to the newly-emerged local "barons") and determined the sort of agriculture that was implemented in the area.' (Troc, 2012, 90-91)

This fits with the developments of land held by large companies with a special relationship with officials of the state as indicated above.

The contrast to these large landowners are the Roma population as analysed by Troc (2012) in a case study in a few villages in Teleorman.

> 'Even if they are strictly dependent to land and its cultivation, they represent also the only "proles", being the sole group from these villages which does not possess land, and which, very likely, was all the time entirely dependent on the working needs in agriculture that were available in different historical moments.' (Troc, 2012, 96)

In interviews they recalled the socialist times in which they were employed for seasonal work.

> 'If this form of engagement seemed to be profitable at the time, being employed on a daily-basis contract, they were excluded from some of the social benefits other agricultural workers get in the present, especially from the right to get a pension, or, also important, the right to get land during the re-privatization that took place in the first half of the '90's.' (Troc, 2012, 96)

So, currently most of the Roma have only access to the land around the house.

The Adventist, a protestant minority in these villages, also 'have less land than the majority population' (Troc, 2012). Demographically they behave differently. They have a higher birth rate than the majority population and have less been involved in rural-urban migration. Before 1990, this related to their difficult situation.

> 'Like all the other neo-protestant communities, the Adventists were under a constant state officials' harassment before 1990, which limited their mobility, and constrain most of the young and educated people to stay in the villages and, while they were not welcomed as employees in the state's institutions, to position themselves mostly towards crafts.' (Troc, 2012, 97)

Troc expects that the relatively poor were attracted to this church as it practices a high rate of solidarity between members, and which explains their limited landownership.

The Orthodox majority of the villages are landowners who often have 1.5 ha to 3 ha of land divided between fields further away from the village, vineyards or orchards nearby and

gardens. Most household get also small pensions or medical contributions based on previous work. These are aging communities in which the number of deaths is a multiple of the number of births (Troc, 2012).

In Romania CAP grants are 40% of farm income (Alexandri and Luca, 2019). As CAP decoupled payments are area based, large farms owned by legal persons get a very large share of the CAP-grants. That is, '… 97% of farms receive only 40% of the total amount of direct payments, while the remaining 3% receive 60% of the amount' (Alexandri and Luca, 2019, 12). The decoupled payments have had some adverse effects on Romanian farming:

> 'At the same time, it has amplified the "land grabbing" phenomenon, under various modalities, both by the Romanian and the foreign land owners.' (Alexandri and Luca, 2019, 15)

This issue of land grabbing has been studied based on case studies (compare Szocs *et al.*, 2015) and it relates to issues in the quality of governance.

> 'The effect of Common Agricultural Policy implementation has been mainly materialized into the increase of farmer subsidies, which practically increased their value five times in the investigated period. Farm incomes steadily increased, yet the increase of the incomes is almost exclusively due to the increase of subsidies received by farmers, in a progressive amount from year to year. The share of subsidies in farm incomes increased from 10% in the year 2007 to 40% in 2016. In this context, we consider that many farms depend quite heavily on the direct payments received, due to the low productivity of agricultural activities.' (Alexandri and Luca, 2019, 15)

So, there is a process of accumulating land to harvest decoupled payments in very large farms. This is not beneficial for the access to land for new generations. Here land grabbing in debates is sometime been equalized by land in foreign ownership:

> '…the only rigorous but internal estimation, carried out by the Romanian authorities in the year 2016, shows that the agricultural land owned by foreign firms or Romanian firms with foreign shareholders totalled 958 thousand ha, i.e. about 8% of the agricultural area (or 12% of the arable area, taking into consideration that the largest part of land sold to foreigners is arable land).' (Luca, 2019, 11-12)

Land grabbing is of course not pure a foreign issue. Also, domestic parties are take-up their share in this practice. After all, 3% of the farms control about 60% of the CAP grants and foreign held is only 12%. However, it must be noted that there are companies active that promote investment in Romanian land advertising (Figure 13), and who are also interviewed in publications directed to professionals in agriculture indicating that you can acquire full ownership in Romania for the price of an one-year lease in the Netherlands (Engwerda, 2017; van der Woude, 2017). Reports of study trips to review 'opportunities' for investments in Romania (Boekhorst, 2018; LTO Noord, 2018), are, however, critical about the orientation of buying more land to grow instead of channelling investments in the improvement of current land. In the proceedings of this business trip observations are shared that, for example, that

Romania has a dual land market of many very small farms and a few very large one that predominantly lease their land. These farmers

> '…appear to be motivated to increase income on short-term with as low input as possible. Long-term soil improvements are less on the agenda, partly because a lot of the soil is not owned. The average Romanian would be tending to acquire extra land to increase income, instead of investments to increase the income of current hectares.' (Boekhorst, 2018)

It is probably best to read 'average Romanian large landholder' as it can be doubted whether the participants of this study trip have been meeting many smallholders, who are not so much active in accumulating land.

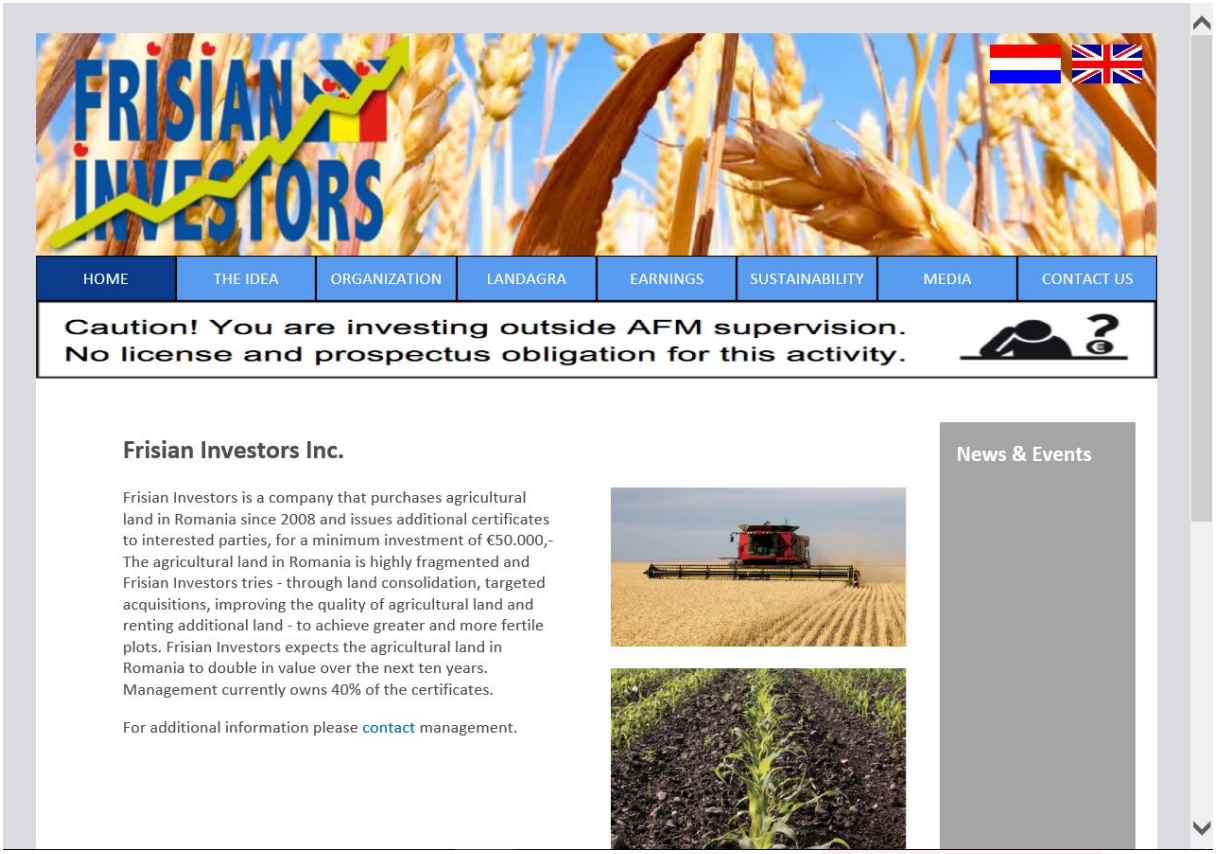


Figure 13: Website for investment in Romanian land (Frisian Investors, 2018)

The system of CAP decoupled payments is clearly supporting such an orientation of acquiring extra land. Investments in land improvements are not the main way to receive extra grants, investments in extra land does provide these. This seems so to be a major disturbance in the development towards a more sustainable development of rural areas.

There is a 'reverse tenancy configuration' (Amblard and Colin, 2009) of many small landowners with large tenants that consolidate land holdings in 'large-scale corporate farms' (Amblard and Colin, 2009, 829). This development has been continued in the last decade (Alexandri and Luca, 2019). In neo-classical economics:

> 'The efficiency of land markets is measured through their ability to transfer land from less productive to most productive users. The transactions costs, which complicate or hinder these transfers, lead to efficiency decrease. Several studies have shown that the agricultural markets from the countries that had already passed through the transitional period were characterized by the existence of significant transaction costs, which represented a constraint for the farms that intended to increase their size, also in the case of Romanian farms. These constraints came from the costs related to the asymmetric information, co-ownership of land (as result of the land restitution process), the precarious situation of the registration of properties, the high level of commissions and fees in connection to property transfers.' (Luca, 2019, 3)

The transparency of the Romanian land market is limited. The statistics on operations at the land market are of limited use (Luca, 2019). Various sources provide different data on land transaction prices; the general consensus is that the prices have been going up considerably since Romania has become an EU Member state (Luca, 2019).

In ***Conclusion*** it is clear that in this type of remote, non-mountainous regions conditions exist for the accumulation of land in the hands of a few large landholders. The low quality of government makes that governments are weak and that the population experiences that not all members of the population have equal access to government services. This is critical for rural development. The fact that matters of local development are not addressed adequately, complicates access to land for new generations. The non-mountainous character makes that economies of scale can be much more easily play a role than in areas, in which natural conditions support small-scale farming. So large inequalities in land holdings are typical in these regions as is an aging population.

5.1.4 Remote regions—mountainous—Low QoG —All ratios of DP/Rent (RE-M-L-A)

RE-M-L-A (Remote Rural and Intermediate areas—mountains >50% of area—Low QoG (<–0.669)—All DP/Rent)
BG412 Sofia; BG413 Blagoevgrad; BG424 Smolyan; BG425 Kardzhali; EL411 Lesvos, Limnos; EL412 Ikaria, Samos; EL413 Chios; EL421 Kalymnos, Karpathos, Kos, Rodos; EL422 Andros, Thira, Kea, Milos, Mykonos, Naxos, Paros, Syros, Tinos; EL432 Lasithi; EL433 Rethymni; EL513 Rodopi; EL521 Imathia; EL524 Pella; EL526 Serres; EL527 Chalkidiki; EL531 Grevena, Kozani; EL532 Kastoria; EL533 Florina; EL541 Arta, Preveza; EL542 Thesprotia; EL611 Karditsa, Trikala; EL621 Zakynthos; EL623 Ithaki, Kefallinia; EL624 Lefkada; EL631 Aitoloakarnania; EL641 Voiotia; EL643 Evrytania; EL644 Fthiotida; EL645 Fokida; EL651 Argolida, Arkadia; HR032 Licko-senjska zupanija; HR034 Sibensko-kninska zupanija; HR037 Dubrovacko-neretvanska zupanija; ITC14 Verbano-Cusio-Ossola; ITC20 Valle d'Aosta/Vallée d'Aoste; ITF21 Isernia; ITF22 Campobasso; ITF64 Vibo Valentia; ITG14 Agrigento; ITG16 Enna; ITG26 Nuoro; ITG29 Olbia-Tempio; ITG2A Ogliastra; ITI45 Frosinone; RO112 Bistrita-Nasaud; RO114 Maramures; RO124 Harghita; RO422 Caras-Severin

Box 7 RE-M-L-A (Remote Rural and Intermediate areas—mountains >50% of area—Low QoG (<–0.669)—All DP/Rent)

In these type regions are located in Bulgaria, Croatia, Greece, Italy and Romania (Box 7). The issues of the Romanian land market have been discussed above. Bulgaria faces the same kinds of issues as Romania. Land ownership of small parcels in not-divided ownership. It is, legally, not possible to divide small partners over all its owners as there is a minimum size requirement of parcels, which means that other steps must be taken to resolve divided ownership (van Dijk, 2003a). Although land ownership is still very unequal (GINI of 0.75), it is not so unequal

as the non-mountainous counterpart of this type. This is due to that less land (40% in the average region) is accumulated in large farms over 100 hectares. This is however a matter of degree: it is a type with a polarised landownership structure. There are large differences between regions. In EL631 Aitoloakarnania (a region in West Central Greece, north of the Peloponnesus), there are even no land holdings over 100 hectares registered. The Italian regions show a large difference between, for example Aosta (see below) with a lot of farmland held over 100 hectare and Molise (ITF21 Isernia and ITF22 Campobasso) in which this is low.

The EEA land use data shows that some dynamics in land use are relatively low in these areas. The land cover flow agricultural dynamics is in this type of region lower than in other types of regions. So, areas do not change from type of agriculture, such as form pastures, to fields or permanent crops. Active forest management is low relative to the size of forests. The loss of agricultural land is, with 0.34% over a period of 18 years, much lower than in urban areas, confronted with urban sprawl. In some regions, especially in Croatia (HR037 Dubrovacko-neretvanska zupanija and HR034 Sibensko-kninska zupanija) and Greece (EL527 Chalkidiki, EL432 Lasithi, EL411 Lesvos, Limnos, EL526 Serres) agricultural land use has been growing between 2000 and 2018. Most regions, show, however, a decline in agricultural land use. Here two Greek regions in Western Macedonia show most decline with a loss of over 2% (in EL531 Grevena, Kozani) and over 3% (in EL533 Florina) of agricultural land between 2000 and 2018. In both these regions there has been a large sprawl of economic sites and infrastructure.

In a recent paper on the chances for organic farming in Bulgaria (Mitev, 2019), several opportunities were distinguished, including the large variety of biodiversity types in Bulgaria, but also some threats to the development were included. Next to issues as a 'lack of entrepreneurial culture' in the area, issues of land markets were signalled, such as, a 'strong fragmentation of agricultural properties, including for small farms' and a 'lack of a real agricultural land market in Bulgaria' (Mitev, 2019, 576). Organisations as the Worldbank had the policy theory that by privatisation of land in Eastern European, a flourishing culture of rural entrepreneurship would develop that would address the issue of rural poverty (Varga, 2020). This policy theory has not worked out in practice: the land reforms resulted in a 'failure to make a marked difference in producing more entrepreneurship' (Varga, 2020, 8). Moreover, there is a 'problematic relationship between poverty reduction and entrepreneurship promotion' (Varga, 2020, 8). The reforms have not resulted in a more market oriented, entrepreneurial, agriculture as the market does not serve the smallholders very well, but in an agriculture that has a large share of 'subsistence' agriculture; production for the own needs of the farmer. Smaller farms tend to produce per hectare more than big farms (Varga, 2020). This might relate to the issue that smaller farms provide more time and effort in producing crops on their land and larger farms tend to acquire extra land holdings to acquire more CAP grants.

A Bulgarian case study (5.1.4.1) shows that mountainous area, because they are less attractive for large scale mechanisation, may benefit form endogenous local development powers, more than other areas that are modernised to the expense of local employment. A case study at Rhodes (Greece) (5.1.4.2) shows that tourist investments have large impact on the area, but also that these demand a large of the state in accommodating infrastructure and even bale out private investors that have taken too much risk. The valley of Aosta (5.1.4.3) was until

recently an area that had exemplary position in relation to Quality of Government and new generations considered as an area that would provide them sufficient opportunities to return to after a journey in the opportunities elsewhere. This has changed very dramatically quite recently; the land market seems not to reflect this yet.

5.1.4.1 Bulgaria (BG424 Smolyan; BG425 Kardzhali)

The Bulgarian regions of Smolyan and Kardzhali are located in the South-Central region of Bulgaria. In a comparative paper, Doitchinova *et al.* (2018) compare the development in this South-Central region with the development of less-mountainous regions in North-West of Bulgaria, which includes regions as Montana, Vidin and Vratsa. In regions as Smolyan traditional family farms having mixed crops staid dominant in the agrarian structure. In the North West, however, 'modernization' took place at a large scale through the processes of (1) intensification, (2) specialization and (3) concentration (Doitchinova *et al.*, 2018). This resulted in more hired personnel and less family farming and in a different land market structure, which much larger land holdings and a larger percentage of rented land. The relationship between owners and renters is based on the revere land tenure situation (Doitchinova *et al.*, 2018). The process of modernization has been supported by the CAP, which has allowed for funding the investments necessary to 'modernize' the farming sector. In relation to rural development however, Doitchinova *et al.* (2018), conclude that the modernizing areas have developed much more negatively than the more traditional farmed areas in the South Central area, such as Smolyan and Kardzhali, which this kind of CAP funding is less used and which have witnessed a relative much better development, than the modernized areas in the North West (Table 28).

Modernizing areas (Northwest)	Traditional areas (South Central)
• unemployment is rising • the population is aging; • migration processes are higher; • the concentration of agricultural production is faster (74.3% of the farms were destroyed in the last 10 years, while 61.6% in the Southern Central Region) and the average size of farms is growing; • high degree of specialization of production on farms; • the relative share of rented land increases; • reduction in the use of labour and family labour in agriculture.	• unemployment in rural areas is lower • employment in agriculture is increasing • family farms dominate, a large part of which is semi-marketable • farmers grow more and more diverse products creating higher added value • more farms that develop other activities as source of additional income. • a more diversified rural economy • higher entrepreneurship • higher added value, including agricultural activities and tourism.

Table 28 Modernizing areas in Northwest Bulgaria compared to traditional areas in South Central (Doitchinova et al., 2018, 256-258)

So, based on the comparison of Doitchinova *et al.* (2018) it can be concluded that the CAP is not only supporting the development of the reverse land market of few powerful tenants and

many small owners in the less mountainous areas of the Bulgarian Northwest, but this development seems not to contribute towards a more sustainable rural development. Areas that are not following the path towards scale enlargement, perform better in rural development, than areas that modernize supported by the EU instruments.

5.1.4.2 Rhodes (EL421 Kalymnos, Karpathos, Kos, Rodos)

On the Greek Islands tourism is a major economic force affecting land use. This results in land speculation, which has been studied by Triantafyllopoulos (2017) in a case study on the village of Faliraki, which has less than 300 permanent residents, but a tourist capacity of over 24,000 beds. It is located at the east coast of Rhodes about 15 km from the island's main urban centre. Many of the tourist facilities have been developed in the agricultural hinterland of the village (Triantafyllopoulos, 2017). Triantafyllopoulos (2017) has studied the land market by analysing cadastral information, as it was set up by the former Italian administration of the Island and which was based on the German *Grundbuch* system, which also means (just as in the German situation) that the information is not open and transparent to all, but that the researcher needed 'special permission granted by the Ministry of Justice' (Triantafyllopoulos, 2017, 17) to access the data and was limited by this permission in presenting outcomes. In the German context there are specific property committees that have access to transaction data and publish reports on the land market (AK OGA, 2019). This is missing in the Greek context: 'Reliable information on land transactions is very hard to find, because they are always covered by confidentiality.' (Triantafyllopoulos, 2017, 17). So, the institutional transplantation of the German system, via Italian administrators, has been incomplete. The confidentially of the cadastre is there, but the transparency of the market by producing authoritative market reports based on this confidential information is missing. This had also as consequence that the study of Triantafyllopoulos (2017) covered rather old data, transactions between 1970 and 1995. The study does show, however, that state subsidies for the regional development of Rhodes were capitalised in land values.

> 'Thus, speculation in the tourism financing system was transmitted to land market and transformed to land speculation, accommodated by the permanent conditions of limited supply of land due to the ownership structures and despite the inefficient land use planning control, the later has resulted in the progressive sprawl of tourist equipment across the whole area of study and the production of a semi-urban environment of low quality (…)' (Triantafyllopoulos, 2017, 25).

Moreover, it showed that, at the time that economic powerful tour operators established lower room prices for their package deals, the consequences, as investors could not pay their mortgage loans were, again, taken by the state.

> 'The banks, which were state-owned and controlled, could not allow the large mortgages to be wasted through confiscation and at the same time create irreparable socioeconomic damage in Rhodes; tourism is the main source of income on the island (…). The solution was provided by the government itself, as the loans were often restructured, the interests were capitalised or new bank loans were provided so as to secure the continuation of financing to the enterprises. This was, to a high degree, the

> result of pressures exerted by local deputies or Ministers.' (Triantafyllopoulos, 2017, 25)

So, the state funded the land speculation in two instalments, first by its economic development policies and, second, by its bale out policies after it has shown that expectations based on which high land prices were paid were too high. This may relate to the issues of institutional structures in relation to planning, property markets and Island development policies. It seems that the allocation of market risks and profits is not balanced between public and private agents.

5.1.4.3 Aosta

Remarkable is that Valle d'Aosta/Vallée d'Aoste (IT) is in this category. Up to 2013, Aosta ranked nationally to the 'higher performers on all underlying indicators' (Charron *et al.*, 2019a, 1938) in the Quality of government scores. In 2017 the score went down to a low QoG, which the highest divergence between 2017 and 2013 of all regions measured by QoG institute (Charron *et al.*, 2019a; Charron *et al.*, 2019b). The QoG is survey based, using three pillars of QoG. The lowest score of Aosta is in the quality pillar, which is built on the following three questions: 'How would you rate the quality of public education in your area?' 'How would you rate the quality of the public health care system in your area?' 'How would you rate the quality of the police force in your area?' (Charron *et al.*, 2019b, 13). The responses to these questions are a lot worse than the Italian average, which is worse than the EU average and this is a recent development for Aosta, as it did not come up in the 2013 survey. This may relate to the situation that this autonomous region was relatively well off until recently. 'However, this situation has changed dramatically in recent years with the region, as an integrated part of the national economy, having to align more closely with an Anglo-European imperative for austerity.' (Sofritti *et al.*, 2019, 2) This has also impact for new generations.

> 'As such, young people in the region are facing the effects of a rise in local unemployment rates and, in turn, the risks of finding themselves at an impasse with increasingly limited access both to work and to education and training opportunities.' (Sofritti *et al.*, 2019, 2)

In interviews with young people there 'is a dialectic between "before" and "after" in several participant's narratives, Aosta Valley is depicted as being no longer a "happy island" like it had been previously.' (Sofritti *et al.*, 2019, 11). So, Aosta shows the fragility of remote mountain regions. Even regions that perform rather well, may transfer to an area which does not provide chances for new generations within a few years.

Land prices in Italy are in general high, much higher than in France or Spain, and the prices are in the North higher than in the South (Mela *et al.*, 2016). Mela *et al.* (2016) indicate that in Aosta the farmland values 'are very high due to local factors' (Mela *et al.*, 2016, 9), making it difficult to model the determinants of agricultural land values. In Aosta (based on FADN data) farmers rent about 90% of their utilised agricultural area. The UUA is large and rents are relative (for an Italian region) relatively low. This is probably due to rents for mountain pastures.

Over 99% of the farms and the land are held by natural persons. So, it is an area of family farming. Here traditional, patriarchal, gender values persist. Only 1/8 of the farmers below 40 are female and these held less than 10% of the farmland held by farm managers below 40. Inequality in farm sizes is also large, 50% of the farms are below 5 hectares, the average farm is over 40 hectares, the GINI is 0.78, a lot higher than the average EU region. Here some specific differences in crops may explain part of this, i.e., the cultivation of wine in the valleys on smaller farms of which '87% are below 0.5 ha' (Bagnod *et al.*, 2020, 104) versus large pastures at higher altitudes. After all, in the region there is (according to EEA data) only 628 hectares for arable land and permanent crops (which has been grown with 3% between 2000 and 2018) and 26068 hectares of grassland and farmland mosaics (which stayed about the same in size). This makes that inequality may be more limited than the data suggests. A farmer needs to held many more hectares of pasture land high in the mountains to be in the same position as a farmer holding a vineyard in the valley.

However, there is only few generational renewal in the wine areas: Bagnod *et al.* (2020) report an average age of 59.7 years for wine farm holders in the area. The wineries have steep slopes, plots are fragmented, small and difficult to access resulting in few mechanisation, especially in relation to the pergola type of wine growing on terraces (Bagnod *et al.*, 2020).

> 'The high land fragmentation we can observe in Aosta Valley is certainly one of the causes responsible for the decrease in agricultural activities and the ageing among agricultural farmers, especially wine-growers. A similar situation can be easily found in many other Alpine regions (…)'(Bagnod *et al.*, 2020, 109)

Winegrowing in the form find in Aosta adds to the heritage of the area and its current situation is very fragile as rural regeneration is not taking forward.

To the positive site it can be indicated that there are few land covers flows in the area. So, the system has not yet collapsed in its spatial manifestation. However, the change of governance context happened very fast and it is so not clear what this will bring.

In ***Conclusion*** remote mountain areas provide less fertile ground for the development of very large farms. Traditional practices may continue longer, which in some cases may also result in that local labour is still wanted, because more labour-intensive and diverse farming practices are continued and developed further using entrepreneurial skills. The higher share of forests and nature areas in land, and the mosaic pattern of land use, makes that more frequent shifts are taken place between these two green functions. Tourism is another function that play an important role in many of these areas, which may, on the one hand, make it possible for farmers to diversify their incomes, but on the other hand, can result in a disposition of farmers for tourist accommodation and attractions. This may result in extra pressures on the land market, making it more expensive to have access to land. Tourism can also be very volatile in its income. Consumer preferences may change and may impact opportunities. As mountain areas are often relatively isolated, they may develop different from their surroundings and may face issues of lack of resilience; this may relate to issue of climate change, but also socially in relation to public service provision and opportunities for new generations. This has its impact on the land market.

5.2 Rural area close to the city

Rural areas of which over half of the population live within commuting time of a city (defined as a population concentration with over 50,000 inhabitants) are considered to be rural areas close to the cities. People in these rural areas have access to urban amenities and labour markets. This may have also impact on land markets. Suburbanisation pressures may be higher for these areas than in remote regions, which may have impact on land prices and willingness of landowners to alienate land for rural prices. However, it can be expected that these effects will be larger in intermediate or urban areas than in rural areas close to the city.

5.2.1 Rural - Close to the city—non-mountainous—High QoG—Low DP/Rent (RC-N-H-L)

RC-N-H-L (Rural - Close to the city—mountains < 50% of area—High QoG (>0.524)—Low DP/Rent (<0.95))
DE119 Hohenlohekreis; DE11A Schwäbisch Hall; DE11B Main-Tauber-Kreis; DE127 Neckar-Odenwald-Kreis; DE135 Rottweil; DE146 Biberach; DE149 Sigmaringen; DE21A Erding; DE21E Landsberg am Lech; DE21G Mühldorf am Inn; DE21I Neuburg-Schrobenhausen; DE21M Traunstein; DE221 Landshut, Kreisfreie Stadt; DE222 Passau, Kreisfreie Stadt; DE223 Straubing, Kreisfreie Stadt; DE224 Deggendorf; DE226 Kelheim; DE227 Landshut, Landkreis; DE228 Passau, Landkreis; DE22A Rottal-Inn; DE22B Straubing-Bogen; DE22C Dingolfing-Landau; DE233 Weiden in der Oberpfalz, Kreisfreie Stadt; DE235 Cham; DE236 Neumarkt in der Oberpfalz; DE237 Neustadt an der Waldnaab; DE239 Schwandorf; DE23A Tirschenreuth; DE24B Kulmbach; DE24C Lichtenfels; DE24D Wunsiedel im Fichtelgebirge; DE251 Ansbach, Kreisfreie Stadt; DE256 Ansbach, Landkreis; DE25A Neustadt an der Aisch-Bad Windsheim; DE25C Weißenburg-Gunzenhausen; DE265 Bad Kissingen; DE266 Rhön-Grabfeld; DE267 Haßberge; DE268 Kitzingen; DE26A Main-Spessart; DE274 Memmingen, Kreisfreie Stadt; DE277 Dillingen an der Donau; DE278 Günzburg; DE27C Unterallgäu; DE27D Donau-Ries; DE804 Schwerin, Kreisfreie Stadt; DE80J Mecklenburgische Seenplatte; DE80L Vorpommern-Rügen; DE80M Nordwestmecklenburg; DE80N Vorpommern-Greifswald; DE80O Ludwigslust-Parchim; DE917 Helmstedt; DE918 Northeim; DE926 Holzminden; DE927 Nienburg (Weser); DE934 Lüchow-Dannenberg; DE937 Rotenburg (Wümme); DE93A Uelzen; DE948 Cloppenburg; DE949 Emsland; DE94H Wittmund; DEA44 Höxter; DEE04 Altmarkkreis Salzwedel; DEE06 Jerichower Land; DEE08 Burgenlandkreis (DE); DEE0A Mansfeld-Südharz; DEE0D Stendal; DEE0E Wittenberg; DEF05 Dithmarschen; DEF07 Nordfriesland; DK050 Nordjylland; FI195 Pohjanmaa; FI196 Satakunta; FRI11 Dordogne; FRI13 Landes; IE042 West; IE051 Mid-West; IE053 South-West (IE); NL341 Zeeuwsch-Vlaanderen; UKH16 North & West Norfolk; UKH17 Breckland & South Norfolk

Box 8 RC-N-H-L (Rural - Close to the city—mountains < 50% of area—High QoG (>0.524)—Low DP/Rent (<0.95))

This type consists of many German areas, one Danish, two Finnish, 3 Irish, an area in the Netherlands and two areas in the UK (Box 8).

About ¾ of these regions have had a growing population between 2014 and 2019. The type includes, for example, many high-growth rural regions in Bavaria (DE) and moderate growth regions in Baden-Wurttemberg (DE). Also, several declining regions are in Germany, such as in Sachsen-Anhalt, which is in the East of Germany, but close the former iron curtain.

The growing regions in this type have high land prices, up to € 100,000 a hectare in some of the German regions (AK OGA, 2019). The French and Finnish regions and the region of Wittenberg (Sachsen-Anhalt) have land prices that are below 10% of these regions.

In all regions the GINI is below the GINI of the EU average region, and within this group, the most expensive regions belong to the most equal regions in relation to land ownership. In

these, more equal regions, there are only few farmers with less than 5 hectares of land. Many smaller farms disappeared since 2005. There is no extreme accumulation in land in very big farms; high land prices, may make this also an expensive undertaking. However, the number of farms that hold more than 100 hectares have been growing considerably over the last decade measured by the data. So, there is land market activity to consolidate land.

Some of these regions have a very high percentage of agricultural land. The two UK regions (UKH16 North & West Norfolk; UKH17 Breckland & South Norfolk), this is 84% of the land. In some other German regions (including Nordfriesland and Dithmarschen in Schleswig-Holstein) and the Netherlands (Zeeuws-Vlaanderen) this is over 80%. In the Finnish regions and in Landes (FR) forests use far more land than agriculture. So, land uses differ by region.

Land is generally held by older farmers: in the UK and Irish regions of this type less than 10% of the land is held by farmers below 40 years of age. Over 90% of this land held by young farmers is held by male farmers. So, the chance that a hectare of land is held by a young female farmer is in these regions and some regions in Germany (mainly in Sachsen-Anhalt), Denmark (Nordjylland), Finland and the Netherlands (Zeeuws-Vlaanderen) below 1%. It is in these regions (except for the German ones) that the percentage of rented land is lowest. Most (84% to 99%) of the land in these regions is held by natural persons. So, family farming in these regions is (still) patriarchal and this practice is being reproduced in the current young generation. Process of allocating land within family relationships is generally not guided by the market, but by traditions; which are, based on these figures, still going strong in these regions.

In this type there are also many regions in Mecklenburg-Vorpommern in which there are, just as in some other regions in the East of Germany non-regional shareholders owners of agricultural firms (Tietz, 2017).

Specific emphasis will be on Sachsen-Anhalt (5.2.1.1), a region with, for the German context, low densities, in which large sale land acquisitions have been growing and Zeeuws-Vlaanderen (5.2.1.2) a rural region in The Netherlands, located between the estuary of the Westerschelde and the Belgian border, which urban-rural relationships are primarily cross border, resulting in cross-border opportunities and land uses. These new claims and activities may have a negative impact on access to land for farming.

5.2.1.1 Sachsen-Anhalt (DEE0D Stendal; and the intermediate area of DEE0C Salzlandkreis)

Bunkus and Theesfeld (2018) have studied land grabbing in two areas in Sachsen-Anhalt, the Altmarkkreis in DEE0D Stendal (which is a rural NUTS 3 area) and the intermediate area of DEE0C Salzlandkreis, which is located about 115 km South of the Altmarkkreis. The study looked at the consequences of Large-Scale Land Acquisitions (LSLA) for the rural communities studied. First, Bunkus and Theesfeld (2018) considered quantitative data showing that land is being held by less farmers and that farmers get bigger. Companies own in average more land than natural persons (Bunkus and Theesfeld, 2018). The data also show that most farmers lease their land and that in this way concentration of ownership does not mean that farmers are losing local connections. In a second step of the research extensive qualitative research was done in 4 communities, both in interviewing people in the agricultural sector as people

living in the village communities. In this study the framework of land grabbing was applied (Borras and Franco, 2012; Franco and Borras, Eds. 2013), analysing 'legal irregularities, non-residence, centralization in decision-making structures, land as investment object, decision-power concentration, and de-facto limited land market access' (Bunkus and Theesfeld, 2018, 16) to study whether the negative consequences of Large-Scale Land Acquisitions (LSLA) could also be found in the German context. The found 'rather social subtle effects' (Bunkus and Theesfeld, 2018, 16) Especially,

> 'De-facto access to land is also an issue, when an average farmer has a lesser chance to buy agricultural land due to raising prices or too large plots offered, when confronted with capital-intensive investors with or without agricultural background and sometimes not even coming from the region.' (Bunkus and Theesfeld, 2018, 16)

Government organisations selling land to the highest bidder support the process that economic power rules; selling land in smaller lots is a first step taken to make the land more affordable for smaller farmers. This may however not be sufficient; in the German context it is highly relevant to consider the lease market as well, as according to Bunkus and Theesfeld (2018) 71% of the cultivated land is leased in the East of Germany

5.2.1.2 Zeeuws-Vlaanderen (NL)

Zeeuws-Vlaanderen is the only NUTS 3 area in the Netherlands that is classified as rural by EUROSTAT. It is located between the estuary of the Westerschelde and the Belgian border. Until 2003 it was only connected by ferry or a detour via Belgium (Antwerp) with the rest of the Netherlands, which contributed to its relative isolation. Cross-border commuting was very low (Meijers *et al.*, 2013). Currently it is connected with a toll tunnel, and as there is only one other road where toll is being paid by the car drivers in the Netherlands, and there is no alternative road, this is contested as contributing to a more isolated development (Meijers *et al.*, 2013; Meijers *et al.*, 2018). In relation to the soil (*zavel,* that is, sandy clay*)* and traditional crops (flask, which is of relative minor importance nowadays) it is connected to Flanders. Although, the local dialect originally has been Flemish (Will, 2004), after four centuries of a border, '…the southern phenomena are disappearing (…). In this respect one could say that the people of Zeeuws-Vlaanderen become more and more people of Zeeland.' (Will, 2004, 283) Furthermore, the border marks a strong difference in landscape and culture (Van den Berghe *et al.*, 2020). South of the border there are the cities of Gent, Brugge and upstream the Schelde, Antwerp, and a web of suburban sprawl along the roads connecting towns and suburbs (De Decker, 2011). Zeeuws-Vlaanderen is predominantly an open area, in which population is concentrated in villages and towns. Traditionally there have been services oriented towards the Belgian population across the border making use of different identities and regulations, including restaurants accommodating busloads of Belgians to eat mussels, a large furniture firm, sex shops and cannabis-smoking facilities. There is also industrial development in a zone along the cannel towards the harbour of Gent. Over the past decades, cross-border land market exchanges have taken place. In response to a perspective of population decline communities have advertised housing in this area to families across the border. Many of these families stay primarily oriented towards Belgium, including that their kids go to school in their area of origin. This relationships had as result that during the Global Financial Crisis around 2008, the housing market in Zeeuws-Vlaanderen did not follow the

deep stagnation of the rest of the Netherlands (Meijers *et al.*, 2013). In Zeeuws-Vlaanderen, the housing prices dropped only 6% after 2008; in the Netherlands, prices dropped over 15% and it took longer to reach the 2008 price level (NVM, 2020). So, Zeeuws-Vlaanderen staid more in par with the more moderate developments in Flanders. Another area of land market exchanges is that of biodiversity compensation for the industrial and harbour developments in Flanders. As rural land is cheaper and less affected by urban development, than the urbanised areas in Belgium, part of this takes place in the Netherlands, which is politically contested especially as it is often about of returning land to the sea (wetland development), which is at odds with regional identity of Zeeland having a long history of disastrous storm surges (Schuijers, 2012). Some of its islands have been lost to the sea and some have been reconquered again (De Kraker, 2006) and such a retreat seems an unhonourable defeat.

However, for farmers in Zeeuws-Vlaanderen the development of the land market is considered to be the largest threat they currently have to face (Spruijt and Schoorlemmer, 2015). The gap between lower land prices in the Dutch average has been closed (Spruijt and Schoorlemmer, 2015). Furthermore, the development that many non-farmers are 'hungry for land' result in taking land from agriculture and to put it in other uses (Spruijt and Schoorlemmer, 2015).

During the COVID19 crisis, the border became more real as the Belgian authorities physically blocked the borders, involving, e.g., that inhabitants of the village of Koewacht could not walk to the local bakery as it was located at the other site of the border (Maes, 2020); historical references were made to an earlier separation of the village by the 2000 Volt 'Wire of Death', which the Germans had installed at the same spot, and the rest of the border, during World War 1. The three mayors of the area have sent an open letter to their counterparts over the border to ask for understanding for the position relating to the interwovenness of the areas across the border (ZVB, 2020). It is not yet known what the effect of this renewed experience with a stringent border will have on the land market. Structurally the location close to the dense Flemish centres has not been changed. The first reports on the effects of COVID19 on the rural land market do not show a major shift (Essink, 2020).

In ***Conclusion***, Rural close to the city regions with a relative to the rent low level of decoupled payments, may be prone to land take for both rural and other functions. The fact that cities are not too far away, makes that these other functions can play a large role on local land markets. Not always these other functions are high-priced, such as nature compensation, but political will can play also a role in allocation of land. In general, this type of regions has a very high share of farmland, which may make that this is not considered to be a big issue. Most of these regions have rather equal shares of farmland, but usually the price, in market value of the land, is high, which fits to the selection of this type as a low ratio of decoupled payments to rent.

5.2.2 Rural - Close to the city—non-mountainous—High QoG—Medium+High DP/Rent (RC-N-H-MH)

RC-N-H-MH (Rural - Close to the city—mountains < 50% of area—High QoG (>0.524)—Medium+High DP/Rent (≥0.95))
AT111 Mittelburgenland; AT112 Nordburgenland; AT113 Südburgenland; AT125 Weinviertel; AT224 Oststeiermark; AT311 Innviertel; DE407 Elbe-Elster; DE40D Ostprignitz-Ruppin; DE40F Prignitz; DE40I Uckermark; DE725 Vogelsbergkreis; DE733 Hersfeld-Rotenburg; DE735 Schwalm-Eder-Kreis; DE736 Waldeck-Frankenberg; DEB13 Altenkirchen (Westerwald); DEB1B Westerwaldkreis; DEB1D Rhein-Hunsrück-Kreis; DEB23 Eifelkreis Bitburg-Prüm; DEB24 Vulkaneifel; DEB3B Alzey-Worms; DEB3D Donnersbergkreis; DEB3G Kusel; DEB3K Südwestpfalz; DED2C Bautzen; DED53 Nordsachsen; DEG06 Eichsfeld; DEG09 Unstrut-Hainich-Kreis; DEG0A Kyffhäuserkreis; DEG0C Gotha; DEG0K Saale-Orla-Kreis; DEG0N Eisenach, Kreisfreie Stadt; FI193 Keski-Suomi; FI1D2 Pohjois-Savo; FRG03 Mayenne; FRG04 Sarthe; FRG05 Vendée; FRH01 Côtes-d'Armor; FRH02 Finistère; FRH04 Morbihan; FRI21 Corrèze; FRI23 Haute-Vienne; FRK21 Ain; UKG11 Herefordshire, County of; UKL14 South West Wales; UKM91 Scottish Borders; UKM92 Dumfries & Galloway; UKN08 Newry, Mourne and Down; UKN11 Mid Ulster; UKN12 Causeway Coast and Glens; UKN16 Fermanagh and Omagh

Box 9 RC-N-H-MH (Rural - Close to the city—mountains < 50% of area—High QoG (>0.524)—Medium+High DP/Rent (≥0.95))

This type of regions (Box 9) includes regions in Austria (6), Germany (25: 4 in Brandenburg, 4 in Hessen, 9 in Rheinland-Pfalz; 2 in Sachsen; 6 in Thüringen), Finland (2), France (9: 3 in Pays de la Loire; 3 in Bretagne; 2 in Limousin and 1 in Rhône-Alpes) and the UK (8; 1 in England, 1 in Wales, 2 in Scotland and 4 in Northern Ireland). 28 (56%) of these regions show a growing population between 2015 and 2019 and 22 (44%) a declining population. There are no national patterns: regions of all member states in this type can be found in the growing or the declining group. There are also large differences in median ages. Mid Ulster (UK) is with a median age of 36.5 year (in 2019) the youngest rural area of Europe. There is enough capacity, that is, youth, within the region to establish generational renewal endogenously. Prignitz (DE), located in Brandenburg in the middle between Hamburg and Berlin, with median age of 55.4 years, belongs to the three oldest rural areas in the EU. There are however many urban and some intermediate areas with younger populations than Mid Ulster and some intermediate areas have also older populations than Prignitz. In these regions, the endogenous capacity for generational renewal is insufficient. Prignitz is currently already the region with the lowest population density in Germany, but in many member states regions with much lower densities exist.

Land prices are generally lower than in the RC-N-H-L type, which is in line with the distinction between the types, that is a low ratio of decoupled payments and rents versus a medium to high ratio between decoupled payments and rents. Regions with higher rents (a lower ration of DP/rent) tend to have higher land prices as well. Lowest land prices can be found in France, Finland and the regions in the hillier areas in central Germany (Rheinland-Pfalz, Hessen, Thüringen). Highest land prices can be found in the UK, and (often winegrowing) areas in Austria and Germany.

Most of the regions of this type show less land inequality than the EU-average region. Moreover, especially in the relative more inequal regions, inequality has been diminished since 2005. The main reason for this is that there are few small farmers. So, in the most equal regions in this type, located in Bretagne (Côtes-d'Armor, Finistère, Morbihan) in France, 65% of the farmers hold more than 30 hectares of the land. In total they manage 93% of the farmland. In the more inequal regions (In Burgenland, Austria) there are also a substantial number of smaller farms (21% below 2 hectare and 18% from 2 to 5 hectare holding together

only 2.6% of the land). In this type, diminishing inequality means there are fewer small farms. There is a steady process of the consolidation of land holdings making that land of retiring farmers goes for a large part to existing farms and not to new farmers. These regions show a relatively large number of medium-sized farms that have been part of the process of scale enlargement and land consolidation of the last decades without moving towards a dual structure of many small land holders and a few megafarms. So, there seems to be more common ground in the farming population without providing much possibilities for new generations to access the land.

In the German regions of Sachsen, Thüringen and Brandenburg a large share, except for one region (Nordsachsen: 46%) it is all in the range between 56% an 66% of land is owned by legal persons. In many of the 'new' federal states in Germany (the East of Germany), there is a large presence of shareholders from outside the region (Tietz, 2017; Laschewski *et al.*, 2019) (5.2.2.1).

5.2.2.1 Ownership of shareholder outside the region in the East of Germany

In Germany, as in some other Member States, such as in France, there are regulations that overview transactions of farmland. The regulations in Germany do not restrict the transfer of shares of a farmland-owning company. Tietz (2017) has studied the owners of these shares and in particularly investigates whether these owners have been active in more than one region and across sectors. So, he has studied whether the shareholders also invest in shares outside farming in other regions. He has done so by studying 10 case study regions in the East-German federal states of Mecklenburg-Vorpommern (Mecklenburgische Seenplatte and Vorpommern-Rügen), Sachsen-Anhalt (Anhalt-Bitterfeld and Stendal), Thüringen (Schmalkalden-Meiningen and Sömmerda), Sachsen (Bautzen and Nordsachsen) and Brandenburg (Märkisch-Oderland and Teltow-Fläming) (Tietz, 2017). Especially in Mecklenburg-Vorpommern many (41%) of the majority owners (controlling 34% of the land in these shareholders farms) are active in more than one region. Many of these companies (about 1/5 of the companies who also hold about 1/5 of the land hold by all shareholders farms) are controlled by shareholders that also hold shares in companies outside agriculture (Tietz, 2017). So, owning shares in a farm seems to be a kind of investment asset fitting in a diversified investment portfolio. Transactions of family farms, owned by natural persons, are observed and restricted by the Land parcel transaction law (*'Grundstücksverkehrsgesetz'*), these transactions are not. So, in a comparative way, the current legal structure support shareholders transactions (no control) compared to family farm transactions (control). The current law is losing its meaning (Tietz, 2018). Many rules and farm statistics are made based with the family farm as 'predominant organisational model in agricultural production' (Laschewski *et al.*, 2019, 3) in mind. However, in the East of Germany 'new organisational realities' (Laschewski *et al.*, 2019, 15) are developing that can cherry pick in the regulations and are so stimulated by current policies. The development makes that the link between farming and local policies is lost (Laschewski and Tietz, 2019). Farmers lose their position as local actors, which may result in a fragmentation of rural policies, which is likely not to be beneficial for rural regeneration.

In ***Conclusion***, this type of region shows a large variety in ages of the population, but has a relative low land price in common. In many cases not the new generations, but stronger

economic players, use this as an opportunity to gather land. Small farms are disappearing and free coming land is used to enlarge existing farms. This happens without creating a dichotomy between a few large farms and many smaller farms but it is a development that concerns the whole farming sector.

5.2.3 Rural - Close to the city—mountainous—High QoG—All DP/Rent (RC-M-H-A)

RC-M-H-A (Rural - Close to the city—mountains > 50% of area—High QoG (>0.524)—All DP/Rent)
AT121 Mostviertel-Eisenwurzen; AT123 Sankt Pölten; AT213 Unterkärnten; AT225 West- und Südsteiermark; AT313 Mühlviertel; AT314 Steyr-Kirchdorf; AT315 Traunviertel; AT331 Außerfern; AT335 Tiroler Unterland; AT341 Bludenz-Bregenzer Wald; DE12A Calw; DE12C Freudenstadt; DE24A Kronach; DE71B Odenwaldkreis; DE737 Werra-Meißner-Kreis; DEB15 Birkenfeld; DEB1C Cochem-Zell; DEB22 Bernkastel-Wittlich; DEG0E Hildburghausen; DEG0F Ilm-Kreis; DEG0H Sonneberg; DEG0P Wartburgkreis; FRK22 Ardèche; FRK23 Drôme; UKL12 Gwynedd; UKL24 Powys

Box 10 RC-M-H-A (Rural - Close to the city—mountains > 50% of area—High QoG (>0.524)—All DP/Rent

This type can be found in Austria (10 regions), Germany (12 regions, France (2 regions) and 2 regions in Wales (UK) (Box 10). Most (18 out of 26) of these regions still have population growth. Land prices are very divergent. Prices in the most expensive regions, often located in Austria are more than 10 times as high as in the French region in which land prices are only € 4,400 a hectare. The German regions located in the centre of Germany (between Pfalz and Thüringen) have also relative low prices. The regions in South Germany and the UK have higher prices. As also can be found in other regions of high QoG, the regions that have a high percentage of land owned by natural persons tend to have higher land prices, than areas in which legal persons own a considerable amount of the land. Only the French regions show a combination of a considerable share of legal persons owning the length and a considerable growth of this percentage since 2005. In Austria, the smallest farm sizes can be found, in the UK and, especially Thüringen (DE), the largest. The large once in Thüringen is part of a general movement of investment behaviour in agricultural holdings in the East of Germany (Tietz, 2017).

In the regions in Steiermark, Nieder-Österreich (AT) and France the share of land held by farmers under 40 years of age is more than 25%. In the UK regions this is just above 5%. So, there is a large difference in the generational transfer of agricultural practices. In the regions share of land held by young farmers they tend to have relatively large farms as their percentage in holdings is always a little less than their share of the land. The share of females in in the land holdings of farmers below 40 is in France below 8%. In the Austrian regions it is less low, with 15% to 28%. In equality in landholdings is in 2/3 of the regions less than the EU average and in 1/3 on or slightly above average. In 24 of 28 regions there is less inequality than in 2005.

The two French regions (Drôme and Ardèche) are good for 66% of all urban residential spawl in these 28 regions measured by the EEA land cover statistics. Sprawl of economic sites and infrastructure happens is also in other regions and has been overall about 3.8 times as large as urban sprawl. Here Drôme is also the area witnessing the largest sprawl. Second and third are here the Austrian regions of Tiroler Unterland and Unterkarnten. All in all, it can be

concluded that sprawl of economic sites and infrastructure are a much larger treat to farmland than urban sprawl in this type of regions. However, in some regions urban residential sprawl can be an issue. Note that Drome the region with by far the largest sprawl is not the fastest growing region. One of the faster growing regions, Bludenz-Bregenzer Wald (AT) does not show any residential spawl et all. This is not so remarkable as Bludenz-Bregenzer Wald has already, relative to the population, a large size of artificial land. The density of population in relation to the area of artificial land is 10.6 inhabitants per hectare. The artificial land density in Drôme is with 19.6 inhabitants per hectare artificial land higher, but some regions have higher densities, including Freudenstadt (DE) which has over 25 inhabitants per hectare artificial land.

5.2.4 Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG—Low+Medium DP/Rent (RC-C-M-LM)

RC-C-M-LM (Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—Low+Medium DP/Rent (≤1.59))
BE321 Arr. Ath; BE327 Arr. Tournai; BE331 Arr. Huy; BE334 Arr. Waremme; BE336 Bezirk Verviers - Deutschsprachige Gemeinschaft; BE341 Arr. Arlon; BE342 Arr. Bastogne; BE343 Arr. Marche-en-Famenne; BE344 Arr. Neufchâteau; BE345 Arr. Virton; BE351 Arr. Dinant; BE353 Arr. Philippeville; ES416 Segovia; FRB01 Cher; FRB02 Eure-et-Loir; FRB03 Indre; FRB05 Loir-et-Cher; FRC12 Nièvre; FRC13 Saône-et-Loire; FRC22 Jura; FRC23 Haute-Saône; FRD12 Manche; FRD13 Orne; FRD21 Eure; FRE21 Aisne; FRE23 Somme; FRF21 Ardennes; FRI31 Charente; FRI32 Charente-Maritime; FRI33 Deux-Sèvres; FRI34 Vienne; FRJ11 Aude; FRJ26 Hautes-Pyrénées; FRJ27 Tarn; FRJ28 Tarn-et-Garonne; FRM01 Corse-du-Sud; ITC4B Mantova; ITH10 Bolzano-Bozen; ITH33 Belluno; ITH37 Rovigo; PT111 Alto Minho; PT11B Alto Tâmega; PT16B Oeste; PT16E Região de Coimbra; PT16F Região de Leiria; PT16I Médio Tejo; PT185 Lezíria do Tejo

Box 11 RC-C-M-LM (Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—Low+Medium DP/Rent (≤1.59))

This regional type includes 12 regions in Wallonia (BE), 1 in Spain, 23 in France, 4 in Italy and 7 in Portugal (Box 11). So, it is the type where most of rural France belongs to. Over half of these regions (27 of 47) have experienced a population decline between 2014 and 2019. Twelve of the twenty growing regions are Belgian. The population of some of these Belgian regions, especially Bastogne with a median age of 36.8 in 2019, is remarkable young for a rural area. In most regions median ages are way into the 40s and in many regions median ages are even above 50 years. In this type the Belgian, growing, regions are mirrored by the Portuguese regions, which are all declining and have much higher median ages. French regions can be found both at declining and growing ends of the spectrum.

In relation to land prices, the French and Portuguese regions have the lowest prices. In all regions of this type it is (far) below € 1 per square meter. Prices in Franche-Comté (Haute Saone, Jura) are lower than in the other regions. Prices in the region of Segovia (ES) can also be found in the price range of the French regions. Prices in Belgium are much higher. Crossing the border from the French Ardennes, which for French conditions has a relative high price, to regions in the Belgian provinces of Namur (BE351 Arr. Dinant; BE353 Arr. Philippeville) or Luxembourg (; BE341 Arr. Arlon; BE342 Arr. Bastogne; BE343 Arr. Marche-en-Famenne; BE344 Arr. Neufchâteau; BE345 Arr. Virton) means that land prices are more than 4 times as expensive, towards Liege even 5 times as expensive. Large inner Member States differences can be found in Italy, in which Mantova is with € 5.5 per m2 the most expensive region of this

type and the regions of Belluno and Rovigo are with € 1.8 per m2 considerably less expensive, but still much more expensive than France, Spain or Portugal.

In the more expensive regions land is for over 80% of the land area owned by natural persons. In all French regions of this type, except for Corse-du-Sud, natural persons own less than half of the land. In France, there is a wide variety of legal forms that are used for the ownership of farms (Levesque *et al.*, 2011). Fiscal benefits and regional context play a role in the choice for a specific form (Levesque *et al.*, 2011).

Both in French, Italian, Spanish and Portuguese regions there is a large difference in farm sizes between farms owned by legal persons (big) and by natural persons (smaller). The difference between these types is much smaller in Belgium in which is it is in some regions less than 10%. The inequality of landholdings differs largely per region. In the Portuguese regions the GINI, and so inequality, is high, far above the average in the EU. Also, in Segovia and some of the French regions there are differences in land holdings, which, as must be noted, can also cone from differences in agricultural; practices, smaller vineyards versus larger pastures, etc. Prices of vineyards vary largely based on the value of the wines that can be produced and may vary between € 5,000 a hectare for vineyards in less popular areas without geographical identification up to more than 1,000 times as much for a Bourgogne Grand Cru vineyard in the Côte d'Or (SAFER, 2019). In the rural regions of this type prices of vineyards are not as high in Côte d'Or, but prices of vineyards to grow Champagne in Aisne, Pouilly-Fuissé in Saone-et-Loire or Sancerre in Cher, etc. (SAFER, 2019) are considerable.

Not all of these differences in land sizes relate to difference in produce, they also can come from differences in a wide range of agricultural firm management styles and smaller family farms (de Rincquesen *et al.*, 2016). More equal are the regions in the Centre-Val de Loire regions (FRB01 Cher; FRB02 Eure-et-Loir; FRB03 Indre; FRB05 Loir-et-Cher), Belgium and French-Comté.

In relation to land held by farmers below 40 years of age the French regions, and especially the regions in Franche-Comté (with over 30% of the land) are doing relatively well. In the Portuguese regions young farmers are a rarity. The gender distribution is, except for Corse-du-Sud with 29% of the land hold by young farmers is held by females, in the French regions 10% or less.

This may relate to the fact that French regions have a high share of rented land, making that financial investment to access to land is a lot lower than in a context of ownership. This share of rented land, is except the region of Corse-du Sud, over 80% in all French regions. Also, in Belgium and most of Italian regions (except Bolzano/Bozen, where it is about 30%) over 50% of the utilised agricultural area (UAA) is rented land. Only in Portugal rent plays a minor role with about 15% of the UAA.

All French regions show a considerable amount of urban sprawl and sprawl of economic sites and infrastructures. This in at the same level as Drôme and Ardèche in the previous (RC-M-H-A) type.

The small figures for sprawl in the Belgian regions suggest there is a decoupling of spawl and population growth. Sprawl happens in some regions more than in other regions, but there are other factors than population growth that predict this. The fact that in French regions more sprawl can be found (also relative to the size of the regions) suggest that institutional factors may play a role. In 2008, 45,000 hectares were, based on data submitted to SAFER (which is probably only the tip of the iceberg considering the figures of urban sprawl taken place as monitored by the EEA (2019)), considered to be land that could be developed ('biens urbanisable' (Levesque *et al.*, 2011, 88)), with a value of € 4 billion. Although this a large sum of money, it is only € 8 per square meter. There are a few regions in Europe with a higher price for agricultural land alone, without urban development values. Unimproved land which expected to be suitable for development may have much higher prices in speculative land markets. It may be that the urban development has a wider oil spill like effect on rural land markets in France. After all, the option of development freezes inner-rural markets as sellers anticipate on higher prices and potential rural buyers cannot afford to pay these values. This would explain why the French regions how much more urban sprawl than comparable regions of this type in other member states. Landowners are often not the one that farm and if development is a legal valid way to replace a low-rent paying tenant for a more profitable use, this may be an extra incentive for landowners to accommodate sprawl. It may be expected that this development will take place earlier in regions with a relative low volatility of development prices as the option values will be relatively less in these regions than in more volatile urban or intermediate environments in which waiting for the right moment will often more profitable than outright development without speculation

5.2.5 Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG High DP/Rent (RC-C-M-H)

RC-C-M-H (Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—High DP/Rent (>1.59))
CZ031 Jihocecký kraj; CZ032 Plzenský kraj; CZ053 Pardubický kraj; CZ063 Kraj Vysocina; EE008 Lõuna-Eesti; ES112 Lugo; ES113 Ourense; FRF32 Meuse; FRF34 Vosges; FRK11 Allier; FRK13 Haute-Loire; LT024 Marijampoles apskritis; LV009 Zemgale; PL217 Tarnowski; PL218 Nowosadecki; PL411 Pilski; PL414 Koninski; PL416 Kaliski; PL417 Leszczynski; PL427 Szczecinecko-pyrzycki; PL616 Grudziadzki; PL617 Inowroclawski; PL619 Wloclawski; PL713 Piotrkowski; PL714 Sieradzki; PL715 Skierniewicki; PL722 Sandomiersko-jedrzejowski; PL812 Chelmsko-zamojski; PL815 Pulawski; PL822 Przemyski; PL823 Rzeszowski; PL824 Tarnobrzeski; PL842 Lomzynski; PL843 Suwalski; PL922 Ciechanowski; PL923 Plocki; PL924 Ostrolecki; PL925 Siedlecki; PL926 Zyrardowski; SI031 Pomurska; SI032 Podravska; SI034 Savinjska; SI035 Zasavska; SI036 Posavska; SI037 Jugovzhodna Slovenija; SI038 Primorsko-notranjska; SI043 Goriska; SK032 Banskobystrický kraj

Box 12 RC-C-M-H (Rural - Close to the city—Combined Mountainous and non-Mountainous—Medium QoG (– 0.669≥QoG≥0.524)—High DP/Rent (>1.59))

In this type, there are many regions from Central and Eastern Europe, including 4 regions in the Czech Republic, one in Estonia, Latvia and Lithuania, 26 in Poland, 8 in Slovenia and one in Slovakia. It also contains 2 regions in Spain and 4 in France (Box 12)

Population declined in 75% of these regions between 2014 and 2019. In LT024 Marijampoles apskritis this decline was 10% in 5 years. ES113 Ourense (median age 52.1) and ES112 Lugo (median age 50.9 years) are the regions with the oldest population in this group. Both regions show also a large decline. On the other side of the age distribution are the Polish regions. 7 of these regions have a median age below 40 and another 9 regions a median age below 41, the

others have a median age of 42.2 or lower. Even so many of these regions also show a, usually relatively mild compared to the regions mentioned above, population decline.

The relative younger population in the Polish regions extends to the population of farm holders. These are also relatively young: 21% to 27% of the land is held by farmers under the 40 years of age. So, in the French, Estonian regions and even the very strong shrinking Lithuanian regions of this type, have with 21% to 23% a relatively large young farmers population. Especially in the Czech Republic (10% to 13%) land is less held by young farmers. The share of females in these young farmers is especially low (5%-9%) in the regions in the Czech Republic and Slovenia. In other regions the share of females in holding land is 11% to 24%. The French and Estonian regions are at the bottom of this range, the Polish regions take almost the whole range, but not lowest percentages, and the Spanish and Slovakian score relatively high.

Land prices in SI043 Goriska are (for this type) exceptional high (with over € 36 thousand per hectare). Most of the regions have prices that are below a quarter of the land prices in this region. Relative higher prices can be found in the Spanish regions, the other Slovenian regions and the regions in Wielkopolskie (PL411 Pilski; PL414 Koninski; PL416 Kaliski; PL417 Leszczynski) and Kujawsko-Pomorskie (PL616 Grudziadzki; PL617 Inowroclawski; PL619 Wloclawski). In the Slovakian region, the French regions and the Czech regions rented areas is over 75% (up to 89% in SK032 Banskobystrický kraj). In the Polish and Slovenian regions, it is 35% or less.

Inequality of land holdings is in most of the regions below the EU average region. This holds for the French regions and most of the regions in Poland. Inequality is high (above the EU average region) in the Czech, Spanish, Latvian and Lithuanian regions. One Polish region, PL427 Szczecinecko-pyrzycki, shows considerable inequality. This can be attributed to history. This region is located in West-Pomerania, an area that has been incorporated by Poland after World War 2. Germany (Prussia) east of the Elbe was a region largely owned by 'Junker', landed estate gentry, and who (especially in Pomerania), in the first decades of the Twentieth Century, were step-by-step replaced by 'bourgeois entrepreneurs' who 'purchased estates as a capital investment and led efforts to embrace modernization through new crops and capital inputs' (Finlay, 2001, 293). Under Polish communist rule, these large landholdings were incorporated in large state farms and after, 1989, these were part of land portfolio of the State Treasury. Inequality of the size of land holdings is so no novel development in this region.

Most concentrated is land in the regions in the Czech Republic: 87% of the land is held by farmers who hold over 100 hectares of land.

In these regions spawl of economic sites and infrastructure is 8.5 times as large as urban residential sprawl. Most sprawl is in the region of PL414 Koninski in which it was over 6000 hectares. Several regions show a considerable growth of artificial surfaces. In 5 regions (PL714 Sieradzki, ES112 Lugo, PL619 Wloclawski, PL715 Skierniewicki, SI037 Jugovzhodna Slovenija), the area of artificial surfaces grows over 10% between 2000 and 2018. Except for Jugovzhodna Slovenija, all these regions show a population decline since 2014. The issue of land take for urban and economic uses does not come to an end with the shift towards regional shrinkage.

The two Spanish regions, including ES112 Lugo are located in Galicia, which is analysed by scholarly literature as an area which witnesses a considerable amount of urban sprawl, much more than in the adjacent region of Asturias. Issues of institutional fragmentation contribute to these issues (Corbelle Rico *et al.*, 2017). Galicia has many small parcels in a mountainous area in which forests and natural uses are much larger than the agricultural area and the agricultural area itself is largely used as pastures. A recent mapping exercise shows a highly fragmented landscape (Corbelle-Rico and Tubío Sánchez, 2017). It also shows that mapping a landscape is a process of valuation and that an expert panel were missing specific landscape values, such heritage, in the designation of areas, which would lead to other classification. A case study in the municipality of Guitiriz in the region of Lugo illustrates these issues further (Corbelle-Rico *et al.*, 2010). The situation is described as 'a system in transition, where traditional agricultural practices have been heavily modified by fertilizers and mechanization, and where shrublands are no longer the energetic support of the system' (Corbelle-Rico *et al.*, 2010, 171).

Some specific emphasis will be on the relation between polish regions and the Common Agricultural Policy (5.2.5.1).

5.2.5.1 CAP grants and Polish rural regions

In the Accession Treaty of Poland, just as the other new member states in Central and Eastern Europe, that is, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Slovenia and the Slovakia in 2003 (EC, 2008), Bulgaria and Romania in 2005 (EC, 2010) and Croatia in 2011 (EC, 2017b), there are transitional measures allowing these Member States to maintain existing restrictions on the acquisition of agricultural and forestry land by natural and legal persons of other EU/EEA countries for a limited period. For Poland during 12 years there have been restriction regarding the acquisition of agricultural real estate. These restrictions differ by member state, but do not involve a 'complete and strict ban' (EC, 2008, 4) of foreign access to land markets, as they, for example, may be allowed to rent land (EC, 2010), to participate in companies that own land (EC, 2008). These restrictions have been reviewed regularly (EC, 2008; 2010; 2017b). These reviews show steep price increases especially in the rental markets (EC, 2008)

In the Polish context the CAP contributions are higher than rent, which means that private owners rarely lease-out their land. The low turnover in "farmer to farmer" land leases is caused by farmers' attitude toward direct subsidy payments, an instrument of the CAP. Disposing of land means giving up this subsidy (…)' (Marks-Bielska, 2013, 794)

However, which does takes place, according to surveys, are informal leases between neighbours which, 'are concluded only orally, and land owners take over the area payments for the land in question' (Sikorska, 2014, 133). It is however difficult to assess the scale of these leases as they are not registered. In these cases, the CAP is not received by the actual farmer, but by the formal one.

Formal leasing happens primarily by the State Treasury and leasing is in principle beneficial to new entrants as they do not need much capital upfront. The CAP has perceived to have had an impact on land prices:

> 'The impact of support related to the inclusion of the Polish countryside in the CAP on the increase in land prices should primarily be seen in the context of increasing the demand on the land market. A significant stream of funds that were channelled to the countryside enabled the realisation of investment plans.' (Sikorska, 2014, 124)

As there is a linear relation between land area and CAP grants, larger farms get more grants. So only for lager farms this enables them to use the CAP for investments in machinery and equipment, supporting a dual structure of farm size.

During communist time, small landowners kept their ownership in Poland. About 80% of the current farmers got their land from parents or parents-in-law and about the same percentage expects to transfer their land to their children. This limits the size of the land market. As indicated, there is few leasing because rent is lower than CAP grants and also few transactions:

> 'The limited supply of agricultural land available on the market will be also caused by a decreasing amount of land owned by the State Treasury. Land transactions in this market will primarily be among land purchased by previous leaseholders and will have minor effects on any changes in the agrarian ownership structure.'(Marks-Bielska, 2013, 798)

Motives to acquire land found in a survey by Marks-Bielska (2013) are: '(1) the desire to expand owned farmland or establish a new farm; (2) an investment on the expected price increase of agricultural land; and (3) to receive benefits from EU funds (…).' (Marks-Bielska, 2013, 791). So, part of the arguments is financial driven:

> 'Another motivating factor for possessing the land was a profitable capital investment, particularly when the prices of the agricultural land were growing faster than the interest rates of the bank investments. This factor not only strengthened the demand for the land but also impeded the increase of the land supply for sale. Even if the main source of income of the agricultural property owner was a non-agricultural income, the holding was not liquidated but at the most its area was reduced. It is largely connected to the non-income functions of the land property, which secures the living of many families in case of losing the job in the non-agricultural environment.' (Sikorska *et al.*, 2009, 68)

Typically is that land with a low fertility according to the 'soil bonitation class' system prices have been grown double as fast as mor fertile soils, suggesting that non-agricultural factors have been of importance (Sikorska *et al.*, 2009). In situations that land prices are the highest, more people are likely to sell, accounting for more transactions (Sikorska, 2014).

> 'High land prices could act as a stimulus to liquidate the land, especially for owners of poorly equipped farms, who are living mainly from non-agricultural activities.' (Sikorska, 2014, 133)
>
> 'In the regions of relatively the cheapest land prices, invariably, socio-economic problems of rural areas depended mainly on general economic conditions, especially the possibility of earning a living. These were areas with a scattered agrarian structure and distinguished by the economic weakness of a considerable part of agricultural holdings. Most owners of the land situated in these areas earned a living beyond agriculture or from annuities and pensions, and owned agricultural holdings were treated primarily as a place of living of a family and a source of self-supply in basic food products' (Sikorska, 2010, 449)

Many small holdings 'are not strictly agricultural' (Zaleczna, 2017, 11), they are not primarily motivated by agricultural production: 'The production value of farmland was viewed as secondary to the value of economic location, because commercially used land could yield higher income.'(Zaleczna, 2017, 11) Rural land is so considered to be an investment asset and this motivates agents on the land market.

Just as in many other areas in CEE where this happens at an even larger scale, in Poland: 'economically strong farms, oriented at cash crops, accumulate leases from owners of land who treat their land primarily as a place of settlement and a source of self-supply' (Marks-Bielska and Zielińska, 2018, 88). Leases are used by larger farms 'to strengthen their market position' (Sikorska, 2018, 9). Although leasing is in average about 20% in Poland; more than 50% of the land area of farms over 50 hectares is leased land and about 70% of these farms have a combination of own land and leased land. In this way the patterns of accumulating land via leases that can be seen in Romania, Bulgaria and the Czech Republic happen also in Poland, but at a smaller scale.

In ***Conclusion***, it can be stated that medium QoG rural regions close to the city show a wide variety of contexts. National patterns of age, land prices and distribution of landownership seem to be more important than the communalities within this type. Land conversion to economic sites and infrastructure takes much more land than urban sprawl. Political decisions and policies play a large role in land take for infrastructure. Long term structural decisions, of decades ago and of past regimes, seem also to be of importance of the current situation. This may also hold for decisions taken today; in many areas structural development regarding landholdings take place, which may have enduring effects.

5.2.6 Rural - Close to the city—Combined Mountainous and non-Mountainous—Low QoG (<–0.669)—All DP/Rent (RC-C-L-A)

RC-C-L-A (Rural - Close to the city—Combined Mountainous and non-Mountainous—Low QoG (<–0.669)—All DP/Rent)
BG311 Vidin; BG324 Razgrad; EL515 Thasos, Kavala; EL642 Evvoia; EL653 Lakonia, Messinia; HR042 Zagrebacka zupanija; HR043 Krapinsko-zagorska zupanija; HR047 Bjelovarsko-bilogorska zupanija; HR049 Pozesko-slavonska zupanija; HR04C Vukovarsko-srijemska zupanija; HR04D Karlovacka zupanija; HR04E Sisacko-moslavacka zupanija; HU233 Tolna; HU323 Szabolcs-Szatmár-Bereg; ITC16 Cuneo; ITC17 Asti; ITC18 Alessandria; ITF11 L'Aquila; ITF32 Benevento; ITF46 Foggia; ITF51 Potenza; ITI19 Siena; ITI41 Viterbo; ITI42 Rieti; RO111 Bihor; RO115 Satu Mare; RO121 Alba; RO123 Covasna; RO125 Mures; RO211 Bacau; RO214 Neamt; RO215 Suceava; RO216 Vaslui; RO222 Buzau; RO226 Vrancea; RO311 Arges; RO312 Calarasi; RO313 Dâmbovita; RO314 Giurgiu; RO315 Ialomita; RO412 Gorj; RO413 Mehedinti; RO414 Olt; RO415 Vâlcea; SK021 Trnavský kraj; SK041 Presovský kraj

Box 13 RC-C-L-A (Rural - Close to the city—Combined Mountainous and non-Mountainous—Low QoG (<–0.669)—All DP/Rent)

In this type we find regions from, broadly defined, the South-East of Europe, that is, 2 from Bulgaria, 3 from Greece, 7 from Croatia, 2 from Hungary, 10 from Italy, 20 from Romania and 2 from Slovakia (Box 13). Except, the two Slovakian regions all of these regions show a population decline. In 5 regions (HR04C Vukovarsko-srijemska zupanija, HR049 Pozesko-slavonska zupanija, BG311 Vidin, HR04E Sisacko-moslavacka zupanija) this decline has been over 10% in the 5 years between 2014 and 2019, which is a very serious challenge.

Land prices show strong differences. On the hand prices in Italy, such as in Piemonte (ITC18 Alessandria, ITC17 Asti, ITC16 Cuneo): € 56 thousand per hectare, are very high, on the other hand, prices in the Slovakian, Croatian and most of the Romania regions are less than 10% of the prices in Piemonte. Prices for a year rent (based on EUROSTAT data[6]) in ITF11 L'Aquila (€ 2067) or ITI19 Siena (€ 2043) are almost a high as for a hectare in full ownership in SK041 Presovský kraj (€ 2402). In the Italian, Greek and Croatian regions land is mainly held by natural persons, in Slovak and Bulgarian regions legal persons held most of the land. The picture in Romania and Hungary is mixed. In all regions, but one (ITF32 Benevento), inequality of land holdings is above the EU average region. One of the regions (HU233 Tolna) is located in Southern Transdanubia, which is with a GINI of 0.92, the most unequal divided land holding region in the EU. In this region 75% of the farmers hold only 2% of the land and another 2.4% of the farmers held 71% of the land. In the other regions it is slightly less extreme, but generally the GINI is so high that the average farm size is hardly existing, that the medium farm is a lot smaller than this 'statistical' average farm and that a few exceptional big farmers hold most of the land.

Young farmers hold only in Croatia and Bulgaria close to or above 20% of the land. Especially in the Greek regions, young farmers are a rarity with about 7% of the land holdings. Although in most regions the share of females under the young farmers is very low, there are a few exceptions, such as in Abbruzzo (l'Aquila) in which this 44% of the land and in Lazzio (ITI42 Rieti and ITI41 Viterbo) where this is 30%.

Although most regions are declining, there is a considerable growth of artificial surfaces. In several regions, especially in ITI41 Viterbo (a growth of 39% between 2000 and 2018) and

[6] Rents paid based on FADN data is a lot lower; which suggests that existing renters pay a lot less, but that for new rental contracts high prices must be paid.

EL653 Lakonia, Messinia (a 30% growth), this is very high. Just as in other Rural regions the sprawl of economic sites and infrastructure is a lot (5.6 times) higher than urban residential sprawl.

The concentration of land holdings in CEE happens mainly by the mechanism of reverse tenancy arrangements as is studied by Amblard and Colin (2009) in the region of Alba (5.2.6.1). The way how specific features capitalize in land values is studied by Sardaro et al. (2020) in the region of Foggia (5.2.6.2).

5.2.6.1 Alba (RO121)

Amblard and Colin (2009) have done a case study on reverse tenancy arrangements in Sebeş, in the Alba region in Transylvania. Here, as elsewhere, large 'Commercial and agricultural societies' (Amblard and Colin, 2009, 830) are tenants who lease their land from many small landowners¸ 'who have benefited from the land reform through restitution or distribution. Mostly living in cities or retired in rural areas, they choose to lease out their land, or part of it, in order to get an income without any involvement in the agricultural process.' (Amblard and Colin, 2009, 830). Contracts are usually for a limited amount of time (5 years) and rents is being set as the value of a certain amount of wheat per hectare to compensate for inflation risk. The bargaining position of the commercial societies is strong.

> 'The fact that several societies are farming in the same village (…) does not mean that they are in competition for land. Indeed, societies are working contiguous parcels by leasing land from landowners owning adjacent plots. Landowners have generally no choice over which society to lease out their parcels, depending on their location. The area under tenancy arrangements worked by a given society shows little variation from one year to the next. At an infra-village level, societies are thus in a monopoly position, except, potentially, at the limits of their operational zones or if the entry of a new actor changes the local contractual game.' (Amblard and Colin, 2009, 831)

So, landowners must either accept the conditions of the commercial firm or farm themselves, there is no alternative. The fact that rents are lower than decoupled payments of the CAP fits with this context in which tenants have a lot of market power. There is hardly any risk involved to lease the land for 5 (or 3 years) as the decoupled payments more than compensate for the costs expected to be made. The implications of the decoupled payments in the CAP have not been studied by Amblard and Colin (2009), but later studies has shown that these had a considerable role in financing large farms (Alexandri and Luca, 2019).

5.2.6.2 Foggia

Sardaro *et al.* (2020) study the way the land market capitalizes 'environmental, historical and cultural components in rural areas'. This is done by a comparative study of two regions within Foggia (in Puglia, Italy) of which one is more mountainous than the other. In relation to cereals, which covers 89% of the UUA in the mountainous area and 53% in the non-mountainous area, there is not much difference between the agricultural practices. These differences are there in the practices at vineyards and olive orchards, in which in the mountainous area fewer intensive practices prevail. The study showed that farming properties were reflected in the land market prices in both areas: 'flat and fertile properties in the proximity of important

infrastructures, and with a managerial configuration able to generate economies of scale, have a higher value' (Sardaro *et al.*, 2020, 8). Historical and cultural components could result in higher, lower or no effect on selling prices, depending on the way these affected agricultural production. So water streams had a negative effect on the price of vineyards in mountainous areas, because, due to the steep terrain, there was a risk of flooding and erosion; in the flat areas the positive effect of nearby water to irrigate the crops made that nearby streams resulted in higher selling prices (Sardaro *et al.*, 2020). The closer distances to natural areas worked out negatively especially in the mountainous areas. Not only because farmland is more fragmented and is so closer natural areas, but also because the specific type of vineyards, with lower hanging grapes, in the mountainous areas is more vulnerable to damage by wild boars (Sardaro *et al.*, 2020). In the mountainous areas elements of cultural heritage and natural beaty had a positive effect in relation to PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication) certifications and so were reflected in the price. In the non-mountainous areas, this was not the case.

In ***Conclusion*** it can be indicated that these regions that, although based on travel time, would allow commuting to a city, face a large level of population decline. This is probably because the cities that can be reached, are not the cities which provide good jobs. Furthermore the low QoG figure indicates that public service provision is not good either. The inequal distribution of land holdings is a signal that market power rules on the land market and that it is difficult for new entrants to enter the land market. Options of community supported agriculture may not be a success as the local community is not strong enough to support it. In some cases quality products may make a difference as the PDO and PGI effect on land prices in Foggia shows.

6 Discussion and conclusion in relation to access for land for new generations

Land is a specific economic good. Its substitutability is partial, it is both locally and globally a limited resource, it functions as an investment asset, but at the same time public interest plays a role as many land uses are also public goods and there are major transaction costs in land markets (Alexander, 2014). As land improvements are for most of its investments a one directional process in which capital is joined to a specific location, land improvement has the character of an option, which involves that market agents may wait with investment until proceeds exceed the option premium. Furthermore, land assembly may result in hold-outs as a relatively large part of extra value of development goes to the last parcels connected to the assembled lands. These aspects make that potential values of urban development may cast a shadow over rural land markets, resulting in development blight. Many rural landowners have more patience than potential urban investors and rural parties cannot pay the land prices based on expectation values, resulting in land market stalemates. This adds to the issues of generational renewal in agriculture.

There is a certain tension between the emergency of the single market in the EU, including freedom to move capital, and the nature of land and territories that are fixed on a geographical location. Investment of capital in land improvements may fix this capital to the land values of a certain location The regulation of ownership and land use are no EU competences, which makes that scaling and rescaling between the EU and national and local authorities result in tensions between the freedom-of-capital principle of the EU and local policies to promote rural development in relation to land rights and land uses. These tensions include the actual and perceived external effects that some land market events may have on local development.

In most regions there is a process of consolidation taken place. In 93.8% of all NUTS 2 regions the average farm size has grown since 2005. Many smaller, and even medium-sized farms stop. The number and share of larger farms grow in most of the regions. In terms of land market, this means that usually farms that acquire extra land to consolidate their farms outperform new entrants to farming. The marginal costs of acquiring an extra hectare of land is for existing farms so smaller than the marginal gains that could be get from this. The CAP place a role in this that it lowers the marginal costs to acquire extra land, because the decoupled payments are based on the area of land that is held by a farm. In most regions, renting an extra hectare of land is more than compensated by the CAP decoupled payments as these are higher than the rent. In other words, renting land is ‘free’, as the costs are compensated by the CAP, which is a major disturbance of the land market and may not result in an efficient allocation of land. Farmers and farming ‘enterprises’ may in this context prefer to acquire extra – free – land above investing in the land already hold. In this way, the CAP may be a driver of practices of ‘land grabbing’.

Also at a more local scale of farmers who take a step back at retirement, this may work-out negatively for generation transfer as indicated by Grubbström and Eriksson (2018). Based on research in Sweden, it can be established that:

> '…in many areas, the single farm payment (SFP) has become the de facto minimum rate for leases. As the SFP is paid to land users, not land owners, the farmer who rents the land receives the payment but, as owners know this, the SFP level is used as a base on which land rents are negotiated. However, this strategy delays the generational shift on the farm, as it means that the parents do not hand over their property when they retire, but rather when they die, which may be another generation ahead in time. This makes it more difficult for their successor to resume farming, as farm buildings and other infrastructure may be outdated.' (Grubbström and Eriksson, 2018, 714)

For new entrants next to land, many other costs must be made to start a farm, such as the acquisition of farm buildings to live and to work in, machinery and equipment and a basic income to live. For a farm that acquires extra land these matters may be covered if the size and location of this extra land can be cultivated using the same means of production that are already there at the farm. For new farmers it is hard to compete with existing farms in this situation. In some countries (see the report on D6.2) existing farmers have the right of first refusal if nearby land is sold. So, legal instruments may facilitate this even further as they are often made to accommodate the process of the enlargement of the scale of agricultural practices and are not intended to promote generational renewal or the production of higher quality crops on the land available.

In the family farming tradition next to land markets also traditions play a major role. According to these traditions, land stays within the family, which makes that land mobility is low in regions in which family farming is thriving. Land becomes only on the market if there is no successor. The family farming tradition is patriarchal, the share of women being 'farm manager' (20.9% in EUROSTAT data [ef_lf_size]) is even a little lower than the share of women in boards of companies (22.5%) in Europe (Tyrowicz *et al.*, 2020).

From the specific studies a few matters can be raised, which can be of importance.

Scotland is in many cases the most traditional, until recently even in part feudal, land market context in Europe. It shows the use of land for the happy few as sporting estate. There are large differences between the haves and have nots in relation to land. There is a new movement towards more common lands. A specific novel point is that the access to rural housing is seen as an issue for new entrants into farming

The situation of the Sami learns that access to land is also an issue in the most sparsely populated area of the EU. Not only land markets and family traditions, but also political decision-making is of importance. It also shows that issues of the development of economic sites and infrastructure, such as mining and a potential new rail road can affect the future of new generations. Getting a position in political decision making is a slow process in which some progress is made.

The Aland Islands are a rare example of a specific land regime that is closed to outsiders since 1921. For many indicators, including quality of government, the development of the Aland Islands is a positive outlier within the group of remote regions or even the EU as a whole. In

interpreting the results it must be noted that specific position is not only related to the land, but also to other aspects that are part of its specific position in the Baltic, such as, the customs situation, which resulted in that many ferries between the capital regions of Finland and Sweden made a stop at the Aland Islands as it allowed for the sale of cheap alcoholic beverages.

In Poland small farms kept their ownership during communist times, which has the result that the ownership situation is generally clear. The issue of land abandonment does not only happen in remote areas, especially in more mountainous regions in which land and forest and nature have many boundaries and these boundaries can easily been redrawn, but also in more urban regions in which landholders anticipate on urban land take and do not farm the lands.

The region of Alentejo in Portugal is in the one hand a very traditional remote area with large differences between large landowners and a population with few certainties in life. Farm mechanisation mend that for many people there was no role anymore an many people left for the city. The position of landowners has also changed (they are not the elite of the village anymore), but the inequality of land holdings remained. It is also the most dynamic regions in land use changes in the EU. This may relate to issues of land use change as formal bread basket of Portugal to olive oil production. On the other hand, there are some case studies about pockets of change in which novel farmers have found their way. This is however a qualitative, but no quantitative development (yet).

In relation to the development of reverse landownership situation (many small owners and a few large tenants) the development in Teleorman (RO) can be seen as a case in point. Based on their rural position decades ago people got small land holdings in the villages, but the situation of people whose ancestors where worse off have been brought back to this situation, without considering decades of potential accomplishments. Most people living in the village have additional sources of income, mainly retirement benefits. There are few new generations living in the villages. Large companies acquire land lease rights to produce crops (and possible also acquire the right to 'harvest' CAP decoupled grants, which level exceed the rent). These companies do not confine themselves to agriculture, but are large agro-industrial, firms with many branches of activities, including transportation and production of fertilisers and other chemicals. They have tight relationships with local, regional and even national political decisionmakers: people having political and economic powers help each other to strengthen their mutual positions.

Research in Bulgarian regions suggests that certain CAP contributions have adverse effects on sustainable development. Regions in which investment contributions are used to a wide scale, modernization areas, move to more industrial agricultural methods, which result in cost reduction, but not in more productivity or employment. Regions in which farms use more diversified, more labour-intensive strategies, have a higher productivity of the land, more employment, less out-migration and foster rural entrepreneurship. So, not only the CAP decoupled payments, but also the other instruments do not only have benefits for rural development, but may show a variety of effects.

The issues of rent seeking, non-transparency of land markets and the feeling that in residual risk of risky investment in land are transferred to the public sector is a story that comes about on tourist investments on isle of Rhodes in Greece. A problematic issue here is that specific land governance instruments are transplanted to another context in a partial way resulting in a less well functioning system than in the original context.

Even remote areas that have shown positive developments for decades can, as Aosta (It) shows, transfer in a short time towards a situation that the future, also expected by new generations is not so bright anymore. The relationship with the land markets is unclear as the regional context of a mountainous region show large differences between different subsectors of the land market.

Land grabbing is also an issue in the new federal states in the East of Germany. Powerful investment companies can outperform here new generations searching for land.

Cross-border relationships are key for the development of Zeeuws-Vlaanderen, the Dutch rural regions, which is located close to the Flemish cities in Belgian. This may provide new opportunities from regional development, but may also result in that the area becomes the area for functions for which there is no place in the urban cross-border context. Farmers consider that access to land is one of the main issues they face.

These cross-border differences in land markets play also in other areas. Between certain rural areas just across border there are large differences in the land markets, land prices and rural development. Land prices between Wallonia and adjacent French regions are worlds apart: the age of the population too. Strangely enough regions with older populations have more sprawl than regions with more generational renewal. There seems to be a decoupling of rural regeneration, that is, rural growth, and sprawl. Moreover, many regions with lower land prices appear to witness more sprawl, which may be explained by simple supply and demand issues at the land market itself. If the land price is low more land can be consumed for the same price by people outside the agricultural sector, which does not provide access to land to new generations. The low prices for land in France have its counterpart in higher prices, and sometimes even extremely high prices, for land for exclusive vineyards. The high price of wine is so being captured by the land market. Eventually the high price for a bottle of exquisite wine results in that the land where this wine can be produced is gaining in value as an investment asset. Locally this use of land as an investment commodity, makes that new generations, without access to investment funds, must search elsewhere to find access to it.

Data and References

EUROSTAT Data sources

- Agricultural holdings by legal form of the management [ef_mp_manleg]
- Agricultural land prices by region [apri_lprc]
- Agricultural land renting prices for one year by region [apri_lrnt]
- Farm indicators by agricultural area, type of farm, standard output, legal form and NUTS 2 regions [ef_m_farmleg]
- Farm indicators by agricultural area, type of farm, standard output, sex and age of the manager [ef_m_farmang]
- Gross regional product, purchasing power [nama_10r_3gdp]
- Labour force by sex, type of the farm and size of the farm [ef_lf_size]
- Land use: number of farms and areas of different crops by agricultural size of farm (UAA) [ef_oluaareg]
- Number of private households by household composition, number of children and age of youngest child (1 000) [lfst_hhnhtych]
- Population, including development, age structure, gender [demo_r_pjanind3; demo_r_gind3]

References

AK OGA (2019) *Immobilienmarktbericht Deutschland 2019 der Gutachterausschüsse in der Bundesrepublik Deutschland*, Arbeitskreis der Oberen Gutachterausschüsse, Zentralen Geschäftsstellen und Gutachterausschüsse in der Bundesrepublik Deutschland, Oldenburg, https://redaktion-akoga.niedersachsen.de/download/150193 (date accessed 18/08/2020).

Alexander, E.R. (2014) Land-property markets and planning: A special case, *Land Use Policy* 41(0), 533-40.

Alexandri, C. and L. Luca (2019) Common Agricultural Policy Effects on Farms, *Agricultural Economics and Rural Development* 16(1), 3-15.

Amblard, L. and J.-P. Colin (2009) Reverse tenancy in Romania: Actors' rationales and equity outcomes, *Land Use Policy* 26(3), 828-36.

Anderson, K.L. (2011) Intestacy in Scotland: The Laughing Heir, *Aberdeen student law review* 2(1), 52-75.

Arnold, C.A. (2002) The Reconstitution of Property: Property as a Web of Interests, *Harvard Environmental Law Review* 26(2), 281-364.

ASP (2000) *The Abolition of Feudal Tenure etc (Scotland) Act 2000*, Acts of the Scottish Parliament, Edinburgh, http://www.legislation.gov.uk/asp/2000/5/contents (date accessed 26/05/2020).

Bagnod, G., G. Chenal, A. Corsi, M. Letey and S. Mazzarino (2020) The »Pergola Valdostana« and heroic viticulture in Aosta Valley (Italy): A case study on a traditional wine-growing system, *Annales-Anali za Istrske in Mediteranske Studije - Series Historia et Sociologia* 30(1), 99-112.

Baker-Smith, K. and B.M.A. Szocs (2016) *What is Land Grabbing? A critical review of existing definitions.*, Eco Ruralis, Cluj, http://www.fao.org/family-farming/detail/en/c/1010775/ (date accessed 07/10/2020).

Ball, J.A. (2020) Women farmers in developed countries: a literature review, *Agriculture and Human Values* 37(1), 147-60.

Banila, N. (2020) *InterAgro reopens Donau Chem fertilizer plant in southern Romania*, SeeNews, https://seenews.com/news/interagro-reopens-donau-chem-fertilizer-plant-in-southern-romania-704511 (date accessed 09/07/2020).

Bański, J. (2011) Changes in agricultural land ownership in Poland in the period of the market economy, *Agricultural Economics* 57(2), 93-101.

Barbercheck, M., K.J. Brasier, N.E. Kiernan, C. Sachs, A. Trauger, J. Findeis, A. Stone and L.S. Moist (2009) Meeting the extension needs of women farmers: a perspective from pennsylvania, *Journal of Extension* 47(3).

Boekhorst, L. (2018) *Mogelijkheden en kansen in Roemenië*, De boer op advies, https://deboeropadvies.com/akkerbouw-bodem-en-nutrienten-missie-roemenie-2018/ (date accessed 29/10/2020).

Bonfiglio, A., B. Camaioni, S. Coderoni, R. Esposti, F. Pagliacci and F. Sotte (2016) Where does EU money eventually go? The distribution of CAP expenditure across the European space, *Empirica* 43(4), 693-727.

Borras, S.M. and J.C. Franco (2012) Global land grabbing and trajectories of Agrarian change: A preliminary analysis, *Journal of Agrarian Change* 12(1), 34-59.

Boydell, S. and U. Baya (2011) Formulating an equitable pro-development compensation model - Lessons from the pacific, *COBRA 2011 - Proceedings of RICS Construction and Property Conference*, 1523-43.

Brady, M.V., J. Hristov, C. Sahrbacher, T. Söderberg and F. Wilhelmsson (2017) Is Passive Farming A Problem for Agriculture in the EU? , *Journal of Agricultural Economics* 68(3), 632-50.

Brandth, B. (2002) Gender Identity in European Family Farming: A Literature Review, *Sociologia Ruralis* 42(3), 181-200.

Bryant, L. (1999) The detraditionalization of occupational identities in farming in South Australia, *Sociologia Ruralis* 39(2), 236-61.

Bunkus, R. and I. Theesfeld (2018) Land grabbing in Europe? Socio-cultural externalities of large-scale land acquisitions in East Germany, *Land* 7(3).

Burmeister, L.L. and Y.J. Choi (2012) Food sovereignty movement activism in South Korea: National policy impacts? , *Agriculture and Human Values* 29(2), 247-58.

Carstens, M. (2016) Sami land rights: the Anaya Report and the Nordic Sami Convention, *Journal on Ethnopolitics and Minority Issues in Europe* 15(1), 75-116.

Charron, N., L. Dijkstra and V. Lapuente (2015) Mapping the Regional Divide in Europe: A Measure for Assessing Quality of Government in 206 European Regions, *Social Indicators Research* 122(2), 315-46.

Charron, N., V. Lapuente and P. Annoni (2019a) Measuring quality of government in EU regions across space and time, *Papers in Regional Science* 98(5), 1925-53.

Charron, N., V. Lapuente and B. Rothstein (2019b) *Measuring the quality of Government at the subnational level and comparing results with previous studies*, European Commission, Brussels, https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/measuring_quality_gov.pdf (date accessed 05/06/2020).

Chiruta, R. (2014) *Sclav pe plantațiile lui Ioan Niculae, cel mai bogat om din România [Slave on the plantations of Ioan Niculae, the richest man in Romania]*, Romania Libera, https://romanialibera.ro/special/investigatii/incognito--sclav-pe-plantatiile-celui-mai-bogat-om-din-romania-337106 (date accessed 10/07/2020).

Christophers, B. (2018) *The New Enclosure: The Appropriation of Public Land in Neoliberal Brittain*, Verso, London/New York.

Ciaian, P., d.A. Kancs and M. Espinosa (2018) The Impact of the 2013 CAP Reform on the Decoupled Payments' Capitalisation into Land Values, *Journal of Agricultural Economics* 69(2), 306-37.

Ciaian, P., D.A. Kancs and J. Swinnen (2014) The Impact of the 2013 Reform of the Common Agricultural Policy on Land Capitalization in the European Union, *Applied Economic Perspectives and Policy* 36(4), 643-73.

Ciaian, P., D.A. Kancs and J.F.M. Swinnen (2010) *EU Land Markets and the Common Agricultural Policy*, Centre for European Policy Studies, Brussels.

Copus, A. (2013) *EDORA Structural and Performance Typologies - update*, ESPON, Luxembourg, https://www.espon.eu/sites/default/files/attachments/2014.03.03_EDORA-typologies_update.zip (date accessed 14/02/2020).

Copus, A. and J. Noguera (2010) *A Typology of Intermediate and Predominantly Rural NUTS 3 Regions, EDORA FINAL REPORT Annex 1 Part 24*, ESPON, Luxembourg, https://www.espon.eu/sites/default/files/attachments/EDORA_Final_ReportPart_C_WP23-28.pdf (date accessed 14/02/2020).

Corbelle-Rico, E., R. Crecente Maseda, J.M. Tubío Sánchez and F. Ónega López (2010) Challenges in collective action for natural resource management: A study of common property regimes in the municipality of Guitiriz (northwest of Spain), *Sustainable use of biological di-versity in socio-ecological production landscapes*(52), 157.

Corbelle-Rico, E. and J.M. Tubío Sánchez (2017) Mapping landscape units in Galicia (Spain): A first step for assessment and management? , *Change and Adaptation in Socio-Ecological Systems* 3(1), 93.

Corbelle Rico, E.J., R. Crecente Maseda and M.J. Enríquez García (2017) El diagnóstico del mercado de tierras rústicas en Galicia, una oportunidad frente a los retos de la fragmentación institucional y el puzle de once millones de piezas [The diagnosis of rural land markets, a tool for facing institutional fragmentation and the Galician puzzle of eleven million pieces], *Revista Española de Estudios Agrosociales y Pesqueros* 246, 61-84.

Davy, B. (1996) Baulandsicherung: Ursache oder Lösung eines raumordnungspolitischen Paradoxons? [Building land provision: Cause or Solution of a planning policy paradox?], *ZfV Zeitschrift für Verwaltung* 21(2), 193-208.

De Almeida, M.A.P. (2013) Landlords, Tenants and Agrarian Reform: Local Elites and Regime Transitions in Avis, Portugal, 1778–2011, *Rural History* 24(2), 127-42.

De Decker, P. (2011) Understanding housing sprawl: The case of flanders, Belgium, *Environment and Planning A* 43(7), 1634-54.

De Haan, H.J. and P.C.M. Hoppenbrouwers (1998) Intergenerational transfer of rural property in the Netherlands. Law, moral code and practice (16th-20th Centuries), *Mélanges de l'École française de Rome. Italie et Méditerranée* 110(1), 339-55.

De Kraker, A.M.J. (2006) Flood events in the southwestern Netherlands and coastal Belgium, 1400–1953, *Hydrological Sciences Journal* 51(5), 913-29.

de Rincquesen, H., V. Julien, C. Lécuyer, R. Levesque, D. Liorit, M. Melin, G. Pathier and C. Quelin (2016) Appariement entre le registre parcellaire graphique et le cadastre pour construire une typologie des exploitations françaises, *Notes et études socio-économiques* 41, 51-82.

Debrunner, G., A. Hengstermann and J.-D. Gerber (2020) The business of densification: distribution of power, wealth and inequality in Swiss policy making, *Town Planning Review* 91(3), 259-82.

Deininger, K. (2002) Agrarian reforms in Eastern European countries: Lessons from international experience, *Journal of International Development* 14(7), 987-1003.

Deletant, D. (2018) *Romania's protests and the PSD: Understanding thedeep malaise that now exists in Romanian society*, London, http://eprints.lse.ac.uk/91371/1/Deletant_Romania%27s-protests_Author.pdf (date accessed 19/10/2020).

Dijkstra, L. and H. Poelman (2008) *Remote Rural Regions: How proximity to a city influences the performance of rural regions*, European Union: Regional Policy, Brussels, http://ec.europa.eu/regional_policy/sources/docgener/focus/2008_01_rural.pdf (date accessed 14/04/2020).

Dimulescu, V., R. Pop and M. Doroftei (2013) Bottom of the Heap. The Case of Romania. In A. Mungiu-Pippidi (ed.), *Controlling Corruption in Europe: The Anticorruption Report, volume 1*, Barbara Budrich Publishers, Opladen, 83-98.

Doitchinova, J., I. Kanchev, R. Terziyska and K. Todorova (2018) Socio-economic and environmental parameters and results of rural development under the CAP: the case of Bulgaria In M. Wigier and A. Kowalsk (eds.), *The Common Agricultural Policy of the European Union – the present and the*

future EU Member States point of view, Institute of Agricultural and Food Economics - National Research Institute, Warsaw, 247-57.

Dolci, P. and C. Perrin (2018) Neo-farmers: drivers of farming systems innovation and of the transition to agro-ecology? The case of Alentejo (Portugal), 13. European IFSA Symposium, Chania, Greece, 2018-07-01, https://hal.inrae.fr/hal-02737192 (date accessed 11/06/2020)

Domingo, R. (2017) The Roman Law of Succession. An Overview, *SSRN*.

Dwyer, J., E. Micha, K. Kubinakova, P. van Bunnen, B. Schuh, A. Maucorps and F. Mantino (2019) *Evaluation of the impact of the CAP on generational renewal, local development and jobs in rural areas*, European Commission: Directorate-General for Agriculture and Rural Development, Brussels, http://eprints.glos.ac.uk/7547/1/cap-gr-study-final-report_en.pdf (date accessed 15/01/2020).

EC (2008) *Review of the transitional measures for the acquisition of agricultural real estate set out in the 2003 Accession Treaty*, European Commission, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52008DC0461 (date accessed 29/10/2020).

EC (2010) *Review of the transitional measures regarding the acquisition of agricultural real estate foreseen in the Accession Treaty 2005*, European Commission, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52010DC0734 (date accessed 29/10/2020).

EC (2017a) Commission Interpretative Communication on the Acquisition of Farmland and European Union Law, *Official Journal of the European Union* 60(C350), 5-20.

EC (2017b) *Review of the transitional measures for the acquisition of agricultural real estate set out in the 2011 Treaty on the accession of Croatia to the EU*, European Commission, Brussels, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52017DC0217 (date accessed 29/10/2020).

EC (2018) *Direct payments*, DG Agriculture and Rural Development, Unit Farm Economics, Brussels, https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/direct-payments_en.pdf (date accessed 14/04/2020).

ECJ (2010) Judgment of the Court in Holland Malt vs European Commission (C464/09P), European Court of Justice, 02/12/2010, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62009CJ0464 (date accessed 20/06/2018).

ECJ (2013) Preliminary ruling in the joined cases of Eric Libert et al. v Gouvernement flamand and All Projects & Developments NV and Others v Vlaamse Regering, European Court of Justice, C197/11 and C203/11, 08/05/2013, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62011CJ0197 (date accessed 29/10/2020).

ECJ (2014) Judgement of the General Court in Beco vs European Commission (T81/12), European Court of Justice, 12/02/2014, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62012TJ0081 (date accessed 20/06/2018).

ECONOMICA.net (2020) *Milionarul Ioan Niculae se aliază cu un gigant din SUA. Investiție de zeci de milioane, la Zimnicea [Millionaire Ioan Niculae is allying with a GIANT in the US. Investment of tens of millions in Zimnicea]*, Bucharest, https://www.economica.net/investi-ie-importanta-la-zimnicea-milionarul-ioan-niculae-vrea-sa-termina-un-terminal-pentru-ingra-amite-impreuna-cu-un-nume-mare-din-sua_179992.html (date accessed 10/07/2020).

Edwards, J.H. (2011) *A Capabilities Approach to Local and Regional Development in Europe: Evidence from Alentejo, Portugal*, School of Geography, Politics and Sociology, Newcastle University, Newcastle, http://hdl.handle.net/10443/1505.

EEA (2019) *Land cover and change 2000-2018*, European Environmental Agency Copenhagen, https://www.eea.europa.eu/data-and-maps/dashboards/land-cover-and-change-statistics (date accessed 02/09/2020).

Egea, F.J., R.G. Torrente and A. Aguilar (2018) An efficient agro-industrial complex in Almería (Spain): Towards an integrated and sustainable bioeconomy model, *New Biotechnology* 40, 103-12.

Eistrup, M., A.R. Sanches, J. Muñoz-Rojas and T. Pinto Correia (2019) A "Young Farmer Problem"? Opportunities and Constraints for Generational Renewal in Farm Management: An Example from Southern Europe, *Land* 8(4), 70.

Elliot, A., J. Watt, I. Cooke and P. Tabor (2014) *The Land of Scotland and the Common Good: Report of the Land Reform Review Group*, The Scottish Government, Edinburgh, https://www.nls.uk/scotgov/2014/9781784124809.pdf (date accessed 28/05/2020).

Engwerda, J. (2017) *Bedrijf opzetten in Roemenië vergt veel geduld [Establishing an enterprise in Romania urges a lot of patience]* De Boerderij, https://www.boerderij.nl/Akkerbouw/Achtergrond/2017/5/Bedrijf-opzetten-in-Roemenie-vergt-veel-geduld-129512E/ (date accessed 21/06/2019).

EP (2017a) *European Parliament resolution of 27 April 2017 on the state of play of farmland concentration in the EU: how to facilitate the access to land for farmers*, Strasbourg, http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2017-0197+0+DOC+PDF+V0//EN (date accessed 25/04/2018).

EP (2017b) *European Parliament resolution of 27 April 2017 on the state of play of farmland concentration in the EU: how to facilitate the access to land for farmers (2016/2141(INI)*, http://www.europarl.europa.eu/doceo/document/TA-8-2017-0197_EN.html (date accessed 10/10/2019).

Essink, S. (2020) Grondmarkt blijft, ondanks crises, overeind, *De Boerderij* 12 juni 2020.

Estonian land board (2020) *Transaction data base*, Maaamet, Tallinn, http://www.maaamet.ee/kinnisvara/htraru/FilterUI.aspx (date accessed 02/09/2020).

EU (2010) Consolidated Version of the Treaty on the Functioning of the European Union, *Official Journal of the European Union* 53(C83), 47-200.

Eurostat (2019a) *Agricultural land prices by region (apri_lprc)*, Luxembourg, https://ec.europa.eu/eurostat/web/products-datasets/product?code=apri_lprc (date accessed 09/10/2019).

EUROSTAT (2019b) *Methodological manual on territorial typologies: 2018 edition*, Publications Office of the European Union, Luxembourg, https://ec.europa.eu/eurostat/documents/3859598/9507230/KS-GQ-18-008-EN-N.pdf/a275fd66-b56b-4ace-8666-f39754ede66b (date accessed 14/04/2020).

FADN (2018) *Farm Accounting Data Network: An A to Z of methodology*, European Commission, Brussels, https://ec.europa.eu/agriculture/rica/pdf/site_en.pdf (date accessed 04/09/2020).

FADN (2020) *FADN Public Database*, European Commission, Brussels, https://ec.europa.eu/agriculture/rica/database/database_en.cfm (date accessed 04/09/2020).

Finlay, M. (2001) New Sources, New Theses, and New Organizations in the New Germany: Recent Research on the History of German Agriculture, *Agricultural History* 75(3), 279-307.

Fligstein, N. (1996) Markets as Politics: A Political-Cultural Approach to Market Institutions, *American Sociological Review* 61(4), 656-73.

Fligstein, N. and I. Mara-Drita (1996) How to Make a Market: Reflections on the Attempt to Create a Single Market in the European Union, *American Journal of Sociology* 102(1), 1-33.

Fligstein, N. and F. Merand (2002) Globalization or Europeanization? Evidence on the European Economy since 1980, *Acta Sociologica* 45(1), 7-22.

Fligstein, N. and A. Stone Sweet (2002) Constructing Polities and Markets: An Institutionalist Account of European Integration, *American Journal of Sociology* 107(5), 1206-43.

Franco, J. and S.M. Borras (Eds. 2013) *Land concentration, land grabbing and people's struggles in Europe*, Transnational Institute (TNI) https://www.tni.org/files/download/land_in_europe-jun2013.pdf (date accessed 07/10/2019).

Franić, R. and T. Kovačićek (2019) *The professional status of rural women in the EU: Study requested by the FEMM committee*, European Parliament, Brussels, https://www.europarl.europa.eu/RegData/etudes/STUD/2019/608868/IPOL_STU(2019)608868_EN.pdf (date accessed 07/07/2020).

French-Property.com (2020) *SAFER Right of Pre-emption*, IFP Ltd., Southend-on-Sea, https://www.french-property.com/news/french_property/safer_droit_preemption/ (date accessed 21/10/2020).
Frisian Investors (2018) *Frisian Investors Inc.*, http://www.frisianinvestors.nl/english.html (date accessed 29/10/2020).
Gallent, N., I. Hamiduddin, M. Juntti, N. Livingstone and P. Stirling (2018) *New money in rural areas: Assessing the impacts of investment in rural land assets*, Royal Institution of Chartered Surveyors, London, http://dx.doi.org/10.13140/RG.2.2.33752.60163 (date accessed 05/06/2020).
Gary, K. and M. Olsson (2017) Business as usual: Nobility and landed estates in Sweden, *Essays in Economic & Business History and Theory* 35(1), 151-73.
Giovarelli, R. and D. Bledsoe (2001) *Land Reform in Eastern Europe: Western CIS, Transcaucuses, Balkans, and EU Accession Countries*, Rural Development Institute, Seattle, http://www.fao.org/3/ad878e/AD878E00.htm#toc (date accessed 19/10/2020).
Glass, J., R. Mc Morran and S. Thomson (2019) *The effects associated with concentrated and large-scale land ownership in Scotland: a research review*, Report prepared for Scottish Land Commission, Scotland's Rural College, Edinburgh, https://landcommission.gov.scot/downloads/5dd7d807b8768_Research-Review-Concentrated-ownership-final-20190320.pdf (date accessed 18/05/2020).
Gonda, N. (2019) Land grabbing and the making of an authoritarian populist regime in Hungary, *Journal of Peasant Studies* 46(3), 606-25.
Goswami, G., T. Noe and J. Wang (2017) Buying up the Block: An Experimental Investigation of Capturing Economic Rents Through Sequential Negotiations, *Journal of Law, Economics, and Organization* 33(1), 139-72.
Grădinaru, S. (2019) Means, procedures that strengthen the fight against corruption or weaken it, *Perspectives of Law and Public Administration* 8(1), 79-88.
Grubbström, A. and C. Eriksson (2018) Retired Farmers and New Land Users: How Relations to Land and People Influence Farmers' Land Transfer Decisions, *Sociologia Ruralis* 58(4), 707-25.
Hartvigsen, M. (2014) Land reform and land fragmentation in Central and Eastern Europe, *Land Use Policy* 36, 330-41.
Heggem, R. (2014) Exclusion and inclusion of women in Norwegian agriculture: Exploring different outcomes of the 'tractor gene' *Journal of Rural Studies* 34, 263-71.
Hoffman, J. and A. Loeber (2016) Exploring the Micro-politics in Transitions from a Practice Perspective: The Case of Greenhouse Innovation in the Netherlands, *Journal of Environmental Policy & Planning* 18(5), 692-711.
Hurlburt, V.L. (1958) Theory of Supply of Farm Land, *Land Economics* 34(2), 161-67.
IMMOunited (2020) *bodenpreise.at*, Wien, https://www.bodenpreise.at/Home/List (date accessed 02/09/2020).
InterAgro (2016a) *SC InterAgro SA*, Bucharest, http://www.interagro.ro/index_en.htm (date accessed 09/07/2020).
InterAgro (2016b) *SC INTERAGRO SRL (in insolvency from 02.02.2016)*, Zimnicea, http://www.interagro-srl.ro/?lang=en (date accessed 09/07/2020).
InterAgro (2020) *Agriculture and agro-industrial policy*, Zimnicea, http://www.interagro-srl.ro/pages/en/agriculture_intro.php?lang=en (date accessed 09/07/2020).
Isaac, R.M., C. Kitchens and J.E. Portillo (2016) Can buyer "mobility" reduce aggregation failures in land-assembly? , *Journal of Urban Economics* 95, 16-30.
Joenniemi, P. (2014) The Åland Islands: Neither local nor fully sovereign, *Cooperation and Conflict* 49(1), 80-97.
Jürgenson, E. and M. Rasva (2020) The changing structure and concentration of agricultural land holdings in Estonia and possible threat for rural areas, *Land* 9(2).
Kay, S., J. Peuch and J. Franco (2015) *Extent of Farmland Grabbing in the EU*, Policy Department B: Structural and Cohesion Policies European Parliament, Brussels,

http://www.europarl.europa.eu/RegData/etudes/STUD/2015/540369/IPOL_STU(2015)540369_EN.pdf (date accessed 10/10/2019).

Kien Hwa, T. (2008) Sources of net present value gains in the acquisitions of corporate real estate, *Journal of Corporate Real Estate* 10(2), 121-29.

Kolecka, N., J. Kozak, D. Kaim, M. Dobosz, K. Ostafin, K. Ostapowicz, P. Wężyk and B. Price (2017) Understanding farmland abandonment in the Polish Carpathians, *Applied Geography* 88, 62-72.

Korthals Altes, W.K. (2015) The single European market and the demise of Flemish housing policy, *International Journal of Housing Policy* 15(2), 209-22.

Korthals Altes, W.K. (2019) Planning initiative: Promoting development by the use of options in Amsterdam, *Land Use Policy* 83, 13-21.

Korthals Altes, W.K. and S.B. Im (2011) Promoting rural development through the use of land consolidation: The case of Korea, *International Planning Studies* 16(2), 151-67.

Korthals Altes, W.K. and H. Ploeger (2010) Planning, Public Contracts and European Land law, Space is Luxury. Selected Proceedings of the 24th AESOP Annual Conference, Helsinki, https://aaltodoc.aalto.fi/bitstream/handle/123456789/4935/isbn9789526031309.pdf?sequence=1 (date accessed 26/08/2020)

Laschewski, L. and A. Tietz (2019) Landwirtschaft und ländliche Gemeinden. Ein Verhältnis im Wandel. Eine Fallstudie, 2019-08-26, http://ageconsearch.umn.edu/record/292299/files/A4-165-Laschewski-Landwirtschaft%20und%20l%C3%A4ndliche%20Gemeinden%20Ein%20Verh%C3%A4ltnis_c.pdf (date accessed 09/10/2020)

Laschewski, L., A. Tietz and E. Zavyalova (2019) *From individual farms to agriholdings: Methodological implications. An explorative regional case study in East Germany*, EAAE Seminar 'Agricultural Land Markets – Recent Developments, Efficiency and Regulation, Humboldt-Universität zu Berlin, https://literatur.thuenen.de/digbib_extern/dn061010.pdf (date accessed 11/09/2020).

Latocha, A., K. Reczyńska, T. Gradowski and K. Świerkosz (2019) Landscape memory in abandoned areas—physical and ecological perspectives (Central European mountains case study), *Landscape Research* 44(5), 600-13.

League of Nations (1921) Minutes of the Seventeenth Meeting of the Council, June 27th, *League of Nations - Official loumal* 2(September), 701.

Léger-Bosch, C., M. Houdart, S. Loudiyi and P.-M. Le Bel (2020) Changes in property-use relationships on French farmland: A social innovation perspective, *Land Use Policy* 94, 104545.

Levesque, R., D. Liorit and G. Pathier (2011) Les marchés fonciers ruraux régionaux entre dynamiques des exploitations agricoles et logiques urbaines, *Economie et Statistique* 410-411, 75-98.

LTO Noord (2018) *Missie Roemenië: akkerbouw, bodem en nutriënten [Mission Romania: arable farming, soil and nutrients]*, https://www.ltonoord.nl/thema/verduurzaming/mest-en-mineralen/nieuws/2018/04/04/missie-roemenie-akkerbouw-bodem-en-nutrienten (date accessed 29/10/2020).

Luca, L. (2019) Regulating the Land Market on the Basis of Incomplete Information: the case of Romania, 165. EAAE Seminar Agricultural Land Markets, 2019-04-25, http://ageconsearch.umn.edu/record/288440/files/Luca-131.pdf

Lup, A. (2018) The parliamentary inquiry into the state of land reclamation works in Romania, 2009 *Agrarian economy and rural development realities and perspectives for Romania*, The Research Institute for Agriculture Economy and Rural Development, Bucharest, 31-61.

MacDonald, D., J.R. Crabtree, G. Wiesinger, T. Dax, N. Stamou, P. Fleury, J. Gutierrez Lazpita and A. Gibon (2000) Agricultural abandonment in mountain areas of Europe: Environmental consequences and policy response, *Journal of Environmental Management* 59(1), 47-69.

Maes, B. (2020) De bakker zit nét over de grens, maar Nederlanders in Koewacht mogen er niet naar toe, *Provinciale Zeeuwse Courant* 26/03/2020.

Marks-Bielska, R. (2013) Factors shaping the agricultural land market in Poland, *Land Use Policy* 30(1), 791-99.

Marks-Bielska, R. and A. Zielińska (2018) Leasing of agricultural land versus agency theory: the case of Poland, *2018* 17(1), 83-102.

McKee, A., L.-A. Sutherland, J. Hopkins, S. Flanigan and A. Rickett (2018) *Increasing the Availability of Farmland for New Entrants to Agriculture in Scotland*, Scottish Land Commission, Inverness, https://landcommission.gov.scot/downloads/5dd6a2d2ac866_McKee-et-al.-Final-report-to-SLC-Increasing-land-availability-for-new-entrants-2.5.2018.pdf (date accessed 05/06/2020).

Meijers, E., J. Hoekstra and M. Spaans (2013) Fixed link, fixed effects? Housing market outcomes of new infrastructure development in the Dutch Delta Area, *Geografisk Tidsskrift-Danish Journal of Geography* 113(1), 11-24.

Meijers, E., D. Van der Wouw, E. Louw and M. Spaans (2018) *TOLWEG of TOL WEG? Continueren of afschaffen van de tolheffing voor de Westerscheldetunnel - een scenariostudie*, TU Delft/ZB, Delft/Middelburg, https://www.dezb.nl/dam/planbureau/bestanden/tolweg-of-tol-weg.pdf (date accessed 19/08/2020).

Mela, G., D. Longhitano and A. Povellato (2016) Agricultural and non-agricultural determinants of Italian farmland values, 2016-07, http://ageconsearch.umn.edu/record/242327/files/AIEAA_2016_Mela_Longhitano_Povellato.pdf (date accessed 14/07/2020)

Miceli, T.J. and C.F. Sirmans (2007) The holdout problem, urban sprawl, and eminent domain, *Journal of Housing Economics* 16(3-4), 309-19.

Miron, L. and A. Lup (2013) Analyse of the structure of the agricultural farms by size and the share of the livestock among them. An argument for more helping for the small farms *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* 13(2), 235-40.

Mitev, G. (2019) Organic farming-the future of the agricultural economy of Bulgaria, *Trakia Journal of Sciences* 17(1), 572-76.

Morell, I.A. (2013) Handling Down -- Taking Care: Generation Transfer in Hungarian Farm Families in the Context of Transitions, *Acta Ethnographica Hungarica* 58(1), 57-86.

Murray, C.K. (2020) Time is money: How landbanking constrains housing supply, *Journal of Housing Economics* 49.

Nilsen, T. (2020) *The dream of an Arctic railway fades as Sami herders signal 'veto'*, The Barents Observer, March 05, 2020 https://thebarentsobserver.com/en/life-and-public/2020/03/arctic-railway-dream-fades-away-sami-herders-announce-veto (date accessed 19/05/2020).

Nilsson, B. (2010) Ideology, environment and forced relocation: Kiruna - a town on the move, *European Urban and Regional Studies* 17(4), 433-42.

Notaris.be (2019) *Notarisbarometer landbouwgronden*, https://www.notaris.be/download/%252Fnews%252F5d3e9ecf17e81.pdf (date accessed 02/09/2020).

Ntihinyurwa, P.D. and W.T. de Vries (2021) Farmland fragmentation concourse: Analysis of scenarios and research gaps, *Land Use Policy* 100, 104936.

NVM (2020) *Overzicht transactieprijzen woningen bestaande bouw in duizenden euro's: Regio 66 Zeeuws-Vlaanderen*, Nederlandse Coöperatieve Vereniging van Makelaars en Taxateurs in onroerende goederen NVM U.A., Nieuwegein, https://www.nvm.nl/media/magmagek/nvmreg_66.pdf (date accessed 26/08/2020).

O'Brien, T. and R. Creţan (2019) The role of identity in the 2015 Romanian shepherd protests, *Identities* 26(4), 470-88.

Parker, G. and M. Amati (2009) Institutional Setting, Politics and Planning: Private Property, Public Interest and Land Reform in Japan, *International Planning Studies* 14(2), 141-60.

Pašakarnis, G. and V. Maliene (2010) Towards sustainable rural development in Central and Eastern Europe: Applying land consolidation, *Land Use Policy* 27(2), 545-49.

Pazúr, R., J. Lieskovský, J. Feranec and J. Oťaheľ (2014) Spatial determinants of abandonment of large-scale arable lands and managed grasslands in Slovakia during the periods of post-socialist transition and European Union accession, *Applied Geography* 54, 118-28.

Petrescu-Mag, R.M., D.C. Petrescu and I.V. Petrescu-Mag (2017) Whereto land fragmentation–land grabbing in Romania? The place of negotiation in reaching win–win community-based solutions, *Land Use Policy* 64, 174-85.

Petrescu, D.C. and R.M. Petrescu-Mag (2018) Valuing land as a finite and precious resource: Citizen perceptions on foreign land property safety limits in Romania, *Calitatea, suppl. Quality-Access to Success: Acces la Success* 19(S1), 386-91.

Pinto-Correia, T., M. Almeida and C. Gonzalez (2016) A local landscape in transition between production and consumption goals: can new management arrangements preserve the local landscape character? , *Geografisk Tidsskrift - Danish Journal of Geography* 116(1), 33-43.

Pinto-Correia, T., M. Almeida and C. Gonzalez (2017) Transition from production to lifestyle farming: new management arrangements in Portuguese small farms, *International Journal of Biodiversity Science, Ecosystem Services & Management* 13(2), 136-46.

Popov, A., I. Koshkalda, O. Kniaz and O. Trehub (2019) Land fragmentation of agricultural enterprises in the context of administration of land, *Economic Annals-XXI* 176, 80-90.

Pryor, F.L. (1982) An international perspective on land scattering, *Explorations in Economic History* 19(3), 296-320.

Ravna, Ø. (2020) A Sámi Community Wins Case against the Swedish State in the Supreme Court, *Arctic Review on Law and Politics* 11, 19-21.

Reid, K. (2015) Intestate Succession in Scotland. In K.G.C. Reid, M.J. de Waal and R. Zimmermann (eds.), *Intestate Succession*, Oxford University Press.

Reid, K.G.C. (2003) Vassals No More: Feudalism and Post-feudalism in Scotland, *European Review of Private Law* 11(3), 282-300.

Reigada, A., M. Soler Montiel, D. Pérez Neira and M. Delgado Cabeza (2020) "Some Things Never Change, We're Always Second in Line": Gendered Experiences of Progress and the Agricultural Crisis in Almeria, Spain, *Rural Sociology*.

Ritter, M., S. Hüttel, M. Odening and S. Seifert (2020) Revisiting the relationship between land price and parcel size in agriculture, *Land Use Policy* 97.

Rodrigo, I. and M.B. Moreira (2001) Portugal: The Emergence of the 'Rural Question'. In L. Granberg, I. Kovách and H. Tovey (eds.), *Europe's Green Ring*, Routledge, London, 238-62.

Romgaz (2020) *Litigations (status on December 31, 2019)*, Bucharest, https://www.romgaz.ro/sites/default/files/Romgaz%20Litigation%20%28status%20on%20December%2031%2C%202019%29.pdf (date accessed 10/07/2020).

Roque, S. (2015) *Romania: Agriculture Billionaire's Assets Seized by Anti-Corruption Prosecutors* Organized Crime and Corruption Reporting Project, https://www.occrp.org/en/daily/4721-romania-agriculture-billionaire-s-assets-seized-by-anti-corruption-prosecutors (date accessed 09/07/2020).

Sabates-Wheeler, R. (2002) Consolidation initiatives after land reform: Responses to multiple dimensions of land fragmentation in Eastern European agriculture, *Journal of International Development* 14(7), 1005-18.

SAFER (2019) *Prix des vignes par appellation, par département et par bassin viticole de 2011 à 2018*, https://www.safer.fr/app/uploads/2019/05/4-prix-vignes.pdf (date accessed 16/09/2020).

Sara, I.-A. (2019) *Whose voice? Understanding stakeholder involvement in law drafting affecting Sami reindeer herding*, PhD Thesis, Faculty of Humanities and Social Science, University of Jyväskylä, Jyväskylä, http://urn.fi/URN:ISBN:978-951-39-7622-4.

Sardaro, R., G. De Pascale, C. Ingrao and N. Faccilongo (2021) Latent relationships between environmental impacts of cultivation practices and land market: Evidences from a spatial quantile regression analysis in Italy, *Journal of Cleaner Production* 279.

Sardaro, R., P. La Sala and L. Roselli (2020) How does the land market capitalize environmental, historical and cultural components in rural areas? Evidences from Italy, *Journal of Environmental Management* 269, 110776.

Schuijers, F. (2012) *Ontpolderen van de Hedwigepolder : De rol van Zeeuwse identiteit en plaatsverbondenheid bij weerstand tegen ontpoldering*, Radboud Universiteit, Master thesis Planologie, supervisor L.J. Carton, Nijmegen, https://theses.ubn.ru.nl/bitstream/handle/123456789/3407/Schuijers%2c_Frank_1.pdf?sequence=1 (date accessed 26/08/2020).

Serra-Cantallops, A. and J. Ramon-Cardona (2017) Host community resignation to nightclub tourism, *Current Issues in Tourism* 20(6), 566-79.

Serrano, A. (2019) Making a financial market: The economization and topology of Farmland REITs, *Journal of Political Ecology* 26(1), 599-613.

Seuren, F. (2018) *Introducing Blockchain to Commercial Real Estate: Exploring the applicability of blockchain technology in lowering transaction costs of the commercial real estate due diligence process*, MSc thesis Complex Systems Engineering and Management, TU Delft, Delft, http://resolver.tudelft.nl/uuid:e5266e5c-3c2c-45fe-a5df-5e9d1f5feec3 (date accessed 01/09/2020).

Shortall, S. (2015) Gender mainstreaming and the Common Agricultural Policy, *Gender, Place & Culture* 22(5), 717-30.

Shortall, S. (2017) Changing Gender Roles in Irish Farm Households: Continuity and Change, *Irish Geography* 50(2), 175-91.

Sikorska, A. (2010) The socio-economic factors affecting the development of agricultural land market in Poland *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* 58(6), 445-52.

Sikorska, A. (2014) Land transfers and agrarian changes in individual farming, *Problems of Agricultural Economics / Zagadnienia Ekonomiki Rolnej*(4 (341)), 122-34, http://ageconsearch.umn.edu/record/235394/files/Sikorska.pdf, (date accessed 2014)

Sikorska, A. (2018) *Rynek ziemi rolniczej. Stan i perspektywy*, Zakładzie Polityki Społecznej i Regionalnej IERiGŻ-PIB, Warszawa, https://ierigz.waw.pl/download/22954-ziemia_rolnicza_2018_internet.pdf (date accessed 30/06/2020).

Sikorska, A., B. Karwat-Woźniak and P. Chmieliński (2009) Changes in the Agricultural Land Market and Agrarian Structure of Individual Farms in Poland, *Economics & Sociology* 2(1), 67-79.

Sim, L.-L., S.-K. Lum and L.C. Malone-Lee (2002) Property rights, collective sales and government intervention: averting a tragedy of the anticommons, *Habitat International* 26(4), 457-70.

Simolin, S. (2018) The Aims of Åland and Finland Regarding a New Act on the Autonomy of Åland – An analysis of three parliamentary committee reports (2010 –2017), *Journal of Autonomy and Security Studies* 2(1), 8-48.

Sofritti, F., A. Benozzo, N. Carey and M.C. Pizzorno (2019) Working precarious careers trajectories: tracing neoliberal discourses in younger workers' narratives, *Journal of Youth Studies*, 1-17.

Sparkes, P. (2007) *European Land Law*, Hart Publishing, Oxford.

Spoor, M. (2012) Agrarian reform and transition: what can we learn from 'the east'? , *Journal of Peasant Studies* 39(1), 175-94.

Spruijt, J. and H.B. Schoorlemmer (2015) *Ondernemersperspectieven Oost Zeeuws-Vlaamse agrariërs*, Praktijkonderzoek Plant en Omgeving - Akkerbouw, Groene ruimte en Vollegrondsgroenten (PPO AGV), Lelystad, https://edepot.wur.nl/366650 (date accessed 21/08/2020).

Steven, A.J.M. (2004) Revolution in Scottish Land Law, *Electronic Journal of Comparative Law* 8(3.5), 1-13.

Suksi, M. (2011) *Sub-State Governance through Territorial Autonomy: A Comparative Study in Constitutional Law of Powers, Procedures and Institutions*, Springer, Heidelberg, Dordrecht, London, New York.

Swinnen, J.F.M. and L. Vranken (2005) *The development of rural land markets in transition countries* FAO & Slovak University of Agriculture, Nitra, https://lirias.kuleuven.be/retrieve/72444 (date accessed 31/08/2020).

Szelenyi, I. (2011) From Latifundia to Central Planning and Onward to Agribusiness: A Rejoinder to Joachim Singelmann's Presidential Address on "From Central Planning to Markets", *Rural Sociology* 76(1), 21-23.

Szocs, B.M.A., B.M. Rodriguez and A. Srovnalova (2015) *Land Grabbing in Romania: Fact finding mission report*, Eco Ruralis, Cluj Napoca, https://drive.google.com/open?id=0B_x-9XeYoYkWUWstVFNRZGZadlU&authuser=0 (date accessed 25/08/2020).

Terres, J.-M., L.N. Scacchiafichi, A. Wania, M. Ambar, E. Anguiano, A. Buckwell, A. Coppola, A. Gocht, H.N. Källström, P. Pointereau, D. Strijker, L. Visek, L. Vranken and A. Zobena (2015) Farmland abandonment in Europe: Identification of drivers and indicators, and development of a composite indicator of risk, *Land Use Policy* 49, 20-34.

Thomson, S., A. Moxey, A. Wightman, A. McKee, D. Miller, E. Brodie, J. Glass, J. Hopkins, K. Mathews, K. Thomson, R.M. Morran and R. Bryce (2016) *The impact of diversity of ownership scale on social, economic and environmental outcomes: Exploration and case studies*, The Scottish Government, Edinburgh, https://www.gov.scot/binaries/content/documents/govscot/publications/research-and-analysis/2016/07/impact-diversity-ownership-scale-social-economic-environmental-outcomes/documents/00502355-pdf/00502355-pdf/govscot%3Adocument/00502355.pdf?forceDownload=true (date accessed 04/06/2020).

Tietz, A. (2017) *Überregional aktive Kapitaleigentümer in ostdeutschen Agrarunternehmen: Entwicklungen bis 2017*, Johann Heinrich von Thünen-Institut, Braunschweig, https://literatur.thuenen.de/digbib_extern/dn059268.pdf (date accessed 11/09/2020).

Tietz, A. (2018) Der landwirtschaftliche Bodenmarkt - Entwicklung, Ursachen, Problemfelder, *Wertermittlungsforum* 36(2), 54-58.

Titman, S. (1985) Urban Land Prices Under Uncertainty, *The American Economic Review* 75(3), 505-14.

Triantafyllopoulos, N. (2017) On the origins of tourist urbanisation in Greece: Land speculation and property market (in)efficiency, *Land Use Policy* 68, 15-27.

Troc, G. (2012) Patterns of migration and economic development in southern Danube micro-region, *Studia Universitatis Babes-Bolyai - Studia Europaea* 57(3), 85-116.

Tyrowicz, J., S. Terjesen and J. Mazurek (2020) All on board? New evidence on board gender diversity from a large panel of European firms, *European Management Journal* 38(4), 634-45.

Valtiala, J. (2020) Testing for regime-switching behaviour in Finnish agricultural land prices, *Agricultural Finance Review* 10.1108/AFR-03-2020-0037, 1-22.

Valtiala, J.P., S. Ovaska and T. Sipiläinen (2019) Investigating the Determinants of Finnish Agricultural Land Prices Using Generalised Additive Model, 165. EAAE Seminar Agricultural Land Markets, 2019-02-27, http://ageconsearch.umn.edu/record/288447/files/Valtiala-136.pdf

Van den Berghe, K., E. Meijers and F. Witlox (2020) Infrastructuur, ruimte en grenzen: havenontwikkeling en de strijd om de Schelde. In J. De Groof (ed.), *Utopie voor realisten: De verrekijker voor toekomstdenkers* Lannoo-Campus, Tielt, 232-47.

van der Woude, C. (2017) *Prijs grondhuur Nederland is in Roemenië eigendom [Price land lease in Netherlands is ownership in Romania]*, Boerenbusiness, http://www.boerenbusiness.nl/ondernemen/grond/artikel/10873135/prijs-grondhuur-ne (date accessed 29/10/2020).

van Dijk, T. (2003a) *Dealing with Central European land fragmentation: A critical assessment on the use of Western European Instruments*, Doctoral thesis TU Delft, Eburon, Delft, https://repository.tudelft.nl/islandora/object/uuid:eb4e1e43-499c-46eb-8322-38c1dceb9d52/datastream/OBJ/download (date accessed 07/10/2019).

van Dijk, T. (2003b) Scenarios of Central European land fragmentation, *Land Use Policy* 20(2), 149-58.

van Dijk, T. (2007) Complications for traditional land consolidation in Central Europe, *Geoforum* 38(3), 505-11.

van Eupen, M., M.J. Metzger, M. Pérez-Soba, P.H. Verburg, A. van Doorn and R.G.H. Bunce (2012) A rural typology for strategic European policies, *Land Use Policy* 29(3), 473-82.

Varga, M. (2020) Poverty reduction through land transfers? The World Bank's titling reforms and the making of "subsistence" agriculture, *World Development* 135, 105058.

Webster, C.J. (2009) Are some planning transactions intrinsically sovereign? , *Journal of Planning Education and Research* 28(4), 476-90.

Wightman, A. (2013, 1st ed. 2010) *The Poor Had No Lawyers: Who Owns Scotland (and How They Got it)*, Birlinn Limited, Edinburgh.

Will, G. (2004) *Zeeuws of Vlaams? (morfo-)syntactische verschijnselen in de dialecten van Zeeuws-Vlaanderen (with English Summary)*, PhD Thesis Universiteit Gent, Gent, https://biblio.ugent.be/publication/8597991/file/8598514 (date accessed 21/08/2020).

Williams, E. (1962) On Portuguese Family Structure, *International Journal of Comparative Sociology* 3(1), 65-79.

Williams, R. (2018) One Hundred Years of Solitude: The Significance of Land Rights for Cultural Protection in the Åland Islands, *Journal of Autonomy and Security Studies* 2(1), 50-81.

Wishlade, F., R. Michie, J. Moodie, O. Penje, G. Norlen, W. Korthals Altes, C. Assirelli Pandolfi and A. de la Fuente Abajo (2019) *Financial Instruments and Territorial Cohesion - Applied Research -Final Report*, ESPON, Luxembourg, https://www.espon.eu/financial-instruments (date accessed 15/01/2020).

Woestenburg, A., E. van der Krabben and T. Spit (2014) Institutions in rural land transactions Evidence from The Netherlands, *Journal of European Real Estate Research* 7(2), 216-38.

Zaleczna, M. (2017) Components of Path Dependence of the Agricultural Property Market in Poland, *Real Estate Management and Valuation* 25(4), 5.

ZVB (2020) *Open brief Zeeuws-Vlaamse burgemeesters over aanpak coronacrisis*, 26/03/2020, Sluis/Terneuzen/Hulst, https://www.gemeentehulst.nl/dsresource?objectid=e322117d-204a-4890-8e8d-f01e11c58d0d&type=PDF (date accessed 24/08/2020).

RURALIZATION

RURALIZATION

The opening of rural areas to renew rural generations, jobs and farms

D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results

Part B: Short hand out with main results

"The project RURALIZATION has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817642."

Version history

Ver.	Date	Comments/Changes	Author/Reviewer
1.0	30/10/2020	Final version reviewed by the S.A.B. and GA	Willem Korthals Altes (TU Delft)

Project Acronym	**RURALIZATION**
Project Title	The opening of rural areas to renew rural generations, jobs and farms
Project Number	817642
Instrument	Research and Innovation Action (RIA)
Topic	RUR-01-2018-2019 Building modern rural policies on long-term visions and societal engagement
Project Start Date	01/05/2019
Project Duration	48 months
Work Package	WP6 Access to Land
Task	T6.3 Quantitative analysis of land holdings and land market trends
Deliverable	D6.3 Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results
Due Date	31/10/2020
Submission Date	30/10/2020
Dissemination Level [1]	PU
Deliverable Responsible	TDL
Version	Part B, version 1.0
Status	Final
Author(s)	Willem Korthals Altes (TU Delft)
Contributor(s)	Titus Bahner, Annelies Beyens, Clara Blasco, Miquel Correa, Sylwia Dołzbłasz, Krzysztof Janc, Anne Kinsella, Imre Kovách, William Loveluck, Aisling Murtagh, Alice Martin-Prevel, Silvia Sivini, Robert Skrzypczyński, Attila Szocs, Veronique Rioufol, Petra Tas, Herman de Wolff
Reviewer(s)	RURALIZATION S.A.B. and Consortium members

[1] PU= Public, CO=Confidential, only for members of the consortium (including the Commission Services), CL=Classified, as referred to in Commission Decision 2001/844/EC

Hand Out with Main Results

This hand out contains the main results of RURALIZATION deliverable D6.3 'Technical Report on Quantitative Analysis of Land Holdings and Land Market Trends, short hand out with main results'. More information can be found in the technical report (Part A). Part B Hand out with main results provides some short take-aways on relevant developments in land holdings and of land market trends that are relevant for access to land for new generations in rural areas. This fits to the broader aims of RURALIZATION. RURALIZATION is concerned with understanding how to facilitate rural regeneration and generational renewal. In this context, its key focus areas are: rural foresight and trend analysis; the future dreams of rural youth; facilitating rural newcomers; farm succession; new entrants into farming; and access to land.

Although there are few statistics on land mobility, the number of transactions, on the land market, the statistics and other studies on land markets suggest that land mobility on rural land markets is low. Few plots of land are being transacted for sale.

There are, especially in areas within the commuting range of cities, many other functions that have a potential demand for land, and landowners speculate on the potential to achieve such a higher land value. This means that they are not likely to sell it for an agricultural value and prefer to wait whether buyers with deeper pockets arrive. The agricultural value is in these cases a kind of bottom value that can be achieved anyway and selling land destroys the potential value as development land. In many of these cases no speculative land buyer is active, but owners of agricultural land have more patience (they do not need a high internal rate of return on their land).

In the case that land prices are based on agricultural value, the dominant form of transaction is by buyers that aim to enlarge their farms. After all, the balance between marginal costs and benefits for existing farms is more positive as they have already covered most of their other costs and they can profit from the economies of scale by buying extra land. This means that these prices are too high for new entrants into farming.

As family farming is the dominant form of agricultural production in the European Union (EU), most of the land stays within the family and is not being likely to be sold at the market. Family farming is generally a patriarchal tradition in which land is transferred from fathers to sons. Although, legally females have currently achieved equal rights to farm inheritance, the practice is different. Of the land held by farmers under 40, only 13.3% is held by females. In practice, culture and institutions on land markets do not provide equal access to land for females in the context of family farming.

Generation transfer within families may result that one of the siblings is taken over the farm. This sibling must compensate the parents or other siblings for this or is bound to the other siblings who are holding a share of the farm. High land values are so a burden to farm successors that face extra costs to farm succession. So, in context of high land prices, these prices provide a major obstacle to succession. After all, the prices are not based on the value

of an entire farm, but on the marginal costs of enlarging an existing farm. So, a successor may start under the burden of debt. Selling the farm to a neighbour is often the option with a higher monetary value. So, farm succession within the family means assigning a higher value to tradition than to money.

Depending on the context, leasing land can also provide access to land for new farmers. It has the advantage that no big investment upfront must be made. The rights and protection of the tenant versus the rights and protection of the owner differ largely by national context and result in different outcomes. In some contexts, the protection of tenants, including a pre-emption right to buy the land, resulted in a transfer from a tenant-based system towards an owner-based system. By selling land to tenants, owners could invest elsewhere. The opportunity costs of landownership were too high. In other systems, the protection of tenants did not result in a redirection of capital from non-farming owners. Most tenancy laws are based on a situation of a few wealthy landowners who have many pour farmers as tenants that need to be protected; both based on social sense (protection of the peasant class) as in economic sense; to ascertain that tenants may pick the fruits of the improvements in the land they have invested in.

It must be noted that in some cases the transaction costs of buying and selling land are so high that market transactions are based on leases. Especially in the case of some former socialist countries redistribution of small parcels of land to the undivided heirs of past owners have resulted in a fragmentation of property rights. Issues of quality of government has made that procedures to break more efficient through stalemates have not worked as there are no trustworthy institutions to allocate decision making powers; so, landownership is still undivided. Transaction costs can be excessive in relation to the land values, because of the small size of the parcels, the fragmentation of ownership and the non-transparency in establishing who these owners are. The allocation of a temporary right of lease can be provided with less transaction costs. The outcome is that reverse tenancy relationship occurs: many small, fragmented owners and a few tenants managing a large land portfolio, which goes beyond the scale of the family farm.

In most EU regions the direct payments of the Common Agricultural Policy (CAP) are higher than the rent of rural land. There is no need to actually farm on the land to be eligible to these grants; it is only necessary to keep the land in a decent shape. In this context there is no incentive at all to rent agricultural land to a novel farmer. The rent does not compensate for the loss in decoupled payments by the CAP. The only way to get this going, is to make a deal that the decoupled payments will still go to the landowner, which seems to be not the objective of the CAP, because it does not support the farmers. Only the 25% extra CAP payments to farmers run by holders under 40 may be an incentive to rent to a new entrant as it will result in extra eligibility of grants. The figures on the age of farm managers do not suggest that in the context of family farming, inner-family transfer of farms to younger generations is exceeded to a massive scale. So, the impact on the land market appears to be limited. Studies also shows that in the case of many small owners, the transaction costs of administering the grants provide an impediment and this feeds the practice of reverse tenancy relationships. It must, however, be noted that outside the EU, in the Ukraine, these relationships also exist in an even more extreme form, and the CAP is so not a necessary

condition for this to come forward. It seems to be more related to the mix of high transaction costs, fragmented land ownership and low quality of government.

Next to all sprawl based on urban development, the energy transition, makes that some land is used for novel functions, such as solar panels. Precondition is that areas are well connected to the power grid and land is relatively cheap. In intermediate regions these conditions may apply, but also in areas which industrial heritage has resulted in good power connections. This provides extra obstacles to access to farmland.

Even in the most remote, low density, regions access to land is in practice an issue. Although farmland abandonment can be seen as spatial phenomenon, it is usually no abandonment legally: owners do not give up their ownership rights. Many of these remote areas have very unequal patterns of landownership, in many of these areas traditional patterns of ownership prevail (latifundio in Alentejo (PT), large 'sporting estates' for the happy few in Scotland (UK)); new entrants depend on the willingness of these landowners to allocate their land to new farmers. Some other remote areas, such as in Central and Eastern Europe, have transferred into a kind of company towns, with one large company landholder consolidating lease rights, which is not only holding the land, but also the other main sources of employment in the region and whose management has very tight connections with the political leaders of the local authorities.

Appendix - Presentations of the expert meeting (15/10/2020)

Land holdings and land market trends

The French situation and European issues

The topic is the renewal of the family farms to create jobs, added value, and extend good farming pratices (agroecology)

Robert Levesque (aGter)
robert.levesque@agter.org

Reminder: relationships between agricultural producers and landowners

The farmers can:

- own the land that they use
- rent the land
- own farming company shares without being owner of the land, without renting the land; the companies own or rent lands

The main trends:

- the farmers rent more and more land
- the farmers own more and more farming company shares; a few farmers own farming share without working on the farm
- *the concentration of land is not well known because one person can own shares in several agricultural companies*

In Normandy, the FNSAFER counted fifty farms, benefiting from subsidies from the EU, while it counted less than 20 units of production.

At the European level, for example, Spear International uses 89 000 ha in 5 countries UK (8 000 ha), Poland (32 000 ha), Czech Republic (27 000ha), Slovakia(5 000ha), Romania (16 000ha), but EU recognizes more than 60 farms

The EU knows the cattle population better than the farm owners to whom it pays aid.

The EU knows the farming companies without knowing the owners.

Modalities of access to land in France

By inheritance

By the land markets

Each year, between 3.3% and 3.6% of the agricultural area changes from one farmer to another:

- nearly half by “inheritance”
- nearly half by land markets

MODALITIES OF ACCESS TO LAND USE RIGHTS	approximated share of the farming area	flow for the year 2017: % of farming area	flow for the year 2017: billion euros
the renewal of family farming through	from 1,4 to 1,8		
inheritance (outside the market)			
land donations			
leases on land belonging to parents			
transfer of transferable leases between family members			
transfer of company shares (GAEC, EARL, ...)		~ 0,6	~ 0,4
expansion or establishment of a new farm (via land markets)	from 1,6 to 1,8		
the rental market supplied by		from 0,55 to 0,73	
farmers who stop their activity			
former land owners			
new owners of vacant properties (71 000 ha)			1,3
the market of company shares		~ 0,6	~ 0,6
the market for land acquired by farmers		0,47	1,9
The "land consolidation" of production units (leaving the size of the production unit unchanged)	more than 0,7		
by inheritance			
of leases land belonging to parents			
of company shares			
by the market of leased lands			
bought by tenants		0,47	0,8
bought by other landowners		0,13	0,6
by the market for shares of land holding companies		0,05	<0,1

Source : Robert Levesque with data of SAFER 2017

NB

- the values include, where applicable, the value of buildings, plantations (vines)
- the land area of the shares'market corresponds to the sum of the land areas assigned to each sale in proportion of the share capital transferred

Inheritance in the broad sense corresponds to inheritances, donations of land from parents to children, leases of land belonging to parents to children, transfers of leases within the family (under the status of tenant farming), and transfers of shares in agricultural enterprises.

- Inheritance allows the renewal of family agriculture, outside of land markets
- The question is why children take over their parents' business or not

MODALITIES OF ACCESS TO LAND USE RIGHTS	approximated share of the farming area	flow for the year 2017: % of farming area	flow for the year 2017: billion euros
the renewal of family farming through inheritance (outside the market)	from 1,4 to 1,8		
land donations			
leases on land belonging to parents			
transfer of transferable leases between family members			
transfer of company shares (GAEC, EARL, ...)		~ 0,6	~ 0,4
expansion or establishment of a new farm (via land markets)	from 1,6 to 1,8		
the rental market supplied by		from 0,55 to 0,73	
farmers who stop their activity			
former land owners			
new owners of vacant properties (71 000 ha)			1,3
the market of company shares		~ 0,6	~ 0,6
the market for land acquired by farmers		0,47	1,9
The "land consolidation" of production units (leaving the size of the production unit unchanged)	more than 0,7		
by inheritance			
of leases land belonging to parents			
of company shares			
by the market of leased lands			
bought by tenants		0,47	0,8
bought by other landowners		0,13	0,6
by the market for shares of land holding companies		0,05	<0,1

Source : Robert Levesque with data of SAFER 2017

NB

- the values include, where applicable, the value of buildings, plantations (vines)
- the land area of the shares'market corresponds to the sum of the land areas assigned to each sale in proportion of the share capital transferred

Expansion or establishment of new farms

The most important markets are the rental and share markets. The market for land for expansion or settlement is not marginal, but is not the most common modality.

When you refer to the market, you refer to competition. In unregulated markets, the price is always too high. Everyone wants to buy land or shares; everyone will find the price of land too high except one person, the one who offers the highest price (or the most attractive conditions). The price therefore depends on who has the right to compete. For each transaction, the price is not determined *a priori*.

Unregulated land markets favour expansion rather than settlement. They are markets of exclusion and marginalisation of family farming.

MODALITIES OF ACCESS TO LAND USE RIGHTS		flow for the year 2017	
	approximated share of the farming area	% of farming area	billion euros
the renewal of family farming through	from 1,4 to 1,8		
inheritance (outside the market)			
land donations			
leases on land belonging to parents			
transfer of transferable leases between family members			
transfer of company shares (GAEC, EARL, ...)		~ 0,6	~ 0,4
expansion or establishment of a new farm (via land markets)	from 1,6 to 1,8		
the rental market supplied by		from 0,55 to 0,73	
farmers who stop their activity			
former land owners			
new owners of vacant properties (71 000 ha)			1,3
the market of company shares		~ 0,6	~ 0,6
the market for land acquired by farmers		0,47	1,9
The "land consolidation" of production units (leaving the size of the production unit unchanged)	more than 0,7		
by inheritance			
of leases land belonging to parents			
of company shares			
by the market of leased lands			
bought by tenants		0,47	0,8
bought by other landowners		0,13	0,6
by the market for shares of land holding companies		0,05	<0,1

Source : Robert Levesque with data of SAFER 2017

NB

- the values include, where applicable, the value of buildings, plantations (vines)
- the land area of the shares'market corresponds to the sum of the land areas assigned to each sale in proportion of the share capital transferred

Not all land markets contribute to the establishment of new farms or the expansion of existing farms

Within the land markets, some aim to strengthen the land base of farms:
- farmers buy the land they use; they avoid rent and increase their security of tenure
- or landowners finance land, allowing farmers to spend more money on productive investments. It is an interesting way to support new entrants

MODALITIES OF ACCESS TO LAND USE RIGHTS		flow for the year 2017	
	approximated share of the farming area	% of farming area	billion euros
the renewal of family farming through	from 1,4 to 1,8		
inheritance (outside the market)			
land donations			
leases on land belonging to parents			
transfer of transferable leases between family members			
transfer of company shares (GAEC, EARL, ...)		~ 0,6	~ 0,4
expansion or establishment of a new farm (via land markets)	from 1,6 to 1,8		
the rental market supplied by		from 0,55 to 0,73	
farmers who stop their activity			
former land owners			
new owners of vacant properties (71 000 ha)			1,3
the market of company shares		~ 0,6	~ 0,6
the market for land acquired by farmers		0,47	1,9
The "land consolidation" of production units (leaving the size of the production unit unchanged)	more than 0,7		
by inheritance			
of leases land belonging to parents			
of company shares			
by the market of leased lands			
bought by tenants		0,47	0,8
bought by other landowners		0,13	0,6
by the market for shares of land holding companies		0,05	<0,1

Source : Robert Levesque with data of SAFER 2017

NB
- the values include, where applicable, the value of buildings, plantations (vines)
- the land area of the shares'market corresponds to the sum of the land areas assigned to each sale in proportion of the share capital transferred

In the territories where farm mechanisation is easier, with a greater agronomic potential, family farming is hardly maintained when land is brought to the land markets.
Capitalist agriculture, where the owner of the production unit does not participate to farm work, will leave the "marginal" land to family farming (where farm work is mainly carried out by the people who own the working capital).

The stakes for the renewal of generations in agriculture to create more jobs, more added value, and to implement agroecological practices:

- **To increase family transmission (in particular to ensure that production units generate higher incomes):**

  improve the remuneration of agricultural work (through prices of agricultural products, per-hectare or employment aid, remuneration of the work aiming at maintaining and improving the ecosystem functions of agricultural areas)

- **To regulate land markets:**

  Transparency of land holdings with a **register of agricultural production units**

  This is possible since the EU has set up a register of final beneficiaries of companies (see the EU Directive 2015/849 on the prevention of the use of the financial system for the purpose of money laundering or terrorist financing)

  Transparency of proposed land transactions and a mechanism for steering the transfers of land brought to the land markets

  This is possible (see Commission Interpretative Communication on the acquisition of agricultural land and European Union law, 2017/C 350/05)

- NB about the values of the land markets :

- the values in euros of the land markets include, where applicable, the value of buildings, plantations (vines)
- the land area of the shares'market corresponds to the sum of the land areas assigned to each sale in proportion of the share capital transferred
- With regard to the surface areas affected, the market value of the shares of production companies may appear low because the companies purchased mainly rented land and the value of the shares takes into account the debts of the companies
- The market value of leased lands acquired by incumbent farmers appears low because leased lands are traded at a lower price than free lands.
- The market value of leased lands acquired by lessors may appear high because it includes wine producing lands

- Thank you very much for your attention

RURALIZATION Expert Meeting

Quantitative Analysis of Land Holdings and Land Market Trends

Oct 15th 2020

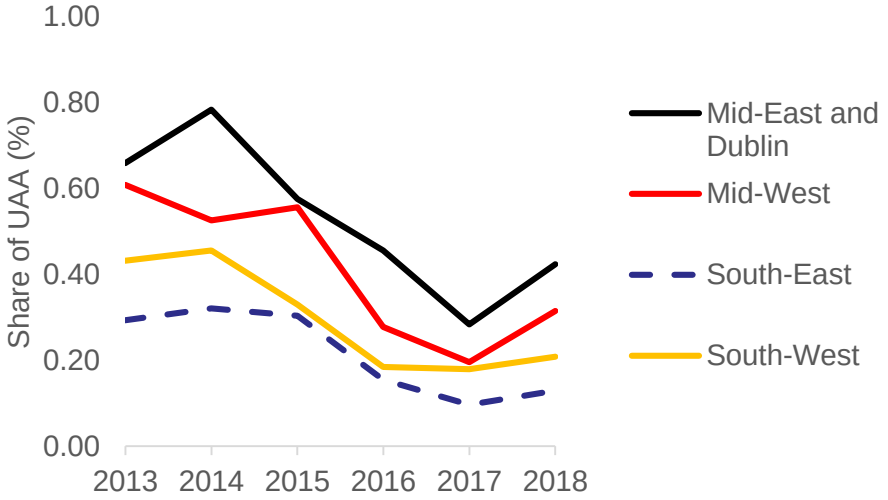
Jason Loughrey[1]

1. Rural Economy and Development Programme, Teagasc

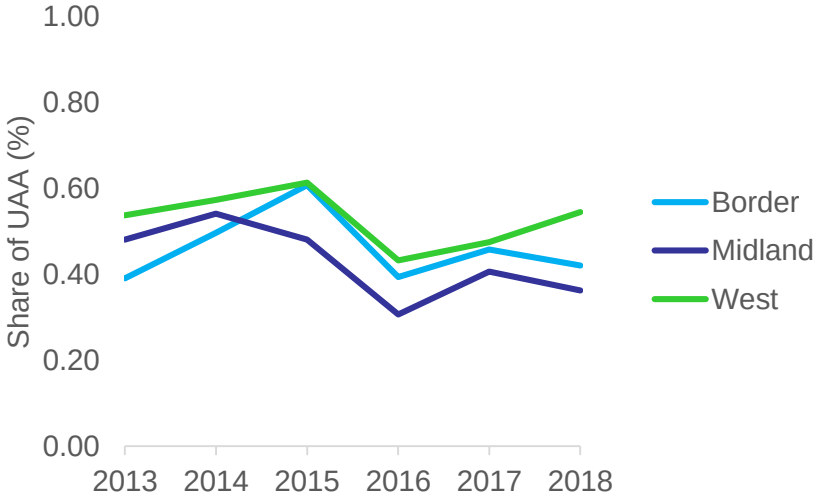
Email: jason.loughrey@teagasc.ie

Share of Agricultural Area Sold by NUTS3 Region 2013-2018

Main Dairy Regions

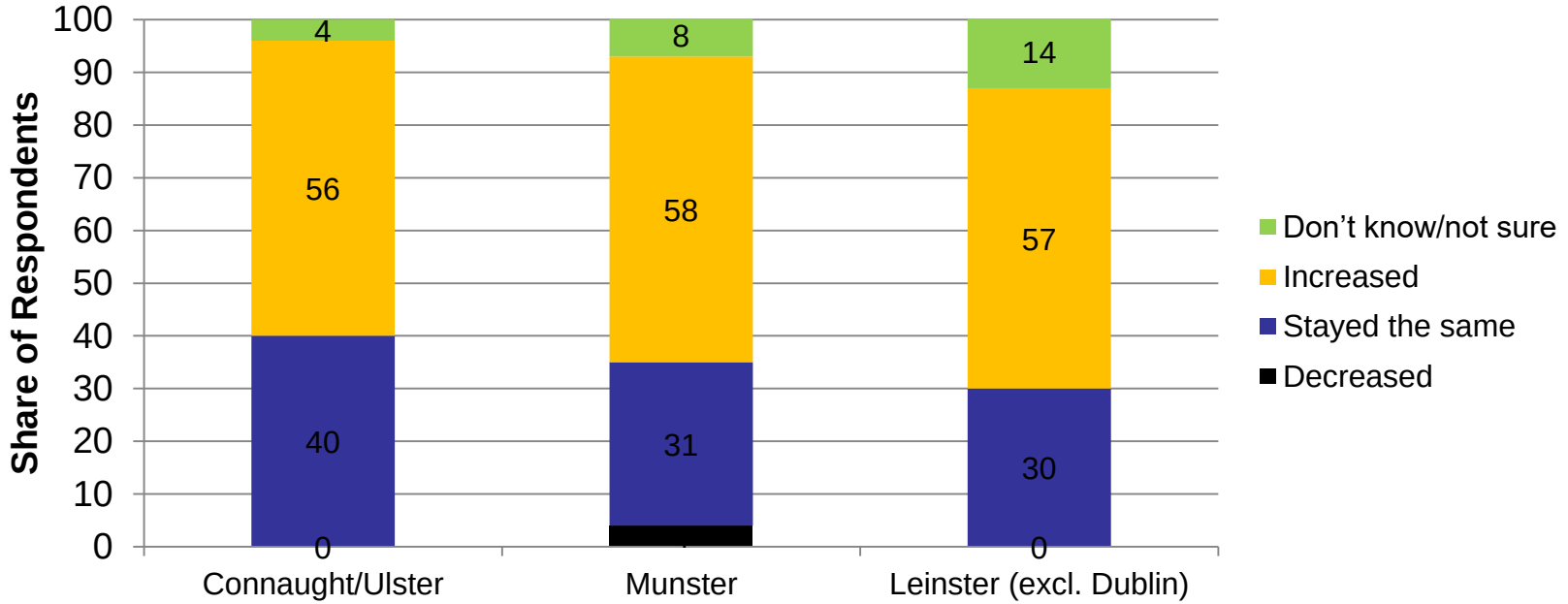


BMW Regions



Source: Central Statistics Office

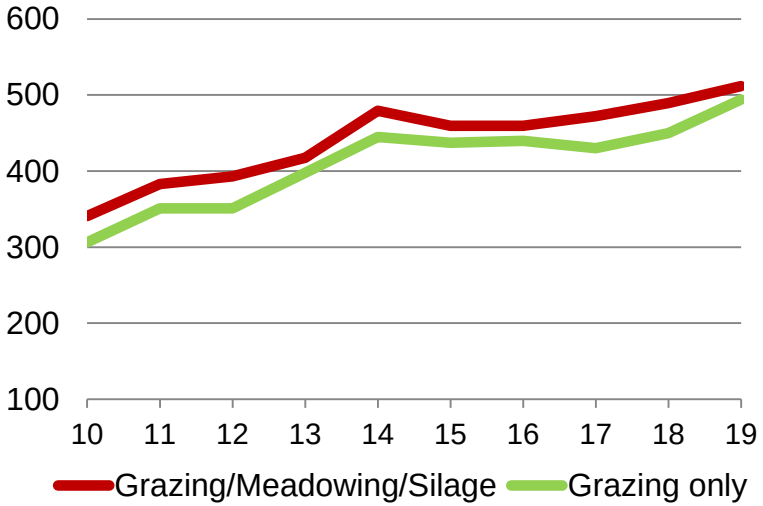
How the demand for long term leases changed from 2018 to 2019 by Province



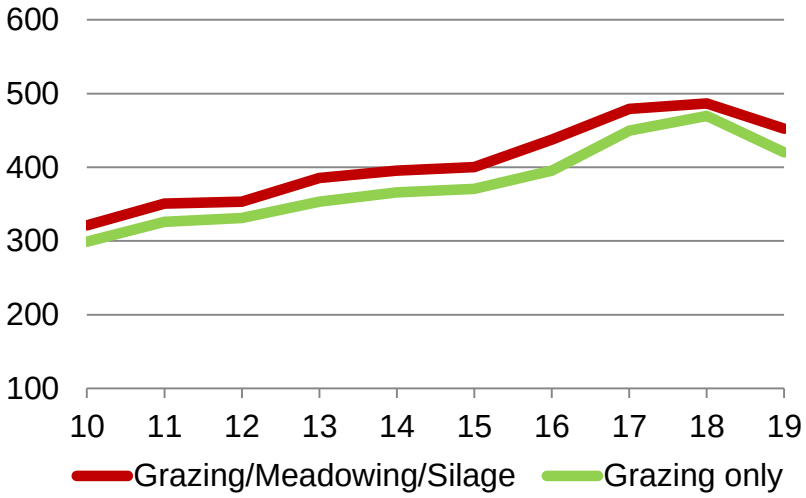
Source: SCSI/Teagasc Land Market Review and Outlook

Rental Prices, Euro/Hectare for Pasture Land, 2010-2019

Munster



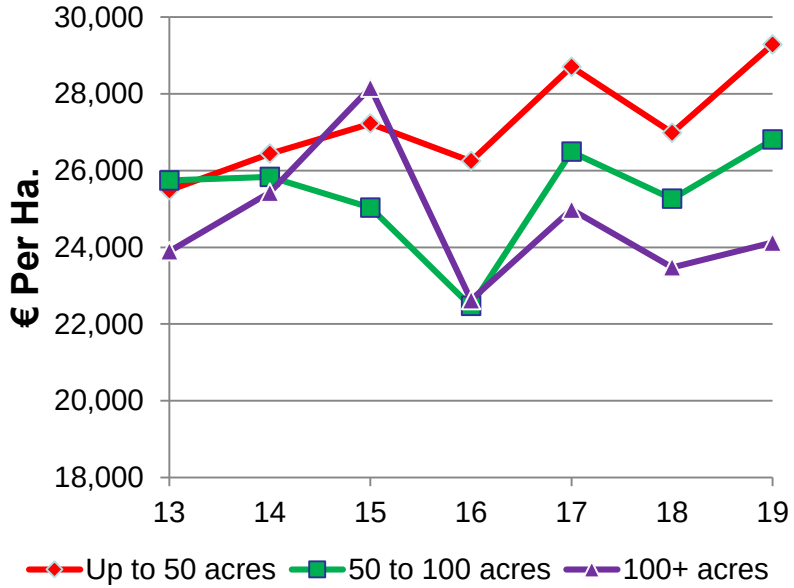
Leinster



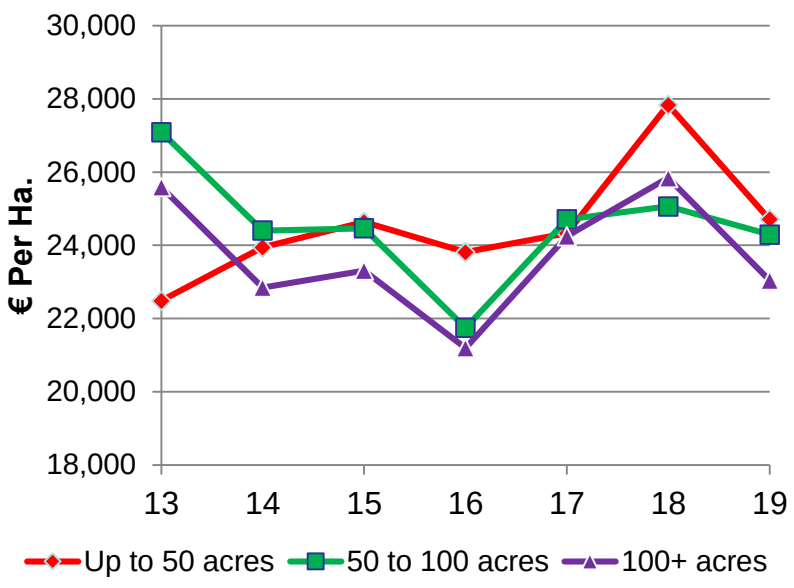
Source: SCSI/Teagasc Land Market Review and Outlook

Munster, Sales Price Per Hectare, 2013-2019

With a residence



Without a residence



Thank you for listening

Comments and questions are welcome

DIGITISATION: ECONOMIC AND SOCIAL IMPACTS IN RURAL AREAS

RURALIZATION: digitalisation and land markets

Gianluca Brunori

DESIRA receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 818194. The content of this document does not reflect the official opinion of the European Union. Responsibility for the information and views expressed therein lies entirely with the author(s).

#DESIRA2020

The question

Land:

a) is the main source of livelihoods;
b) it is limited;
c) it produces public goods, and the way it is managed is a matter of public concern.

Is a framework that continues to consider land a commodity appropriate?

Regulation should thus regard: a) land distribution; b) land mobility; b) land management.

In the future, the principles on which land is governed may change deeply.

How digitalization affect these issues?

Land distribution

Digitalisation of registry data:

- Land consolidation: land associations, land banks, cooperatives
- Land rights
- Identification of owners
- Analysys of fragmentation

Land mobility

- Administrative simplification
- Matching demand-supply
- Crowdfunding

Land management

- Remote sensing: Incentives and sanctions related to stewardship
- Remote sensing: carbon emissions
- Automation: economies of scale
- Data integration: land data+land-related policies

Pros and cons of digitalisation

+ reduction of options for corruption
+ transparency : responsibility
+ certainty of tenure rights
+ reduction of transaction costs
+ more accurate statistics
- disparity of access to data/to land: driver of land grabbing
- loss of privacy
- stigma on bad performers

DIGITISATION: ECONOMIC AND SOCIAL IMPACTS IN RURAL AREAS

Thank you!

@DesiraH2020

@DESIRA.H2020

DESIRA H2020

DESIRA H2020

Land Administration “issues” in Romania

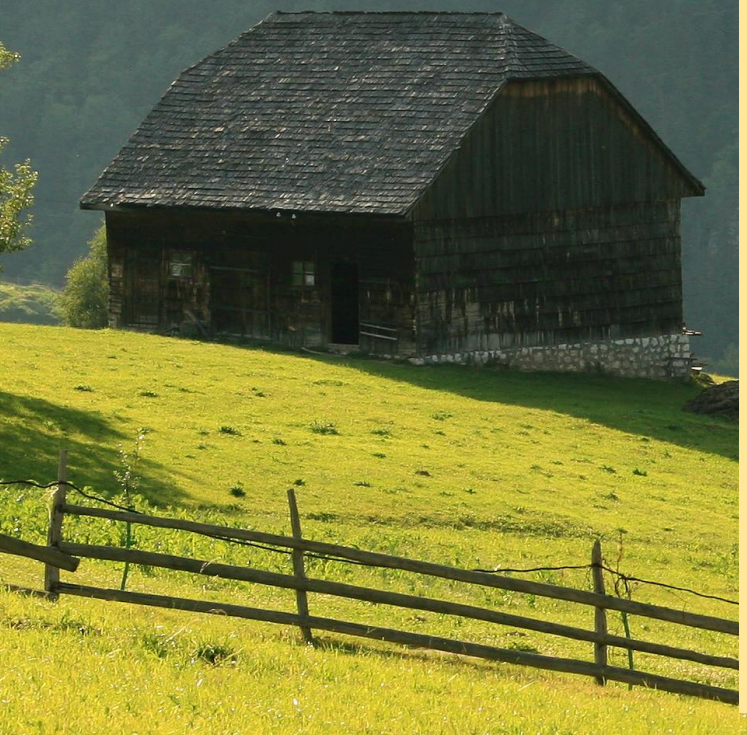
Mark Redman (15 October 2020)

highclere consulting

MOVING
MOuntain Valorization through INterconnectedness and Green growth

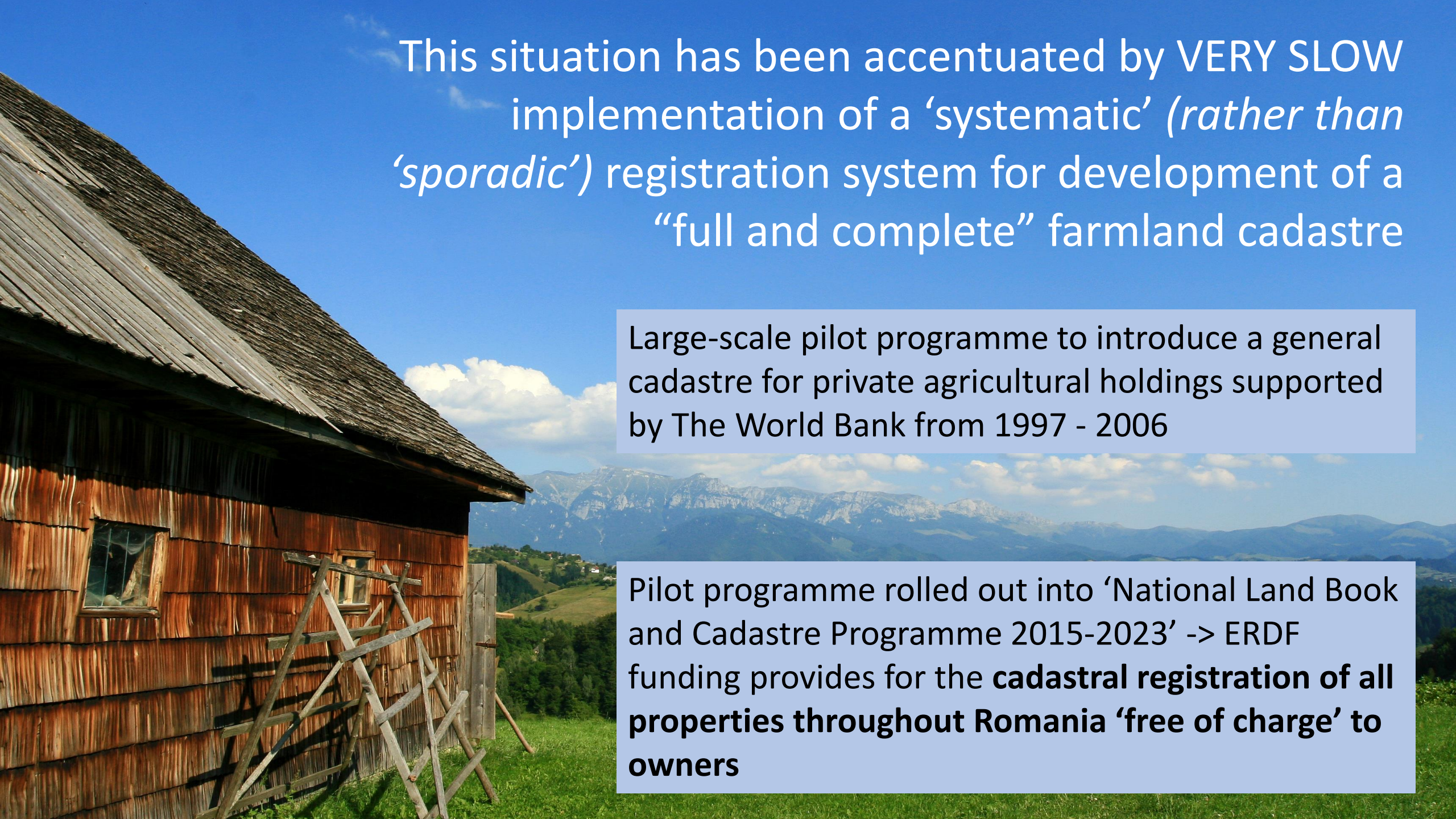
‘Land Fund’ Law 18 / 1991

Regulatory framework for the re-privatisation and restitution of land after the collapse of communism -> objective of achieving **“equity and social justice for former landowners”**



But flawed design and implementation led to **multiple forms of conflict and dispute** (Rusu *et al.*, 2011) **->** many of which still **continue** including:

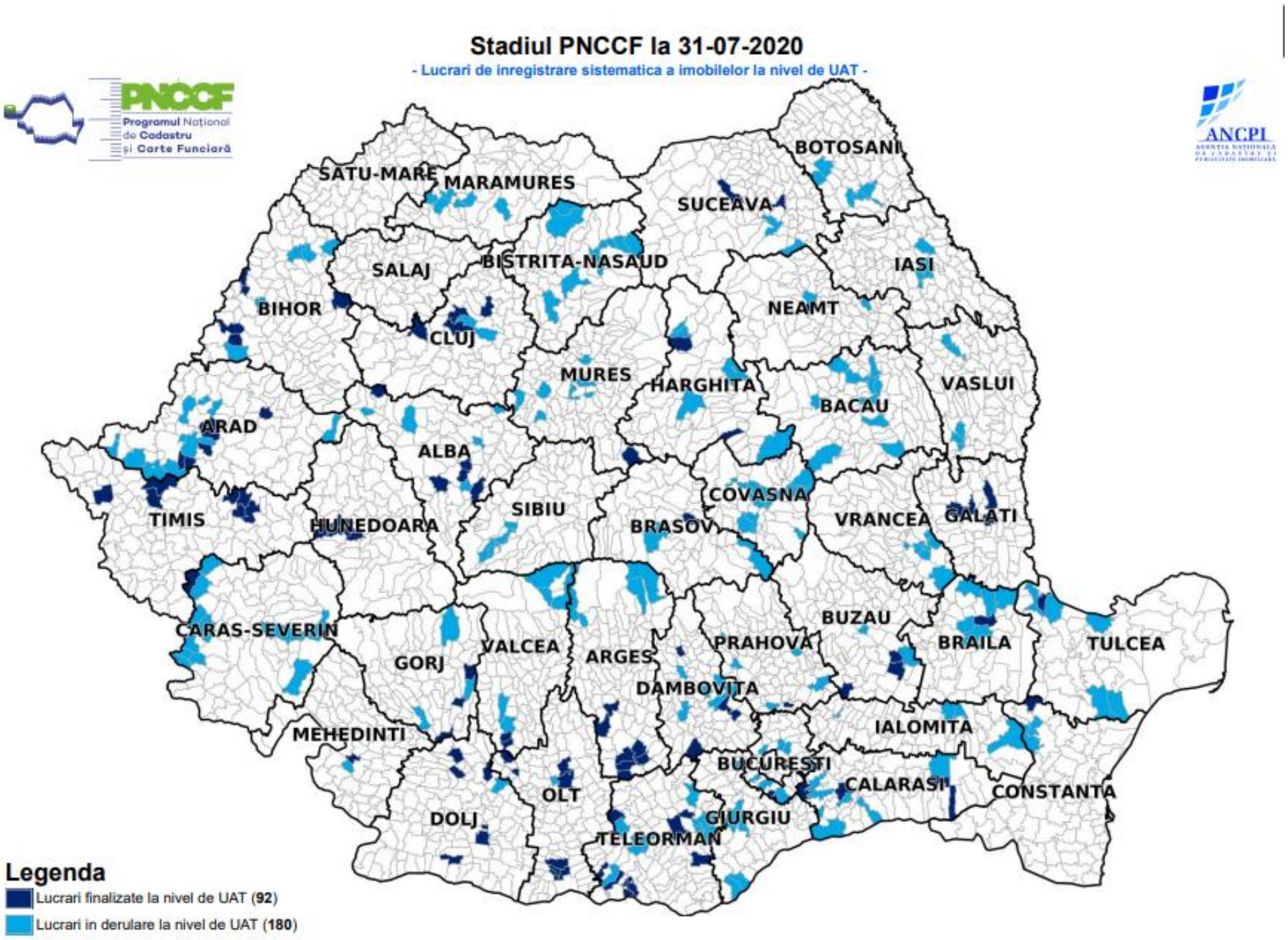
- Ownership conflicts between state and private, common or collective owners
- Boundary conflicts
- Ownership conflicts linked to inheritance
- Disputes over the value of land
- Ownership conflicts due to lack of land registration
- Disputes over payments for using / buying land
- Evictions by landowners, and
- Illegal evictions by state officials acting in their private interest.



This situation has been accentuated by VERY SLOW implementation of a ‘systematic’ *(rather than ‘sporadic’)* registration system for development of a “full and complete” farmland cadastre

Large-scale pilot programme to introduce a general cadastre for private agricultural holdings supported by The World Bank from 1997 - 2006

Pilot programme rolled out into ‘National Land Book and Cadastre Programme 2015-2023’ -> ERDF funding provides for the **cadastral registration of all properties throughout Romania ‘free of charge’ to owners**



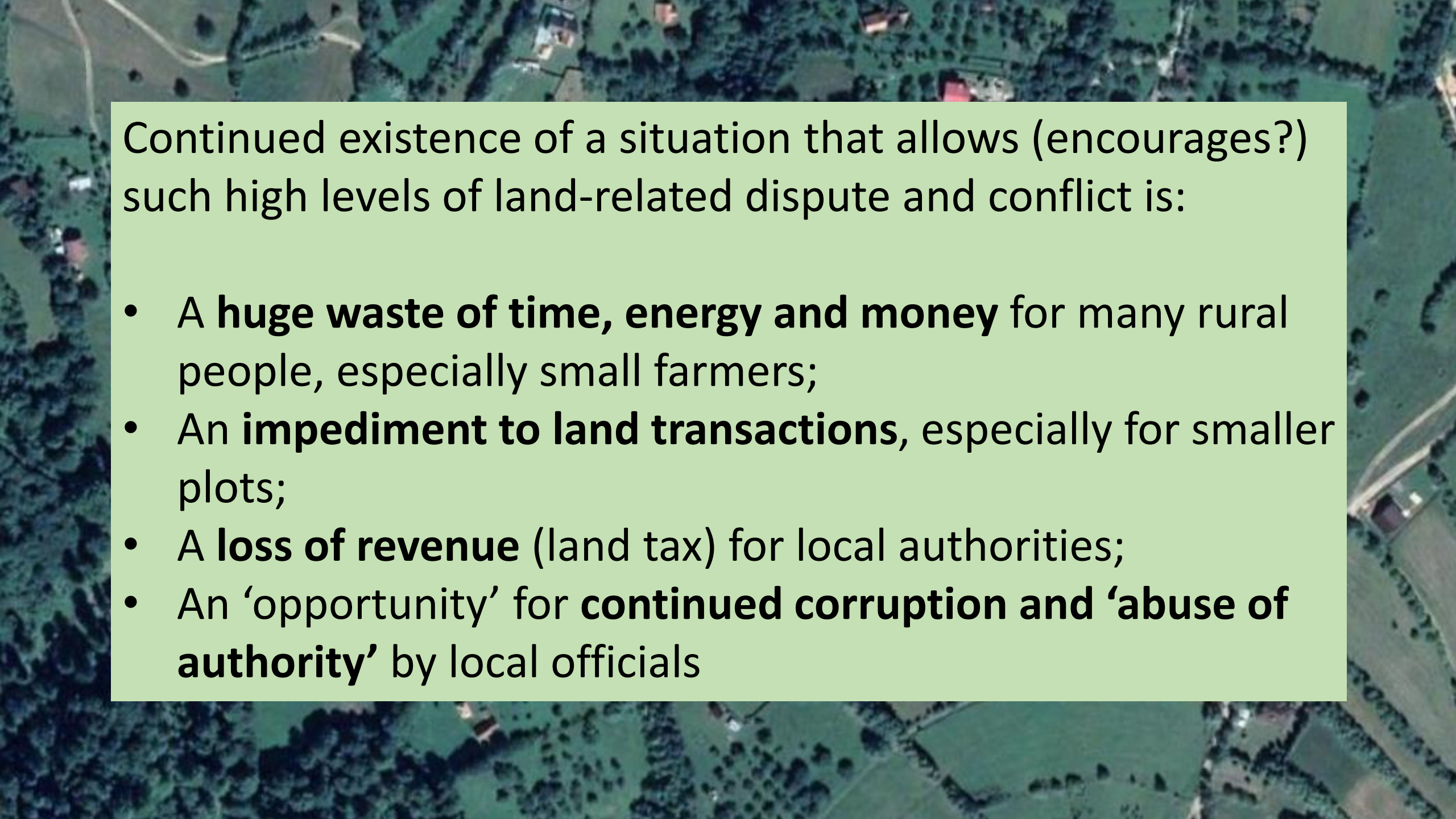
Very low uptake – **systematic registration** is only underway / completed 10-15% of LAUs

Additional capacity-building projects are launched!

0.3 hectares
purchased in 2006

In the last 5 years, we have:

- Paid over **1,500 EUR** in technical / legal fees related to resolving dispute on the boundaries;
- Been subject to a **2 year civil action** regarding misplaced boundaries initiated by one neighbour, and;
- A **12 month criminal action** *(tulburare de posesie)* regarding misplaced boundaries initiated by another neighbour.



Continued existence of a situation that allows (encourages?) such high levels of land-related dispute and conflict is:

- A **huge waste of time, energy and money** for many rural people, especially small farmers;
- An **impediment to land transactions**, especially for smaller plots;
- A **loss of revenue** (land tax) for local authorities;
- An ‘opportunity’ for **continued corruption and ‘abuse of authority’** by local officials

EXPERT MEETING ACCES TO LAND

RURALIZATION – Horizon 2020 project

15 October 2020

Workshop:
Land holdings and land market trends

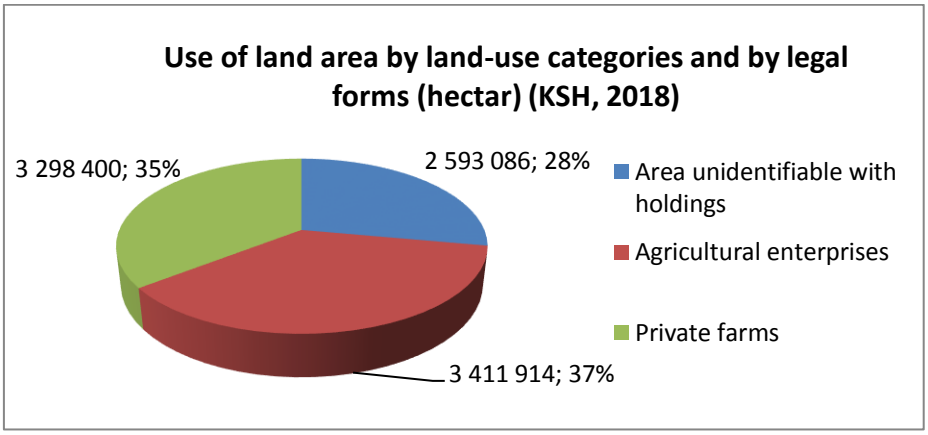
Dr. Laszlo Posta – associate professor
University of Debrecen – Faculty of Economics and Business
Research topic: land economics (land administration, rent, valuation)

Dr. Ferenc Buzas – scientific fellow
University of Debrecen – Faculty of Economics and Business
Research topic: real estate valuation, enterprise economics

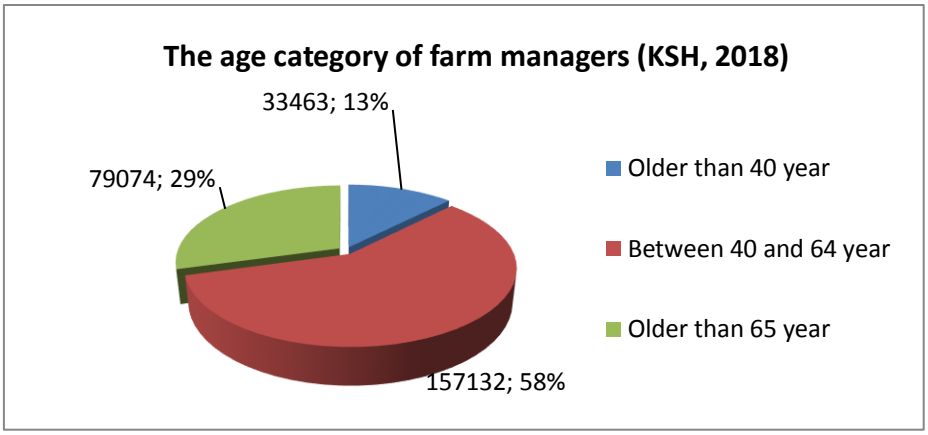
Few important reasons which limited the access to land market – that we consider – are the followings:

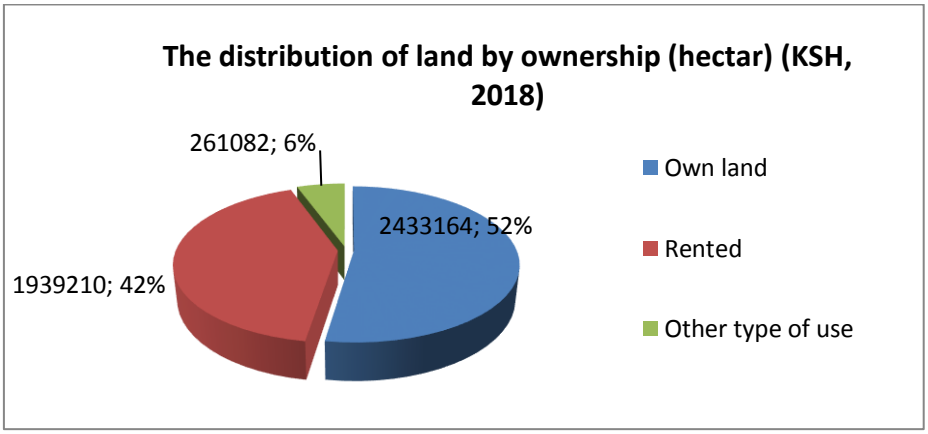
- financial and economic problems (lack of capital for young farmers).
- market irregularities (weakness in supply side, increasing land prices)
- administrative and legal (judiciary) obstacles (long administrative processes, controversial regulations etc.)

Under this project we try to highlight on reasons and possibilities in the context of young farmers entering on agricultural land market.

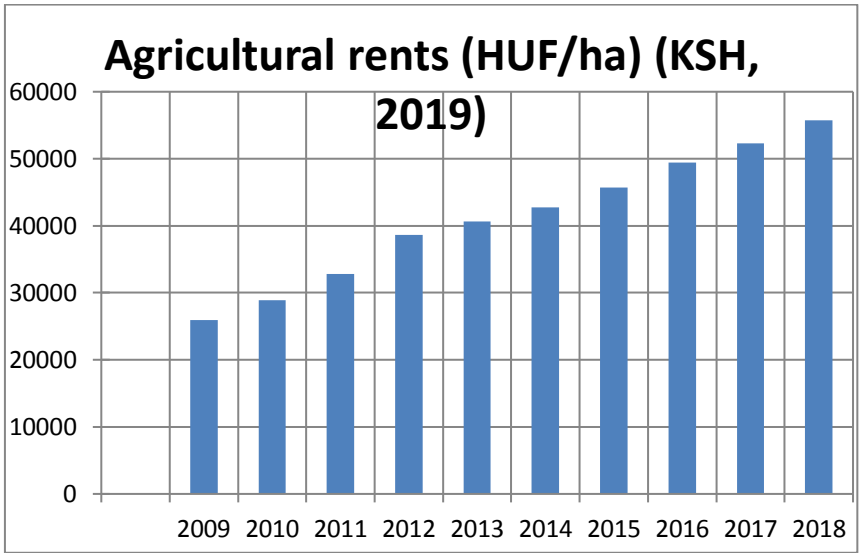


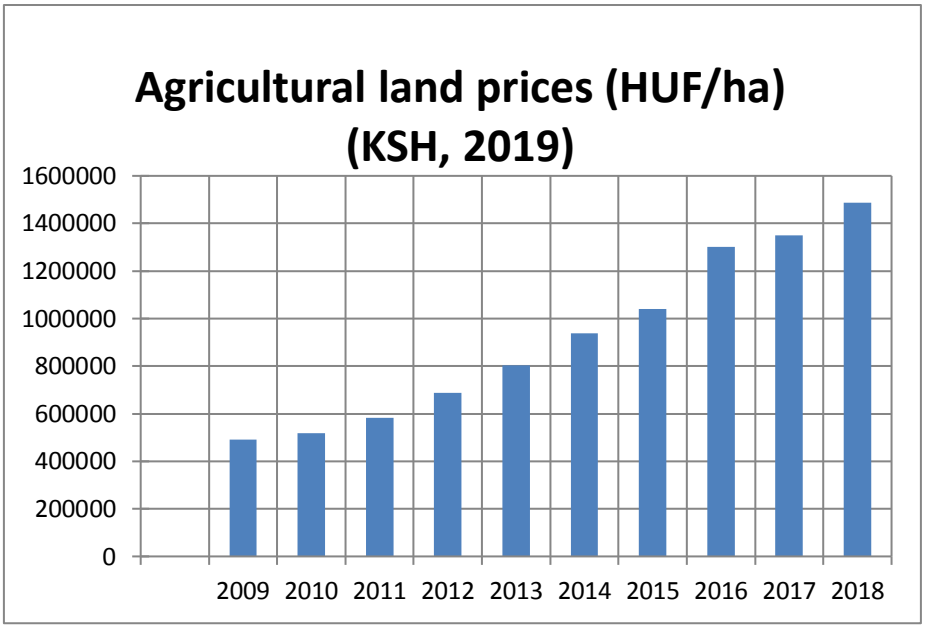
The number of private enterprises in agriculture was **25.685,** (**5%** of the total number of enterprises).





Increases of agricultural rental and land prices a in Hungary





Thank you for Your attention,

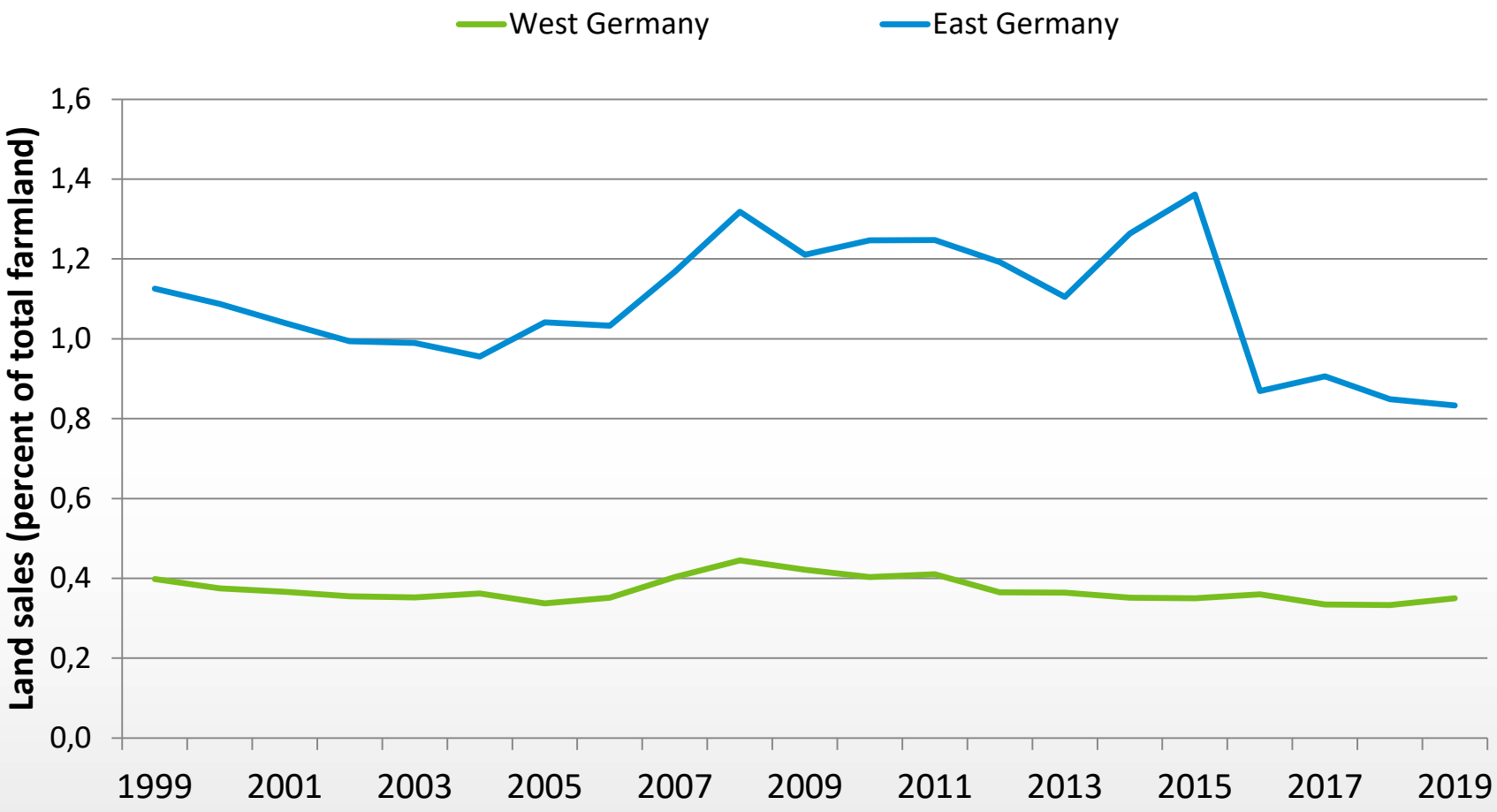
Laszlo Posta and Ferenc Buzas

Situation in Germany

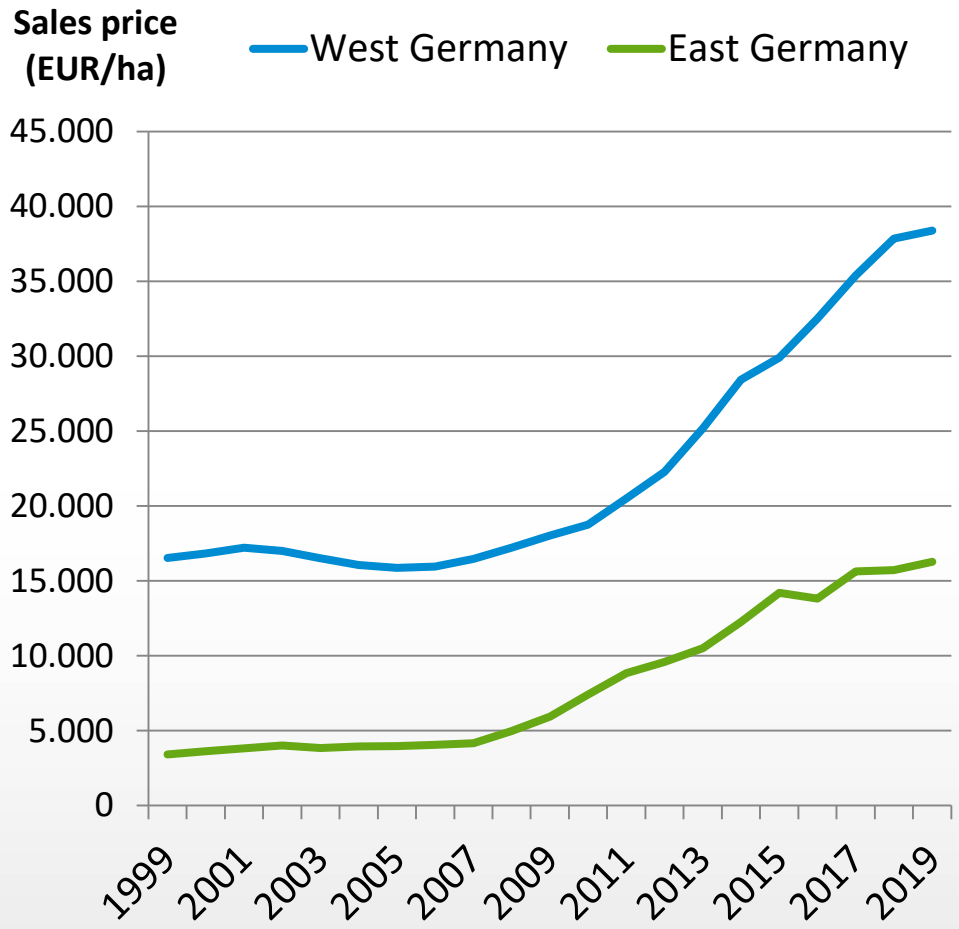
Andreas Tietz
Thünen-Institut für Ländliche Räume, Braunschweig

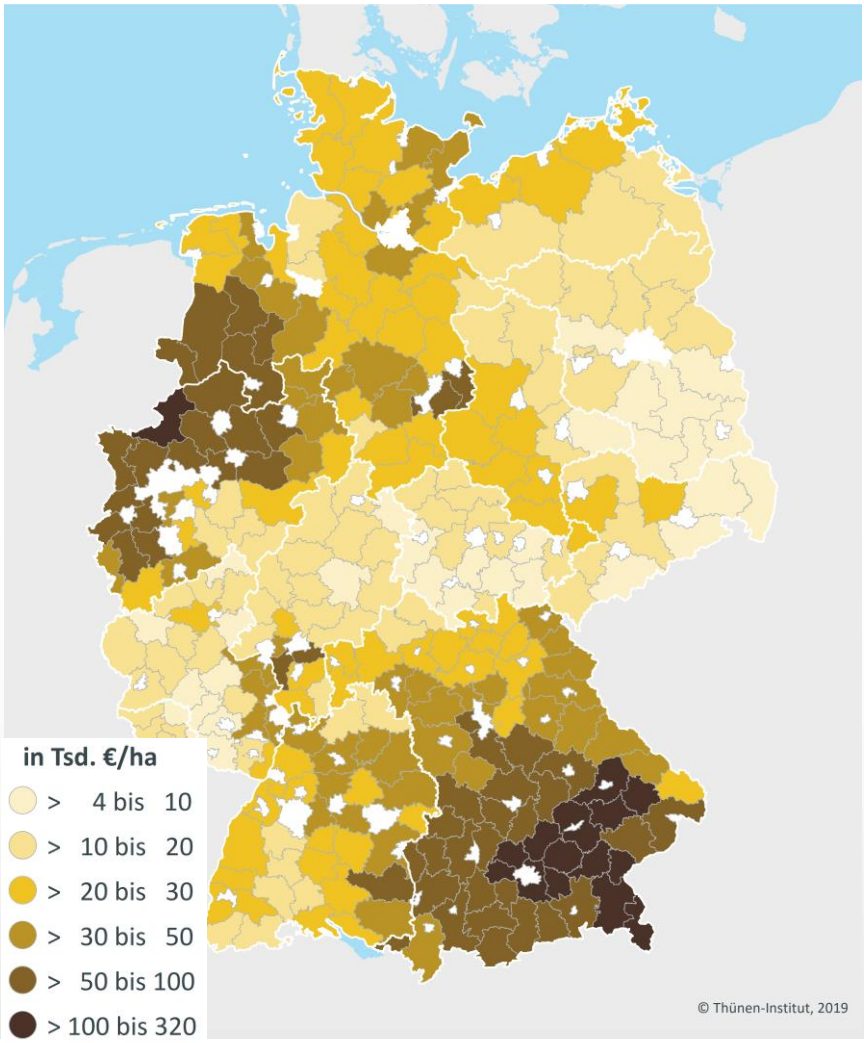
RURALIZATION
Online, 15.10.2020

Agricultural land mobility in Germany (West – East)



Land prices in Germany (West – East)





Causes of high land prices

- **Non-agricultural purposes – Urban sprawl**
- **Competition inside agriculture**
  - Pressure to grow
  - Livestock density – dependence on land for environmental reasons
  - Support for renewable energies
- **Capital market failures – Zero interest rates**
  - Lack for investment alternatives, fear of inflation, escape into asset values
  - Land is appreciated for its stable value (long term investment rather than speculation)
  - Low, but reliable returns

➢ **Asset value is crucial, not the agricultural value**

Structural change in agriculture

- **West Germany: >90% family farms**
  - transfer by inheritance
  - termination of farms caused by lack of successors – farm number decreases 3% yearly
  - farm growth by renting land and/or cooperation between farmers
- **East Germany: ½ family farms – ½ legal entities**
  - Transfer by share deals
  - Farm numbers are stable - Growth by formation of holdings
- **Newcomers in agriculture are uncommon**
  - High income business models needed – access to market crucial
  - Official projects promoting extra-family farm transfers („Hofbörse“) have little success
  - Expectations of old and new generation normally don‘t match

AGRICULTURAL LAND MARKET IN BULGARIA – LAW AND ECONOMICS PERSPECTIVE

Ass. Prof. Minko Georgiev, Department of Economics, Agricultural University, Plovdiv

Dafinka Grozdanova, PhD Student, Agricultural University, Plovdiv

Agricultural University – Plovdiv, Bulgaria

Theoretical framework related to the market of Agricultural land

- Common law
- Natural rights and property low theory

- Land mobility theory
- “Land Grabbing” conception

- Common-Pool Resource/ Property Rights theory
- Theory of Vertical integration
- Transaction cost theory (TCE)
- Theory of structure-conduct-performance (S-C-P) and Antitrust paradox

- Theory of the “Rent seeking”

Chronology and development of the agricultural land market 1989-2020

- Amendment of the Bulgarian Constitution in 1991 – the beginning of the restitution of agricultural land;
- In 1992-2000, more than 2,000,000 plots of agricultural land have been restituted;
- Some of the agricultural plots are with more than - 20 heirs at law.

Effects of the restitution of the agricultural land market

- Market barriers:
  -problems with the realization of the property land rights;
  -difficult access to the linked markets;

- High levels of the transaction costs;

- Low prices – for the agricultural land and low liquidity of the resource;

- Social consequences:
  - broken connections with the agricultural land;
  - migration of people from the village to the city;

Legal framework promoting the development of market relations as regards the agricultural land

- 1992 Agricultural Land Ownership and Use Act

– solves the problems related to the restoration of ownership of agricultural land;

- 1997 Agricultural Lease Act

– solves the issues of long-term production relations;

Urgent need for resource consolidation

- There are many:
  - fragmented plots of agricultural land;
  - uncultivated plots of agricultural land.

- An exception is only the region of Northern part of Bulgaria;

- Joint Project of the Bulgarian Ministry of agriculture food and forestry, DLG (Germany) and EVD – Kingdom of the Netherlands for Consolidation and sustainable use of the agricultural land.

- The Joint project started in 2006 and as result of it a Strategy for Consolidation and sustainable use of the agricultural land had been established. In this strategy 7 methods for consolidation of the agricultural land are identified.

Consolidation based on the use of agricultural land. Rules for renting agricultural land

- Procedure according to the art. 37c of the ALOUA;
- Appearance of large funds with special investment purposes.

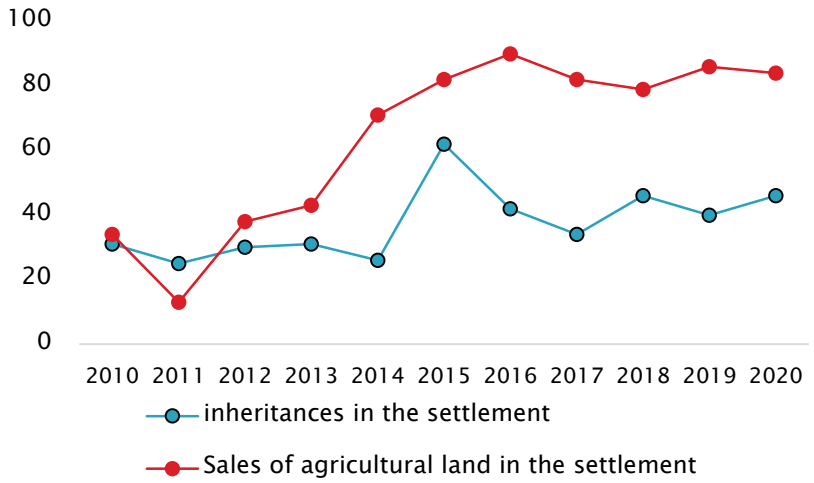
Legal entities as players in the agricultural land market

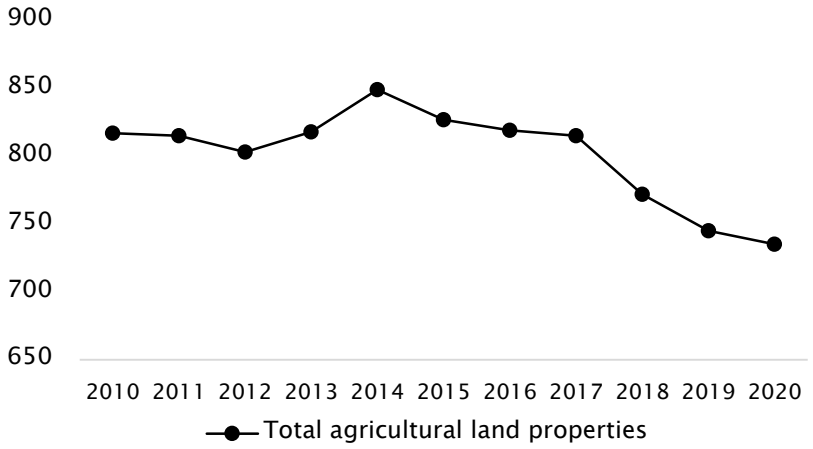
- Administrators of the business transactions for transferring and use of agricultural land;
- As regards the procedure of Art. 37 (c) ALOUA – the administrative players are 18;
- The total number of "players" in the agricultural land market in general is decreasing due to the takeovers;

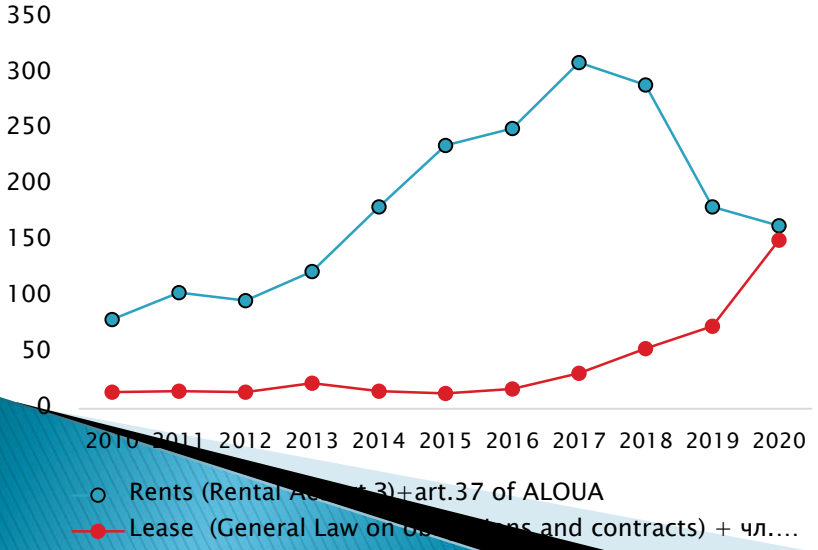
Concentration of the agricultural land

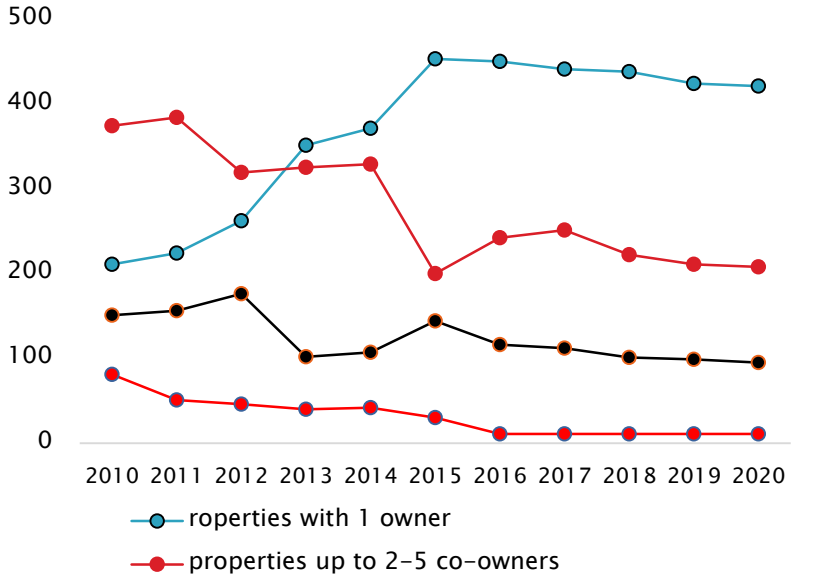
- Gradually decreases the number of big players;
- Seizure of the agricultural land by legal entities is a dominant situation in the local land markets;

Dynamics of the agricultural land market 2015-2019

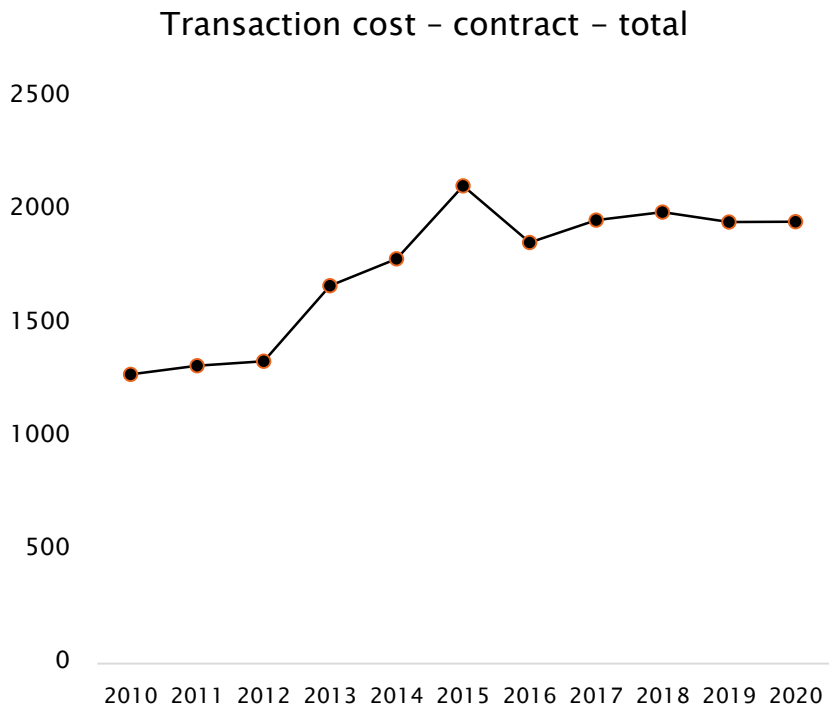


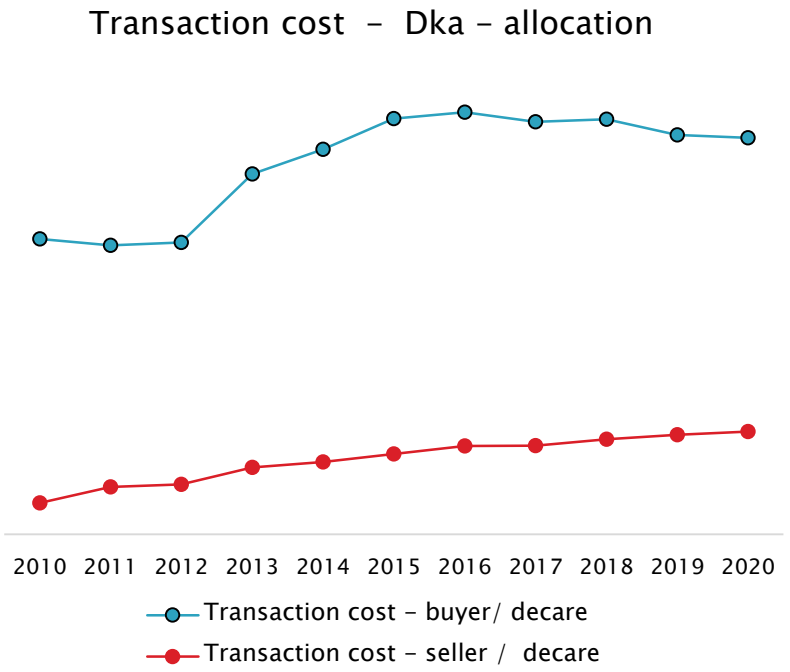






Transaction costs on the agricultural land market





Some Conclusions

- "Legal gap" – lack of regulation on the competitiveness production factor – cascading market distortions;
- The big legal entities works with other big ones
  – decreasing the number of the small farmers;
- The big players indirectly transferred the burden of the transaction's costs on the smaller ones.

References

- Boliari, N. 2013. Does Land Fragmentation Affect Land Productivity? Empirical Evidence from Bulgaria. Review of Agricultural and Environmental Studies, 94-3, pp. 273-302.
- Boliari, N. 2017. Can Partible Inheritance Explain Land Fragmentation? The Case of Bulgaria- Agrarian South: Journal of Political Economy,Vol 6, Issue 3, https://doi.org/10.1177/2277976017745194
- Bork, Robert H. (1993). The Antitrust Paradox (second edition). New York: Free Press. ISBN 0-02-904456-1.
- Demsetz Harold (2003) “Ownership and the Externality Problem.” In T. L. Anderson and F. S. McChesney (eds.) Property Rights: Cooperation, Conflict, and Law. Princeton, N.J.: Princeton University Press
- Hartvigsen, M. (2014). Land Mobility in a Central and Eastern European Land Consolidation Context. Nordic Journal of Surveying and Real Estate Research, 10(1).
- Hovenkamp, Herbert, Antitrust and the Close Look: Transaction Cost Economics in Competition Policy (December 2010). Available at SSRN: https://ssrn.com/abstract=1661993 or http://dx.doi.org/10.2139/ssrn.1661993;
- Hovenkamp, Herbert, Harvard, Chicago and Transaction Cost Economics in Antitrust Analysis (November 10, 2010). Antitrust Bulletin, Vol. 55, p. 613, 2010, U Iowa Legal Studies Research Paper No. 10-35, Available at SSRN: https://ssrn.com/abstract=1592476
- Kay, S., 2016. Land Grabbing and Land Concentration in Europe. A Research Brief. Transnational Institute for HOTL, Amsterdam.
- Ostrom, Elinor (1990) "Governing the Commons. The Evolution of Institutions for Collective Action". Cambridge University Press. ISBN 0-521-40599-8
- Tullock, Gordon (1980). "Efficient rent-seeking". In Buchanan, J.; Tollison, R.; Tullock, G. (eds.). Toward a theory of the rent-seeking society. College Station: Texas A&M Press. pp. 97-112. ISBN 0-89096-090-9.
- Van Dijk, T., 2003. Scenarios of Central European Land Fragmentation. Land Use Policy, Vol. 20, Issue 2, pp. 149-158.
- Williamson, Oliver E. (1975). Markets and hierarchies: analysis and antitrust implications. New York: Macmillan Publishers. ISBN 978-0029353608.

Thank you for your attention!

Благодарим Ви за вниманието !