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Young Farmers as Innovation Enablers in Rural Areas: The Role of The EU's Support in a Portuguese Pe- ripheric Region, Trás-Os-Montes¹

Jovens Agricultores como Vetores de Inovação em Zonas Ru- rais: O Papel do Apoio da UE Numa Região Periférica de Por- tugal, Trás-Os-Montes

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Abstract

The European Union has suggested several approaches to decrease regional asymmetries and develop its rural areas. The main purpose of this paper is to study one of these policies, the Young Farmers Program, in the rural region of Trás-os-Montes, an area threatened by ageing and depopulation. This initiative might reverse such phenomenon and increase the attractiveness of the rural lifestyle to younger generations. But do these farmers bring innovation to Trás-os-Montes? Do they have a significant environmental and sustainability awareness? Are they aware of the potentialities of the circular economy? Is the digital usage already a reality? Do the associative leaders encourage the sustainable development of the region? A tentative answer to these questions is searched by means of a detailed survey by questionnaire to a representative sample of young farmers in the region and by interviewing their main associative leaders. Overall, a positive conclusion emerges from the results, as young farmers truly have the potential to bring change and development to Trás-os-Montes.

Keywords: Rural development; CAP; Young farmers; Portugal

JEL Codes: Q12; Q18; R14; R51; R58

Resumo

A União Europeia tem sugerido várias abordagens para diminuir assimetrias regionais e para o desenvolvimento das suas zonas rurais. O objetivo deste artigo é estudar uma dessas medidas, o Programa Jovens Agricultores, na zona rural de Trás-os-Montes, uma área ameaçada pelo envelhecimento e despovoamento. A iniciativa poderá reverter estes fenómenos e tornar o estilo de vida rural atrativo para as gerações mais novas. Mas serão estes agricultores um vetor de inovação para Trás-os-Montes? Terão uma consciencialização ambiental e sustentável sólida? Conhecerão o modelo de economia circular? Será o uso digital uma realidade? Estarão os dirigentes associativos

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a encorajar um desenvolvimento sustentável? A tentativa de resposta a estas questões é feita através de um inquérito por questionário distribuído a uma amostra representativa de jovens agricultores e através de entrevistas aos seus principais dirigentes associativos. Em termos gerais, os resultados apontam para uma conclusão positiva, a de que os jovens agricultores podem trazer mudança e desenvolvimento a Trás-os-Montes.

Palavras-chave: Desenvolvimento rural; PAC; Jovens Agricultores; Portugal

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1. INTRODUCTION

The continuous escalation of a borderless global economy in the last few decades has paved the way to increasingly bigger regional asymmetries felt world-wide, regardless of the development level of each country. These asymmetries are characterized by an imbalance between overpopulated urban centers and depopulated rural areas, to which the EU is no exception. This paper focuses on the efforts carried on by the EU in order to reverse its rural areas' declining path, which are portrayed by worrying levels of ageing and depopulation.

Although each member state has their own local and specific set of challenges, there is still a considerable common ground on the rural problematic. The EU keeps working towards joint solutions by designing common goals for the member states which are highly dependent on their own national cooperation, in order to be adjusted for their specific local needs (Masot and Gascón, 2021).

The European Agriculture and Rural Development Fund (EARDF) develops several initiatives which are meant to deal with these rural regions under common threats. The Young Farmers Program was chosen for this study due to its potential of representing a gradual, slow-paced reversion of these threats. Young people who wish to set up as farmers for the first time are given a grant and farming training to start developing their project. It is an initiative that could bring renovation and improvement to the EU's agriculture, contribute to the attractiveness of the rural lifestyle for the younger generations and help slow down the ageing of the agrarian population by starting a farmers' generational renewal.

The area chosen to study the Young Farmers initiative is the northeast peripheral region of Portugal, NUTS 3 of Trás-os-Montes (TM), which has been severely affected by the phenomenon mentioned above and has always been a traditionally lagging behind region.

The paper is organised as follows. The theoretical framework is presented in section 2, starting with a brief literature review, followed by the description of the European Common Agricultural Policy (CAP) and the Young Farmers program. Section 3 presents the methods used in the paper and section 4 makes the territorial characterization of the whole population and the rural one, living in TM. Section 5 shows and discusses the empirical results, obtained both from the survey by questionnaire to the region's young farmers and from the interviews to their associative leaders. Section 6 concludes.

2. THEORETICAL FRAMEWORK

2.1 Literature Review

Rural exodus has become a world-wide ongoing trend. It will likely create an unbearable pressure in the biggest urban centers and will perpetuate the shrinkage of rural population (Johnson and Lichter, 2019). The European Union has focused much of its attention in finding solutions to this problem since many of its member states have also been highly affected by it (Rodríguez-Pose and Ketterer, 2020). The lagging regions report (European Commission, 2017) highlights the urgent need of national strategies for local and regional development, focusing mainly on reforms of the labor market and business environment.

It is well known that globalization enabled the socioeconomic weakening of certain EU regions which were already fragile, like the case of the Portuguese NUTS 2 region of Norte (Madeira, 2014). There are many pessimistic expectations for the future of rural areas, where the decreasing economic development could lead to rural abandonment by the working population and the few companies operating there, to such level that this drastic depopulation phenomenon would leave behind nothing but inhabited land (Costa et al., 2002). It is vital to create opportunities to develop rural economies in a sustainable and endogenous way, aiming at the development of local autonomy and at some retention of the locally generated value added (Ferrão, 2018).

Attention should be focused on what to do in territories that have been forgotten and abandoned, where the inhabitants live in a state of territorial reclusion with little expectations for their future. The interior of Portugal, which represents 60% of the total country, is a perfect example of this situation. In fact, these territories have had long-term structural vulnerabilities and have not been able to endure the aggressive dynamics of the global markets (Covas & Covas, 2013). There is a common agreement amongst Portuguese people that rural areas face a declining path (Soares da Silva et al., 2016; Almeida, 2017). The lay representation of rurality is characterized as being disadvantaged, deprived and basically a pre-modernity space - although some consider this pre-modernity signs to end up portraying an idyllic place.

The Common Agricultural Policy (CAP), EU's biggest tool for rural development, hasn't been enough to stop, on a national scale, the depopulation of the interior of the country and the overpopulation of the seacoast. The CAP was designed to be the unifying thread of the EU's foundation (Cordovil et al., 2004) but it has been met with several new challenges. Its future and the future of EU's agriculture in general depends now on the competitiveness and potential of diversification and modernization in farming. It depends also on the dedication of each member state to their own rural development initiative (Avillez, 2004).

The decrease of agrarian population has been felt around all Southern Europe (Camarero, 2017) and amongst this reduced population there is a wide demographic imbalance that shows a high number of elder farmers in opposition to a low number of young ones (Carbone and Subioli, 2008). The current social consideration of the agricultural sector, the entry and exit barriers and the low productivity in agriculture are some of the reasons for this aggravating asymmetric age structure.

For instance, Zagata and Sutherland (2015), who explore the young farmers problem in Europe, state that more than 50% of farms are managed by farmers over 55 years old. But those levels have different representation throughout the EU Member States: in Germany, 5% of farmers are 65 years old or older while in Portugal it amounts to 46%. The authors also present a correlation between farmers' age and farm size, where small-size farms are more likely to be managed by older farmers. Portugal is used as a frequent example of this. Bigger size farms tend to have a greater efficiency and be more prone to innovation which leads to higher levels of production and rural business development, being, therefore, more attractive to young holders (Simeone, 2006). It has also been verified that small-scale farms aren't usually able to establish viable farm businesses, so they become less attractive to younger population, slowing down the revitalization of the countryside.

But there is also another issue hardening the demographic imbalance amongst farmers which is the old farmer's unwillingness to pass on their farms to the younger generation or this type of transition being made at a very slow pace. Succession is a key-point to a successful modernization of farms and to an easy adjustment to the EU's constant new demands. New entrants are more willing to diversify their farm and to develop new markets and since many times they don't have an agricultural background, they are also more likely to build links between new sectors (Zagata and Sutherland, 2015). In Portugal, a farmer with a certain or likely successor is more willing to try new farm activities and to intensify farm production. On the other hand, farmers that don't have a successor show a higher tendency to abandon their lands (Sottomayor et al., 2011).

When succession happens, there is also a transfer of knowledge and skills that are passed on from the older farmer to the younger one. This type of knowledge is undeniably valuable specially nowadays when agricultural knowledge has become quite standardized (Šūmane et al., 2018). The complementarity of scientific knowledge with farmers and local knowledge can better guide agriculture towards planning a more sustainable future (Christmann et al., 2020).

It is also important to acknowledge the likelihood of younger farmers being more receptive to sustainable and environmentally friendly practices in their farms. There has been a significant transition of agriculture towards environmentalism which shows a change in people's and stakeholders' perceptions on the environment leading to intangible changes of mindsets (Wilson,

2007) and it's the younger farmers who more frequently pursue these new behaviors. A research regarding the role of organic farming in rural development (Lobley et al., 2009) classifies organic farmers from an English sample as being young and highly educated, which might be a borderless characterization. This type of farmer is likely to develop alternative food businesses with environmental and nutritional benefits. It can also help developing rural areas on an up-to-date way. This trend is evidenced again by the noteworthy lack of interest from traditional farmers regarding organic farming, as exemplified by a project developed in San Sebastián, located in the north of Spain's Basque Autonomous Community (Cruz and Collantes, 2017). It shows that the relationship between a traditional farmer and an ecological production is practically nonexistent.

But sustainable farming is expected to become more and more common which is why it is so important to understand which efforts are being made individually, by the farmers, the EU and the Member States. The EU is already making efforts towards the implementation of a circular economy, which maintains in the economy for as long as possible the value of the products, materials and resources, diminishing the generation of waste (European Commission, 2018). Still, many of these efforts remain merely good intentions and the results aren't always obtained (European Court of Auditors, 2018).

2.2 CAP, rural development and Young Farmers program

The EU's many efforts towards the development of rural areas, like the initiative of the Young Farmers program chosen for this research, come under the umbrella of the CAP, EU's first integrated policy, introduced in 1962. Its legal basis is set on the Treaty on the Functioning of the European Union (TFEU), from article 38 to 44.

CAP is currently financed by two Funds, the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD). It is also organized in two different pillars. The first pillar is divided in two categories and it's financed by EAGF, therefore the aims are essentially the same: the common organization of the markets in agricultural products (Reg. (EU) No. 1308/2013) and the direct payments to farmers [Reg. (EU) No. 1306/2013 and Reg. (EU) No. 1307/2013]. The second pillar consists on the Rural Development Policy [Reg. (EU) No 1303/2013, Reg. (EU) No 1305/2013, Reg. (EU) No 1306/2013 and Reg. (EU) 2017/2393] and it is co-financed by EAFRD and regional or national funds from each Member State.

The European rural development policy is implemented through each Member State's rural development program. The European Commission has established three main priorities for rural development, which are the promotion of agricultural competitiveness, the sustainable management of natural resources and climate action and the balanced development of rural regions by fostering employment (European Parliament, 2018). These three objectives branch out into six different priorities for rural development policy² and, out of these six, each member states' rural development program must include or be related to at least four. So, each of these programs apply a personalized strategy for the countries' specific needs, yet this strategy must be designed according to the EU's rural development guidance.

The rural development programs of Portugal that were included in this research are PRODER, which ran from 2007 to 2013, and PDR 2020 which started in 2014 and is now ending. So, all the data collected with and from the case study dates back to one of these two editions. Both programs were organized in four subcategories: competitiveness, innovation and knowledge, sustainable development and local development. The Young Farmers program is included in the competitiveness subcategory for both programs.

The EU established payment schemes for European farmers since the beginning of the CAP. However, if the farmer obeys certain criteria to be considered as a young farmer, it becomes eligible for further financing. A young farmer must be between 18 and 40 years old by the time he/she submits a project up for financing. This must be the first installment as a farmer and it can be either a full-time or a part-time activity. The young applicant must also be the holder of the farm and it must present a business plan of the project for a five years period with a description of the farm, the pre-determined agricultural activity and a detailed description of the desired investment. These requirements seek to promote the fixation of young people in rural regions and to invigorate the

² "Fostering knowledge transfer in agriculture, forestry and rural areas; Enhancing the competitiveness of all types of agriculture and enhancing farm viability; Promoting food chain organization and risk management in agriculture; Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry; Promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors; Promoting social inclusion, poverty reduction and economic development in rural areas" (European Parliament, 2018).

regional economy by innovating the agricultural sector (PDR2020, 2014).

The funding of Portuguese young farmers is done by IFAP (*Instituto de Financiamento da Agricultura e Pescas*, I.P.) and is currently of 20.000€. To this initial amount, extra funding can be added. For example, if the farmer does not exercise any other gainful employment, that can mean an added 5.000€. The extra funding possibilities vary with each edition of rural development programs.

The total number of approved and subsidized projects during PRODER in the 9 counties that currently build TM was 390: 263 projects from Nordeste Transmontano plus 37 projects from Vila-Flor and 90 from Mirandela (PRODER, 2014).

3. METHODS

The selected methods for this research were a survey by questionnaire to a valid sample of young farmers and an interview to some leaders of local farming associations, (the survey and interview guide can be provided upon express request to the authors). The survey, which was made through an online platform and through *in loco* distribution, allowed reaching out to a higher number of young farmers of the region. All young farmers registered in the farming associations were contacted for this study and the results were obtained based on the sample which answered the survey. Interviewing the main associative leaders, who have the closest contact with these farmers, allowed to corroborate the survey's conclusions and to add the perspective of the interviewees on the results. The survey was conducted in the first semester of 2018, and the interviews were conducted from May to July of the same year.

A study about Young Farmers' needs in the EU from the year 2015 was considered in the design of the survey and in the set of a representative sample for this research. The "Pilot Project: Exchange programmes for young farmers" was a project assigned by the European Commission that examined some of the young farmers' most important needs, skills, information sources, etc. (Zondag et al., 2015). It also created a survey by questionnaire that was distributed amongst every EU member state with a goal of 75 respondents per each. That goal was surpassed in some countries, mainly in the northern ones, and it felt slightly short in others, like in Portugal which obtained only 73 responses. These 73 responses come from young farmers of the entire country and there is no specific information about which region they belong to.

So, given that 75 young farmers on a national scale were considered a valid sample for this European Commission project and that 39 answers would represent 10% of the total projects in the Terras de Trás-os-Montes during PRODER, the goal for this research was set for between 50-60 answers. In the end, 52 answers were obtained.

The first contacts were made to the farmers associations. This was the first step to make a pre-evaluation on the viability of the research project: reaching out to a few associations to explain the project, propose an interview and make an estimation on the number of young farmers willing to answer the survey. Once there was certainty that the project was viable, the survey and interview script were created simultaneously.

The survey was organized in five different categories: the first category is called "Profile" and inquires about the young farmer's age, gender, location, main activity and personal motivation to start a farming project. The second category, "Education", determines the education level of the sample, the most common education fields and the most relevant skills according to the young farmers to assure a successful project. The third category, "Important needs" explores the most crucial needs for a young farmer in the region, drawing a parallel from the national results obtained in the study on Young Farmers needs in the EU cited above. The fourth category, "Digital use", analyses how up to date these young farmers are with technological innovation, how important they consider IT skills for their projects and which are their biggest challenges regarding the digital world. Finally, the fifth category, "Sustainable practices", searches for an environmental-friendly mindset by asking which sustainable measures have been adopted or are intended to be adopted by this new generation of farmers.

The interview was drafted in a similar way, following several qualitative interviewing examples and instructions from Josselson (2013), Brinkmann (2013) and Skinner (2012). Firstly, it asked for a perception on the farmers associations' dynamic in TM. Then, there was a set of queries on basic characteristics of the young farmers like age, gender, main farming activities in the region and most common reasons for young people to become farmers. Afterwards it was requested a general overview on the educational background of these new farmers in TM and which skills were mostly needed and which skills did these young farmers lacked the most. Like in the survey, the third part

of the interview focused on the main difficulties and needs for young farmers and for farmers' associations. Lastly, there were a few questions regarding sustainability, which were inspired after reading relevant information on the EU's mostly unrealized efforts when it comes to sustainability and renewable energies.

Before analyzing the results, a regional characterization of the chosen territory is imperative for the understanding of some noteworthy difficulties and points of view.

4. TERRITORIAL CHARACTERIZATION

4.1 Population

Trás-os-Montes is a NUTS3 northeast region of Portugal belonging to the NUTS 2 region Norte. It was divided in 15 counties from 2008 to 2013 and officially named Alto Trás-os-Montes. After the 2013 NUTS reform³, it is currently divided in 9 counties (see Figure 4.1) and renamed Terras de Trás-os-Montes (INE, 2015). It is considered a Predominantly Rural region, which means that more than 50% of its population resides in a rural area (Eurostat, 2015).

This NUTS3 region has been severely affected over the past decades by the ageing and depopulation phenomenon. Therefore, the need to fixate young people in the area is crucial. Giving its significant amount of arable land there should be an inherent appeal for young people to remain in the region and develop a farming project. Nevertheless, several difficulties that the region faces haven't allowed the young farmers program to be the natural enabler that it was set out to be.

Figure 4.1: The 9 counties of Terras de Trás-os-Montes



Source: *Comunidade Intermunicipal* (2018)

The amount of resident population over the last years has registered a decreasing pattern, with a loss of more than 10 000 residents over the last eight years, which means that TM has lost around 1 000 people per year, either to Portugal's urban centers or to emigration, from 119 109 in 2009 to 107.661 in 2019 (PORDATA, 2018).

4.2 Farmer Population

The Agricultural Census (INE, 2011) also contributes to further understanding TM's role on a national perspective. This study is done every ten years and the most recent one, 2009, compares all of its results to the previous analyzed period of 1999. Table 4.1.a quantifies the farming population on a national and regional scale. It is worth noting that the number of farmers in TM

represents around half of the total population. On a national scale this representation is much lower. Still, both areas show a decreasing variation during the 10 years period. Regarding the female representation on the farming sector, it must be highlighted that TM registered an increase of 29% in this period.

³ Since the selected period of time for this analyzes goes from 2007 till the present, this change had to be taken into account, although it did not represent significant differences in the statistical data collected for the characterization of the region, which is done in the next section.

Table 4.1.a: Total Population and Farmer Population, 2009

Regions	Total Population	Total Farmers	% change 1999-2009	Female % of total	Female %change 1999-2009
Portugal	10 637 700	296 381	-27%	31%	-2%
NUTS 3: TM	119 109	60 979	-12%	34%	29%

Source: INE (2011)

Table 4.1.b shows the age range of farmers, again on a national and regional scale. The amount of farmer population below 35 years old has decreased significantly, 60% on a national scale and 52% on a regional scale. The farmer population between 35 and 45 years old has also suffered a serious decrease. The age range that has suffered the least is the one representing farmers with 65 years old or above, with a slight decrease on a national scale and an increase of 10% in TM, which illustrates the ageing phenomenon spread around the region. In fact, the average farmer's age has risen from 59 years old in 1999 both on a national and regional scale, to 63 and 62 years old in 2009 on the national and regional scale respectively (INE, 2011).

Understanding the educational background of the new farmer generation was one of this study's most important goals. It is important to state that farmer's education levels have gone through significant changes over the last decades. Not so long ago, illiteracy was common among the agrarian sector which is no longer the current reality. With the national policies of mandatory education for all, the data shows a significant evolution from 1999 to 2009 (see Table 4.1.c).

Table 4.1.b: Age Range of Farmers

Regions	<35		35 to <45		45 to <65		≥ 65	
	Total %	%change 1999-2009	Total %	%change 1999-2009	Total %	%change 1999-2009	Total %	%change 1999-2009
Portugal	2	-60	8	-51	42	-34	48	-8
NUT 3: TM	2	-52	8	-44	43	-18	47	10

Source: INE, (2011)

There is a remarkable decline of people without any education, of 53% in Portugal and 44% in TM in this decade. One of the most notorious values is the 95% rise of people in TM that graduated high school, a value undeniably connected to the mandatory education policy. Therefore, in 2009, farmers were already becoming more and more educated with some of them graduating University. The data gathered through the case study's survey confirms this reality, leaving a positive expectation for the future.

Table 4.1.c: Education level of Farmers, 2009

Education level	Portugal %	% change 1999-2009	TM %	% change 1999-2009
None	22	-53	22	-44
Primary School	52	-25	51	-9
Middle School	17	23	17	46
High School	4	44	4	95
University (agri. related)	1	6	1	31
University (non-agri. related)	4	31	5	57

Source: INE (2011)

5. EMPIRICAL RESULTS

5.1 Survey by questionnaire

The surveys were distributed during a period of three months and enabled a detailed

characterization of the current young generation of farmers installed in the region.

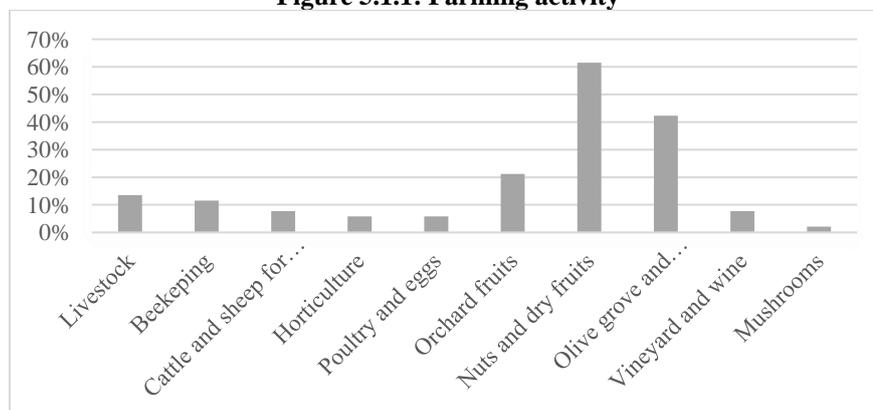
5.1.1 Profile

There were four essential questions that allowed to draw a general profile of the sample: average age, gender distribution, personal motivation behind the decision to become a young farmer and main agricultural activity. The average age of this sample was of 31 years old which shows that most young farmers will initiate their projects on a later phase. The gender distribution was 33% female and 67% male, quite similar to the national distribution which is of 40% female and 60% male (PRODER, 2014).

It was imperative to understand the most common reasons that drove the survey's respondents to become young farmers. This allowed to weigh in on the region's and sector's attractiveness for a young person. The survey gave two possible answers to this question and, in case that none of these two were applicable, there was still the option of an open answer. The majority answered within the first two given options: "it was a career option" (38%) or "I was unemployed" (30%) which evidences two very different realities and motivations of a professional ambition versus a professional escape. Regarding the open answer possibility, there were three main reasons mentioned: "it is a part-time activity" (12%), "it is a way of increasing family income" (10%) and "it is a way of modernizing the family's farm" (10%). These results essentially show that although many respondents became young farmers to fulfill a professional ambition, agriculture continues to be, to many others, a refuge activity to the lack of professional offer that is felt on a national scale. The open answers also showed that farming can be seen just as a complementary activity or a way of making the most out of available resources.

To determine the most usual farming activities in the sample, the survey had a question where the respondents could select as many options as they wished, since many farmers aren't focused on one simply activity. As seen in Figure 5.1.1, the most common activity was undoubtedly "nuts and dry fruits" with 61.5% of respondents developing such farms. "Olive grove and olive oil" was also a frequent preference for 42.3% of the sample. For 21.2% of these young farmers, "orchard fruits" was also a viable choice, followed by 13.5% of "livestock" and 11.5% of "beekeeping".

Figure 5.1.1: Farming activity



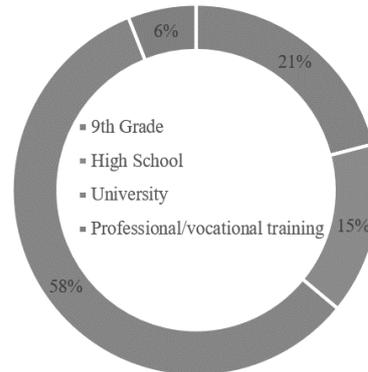
5.1.2 Education

Considering the progress on farmers' education highlighted in the 2009 Agricultural Census, it was important to confirm if this evolution was continuous and still felt in the new generation of farmers. So, the "Education" category aimed at evaluating the instruction level of the sample, the most common fields of study of those who had higher levels of schooling and the complementary skills that young farmers considered essential for a successful project.

Figure 5.1.2.a represents the education level of the sample. As it can be seen by the 58% rate of University graduates, there is a significant portion of respondents who have a higher level of education. There is 21% of the sample who has a lower level of education having solely completed

9th grade. This portion can be associated to the oldest percentage of Young farmers since recent national education reforms shifted the mandatory graduation requirements from 9th to 12th grade.

Figure 5.1.2.a: Education level



For the respondents who claimed being University attendees, there was a second question which inquired about the type of degree that was obtained. Most of them had obtained a Bachelor degree (67.7%), while less had obtained a Master degree (16.1%) and a few had completed a Post-Graduation (12.9%).

However, there is a likely possibility of these results not being completely representative of the young farmers' reality in TM. There is a known correlation between level of education and predisposition to answer academic inquiries, which could mean that this data is slightly biased. Facing these odds, there was a need to verify the results with the interviewees from the farmers associations. They confirmed this possibility and considered the actual percentage of young farmers' graduates in the region to be around 30%-40%.

Since this study reached a very qualified share of young farmers, the results regarding the different education fields shown in Figure 5.1.2.b were varied and truly interesting. While the most common background was accurately Agricultural Science, many others were represented in the survey's results. A significant part also studied in the fields of Economics and Management, Health, Engineering and Social Sciences. The results show that amongst this new generation of farmers in TM, there is a vast scope of different skills and knowledge. The fact that many of them don't hold a background in Agricultural Sciences doesn't really represent a handicap. In fact, it is common agreement that a farmer who masters different competences is more likely to have a profitable farm. Once their projects have been approved for financing, they are given between 12 to 24 months to obtain this knowledge and training, so they can officially begin. Besides the training in Agricultural Sciences, there are many other skills considered to be important for a successful execution of these projects. Hence, the last question in this section focused on the most important complementary skills to Agricultural Sciences that young farmers perceive as advantageous to their projects. The options given were Marketing, Economics and Finance, Management, Languages, IT and Entrepreneurship. The respondents could evaluate them as "not relevant", "relevant" and "very relevant". To obtain the results, the "not relevant" option was subtracted from the sum of the "relevant" and "very relevant" options and the result was converted to a percentage value. The answers showed that Management and Entrepreneurship skills were the most valued skills (each 21%) followed by Economics and Finance and IT (each 18%). Marketing skills were not so significant for the sample (14%) and Languages was the least valued one (8%).

Figure 5.1.2.b: Education field

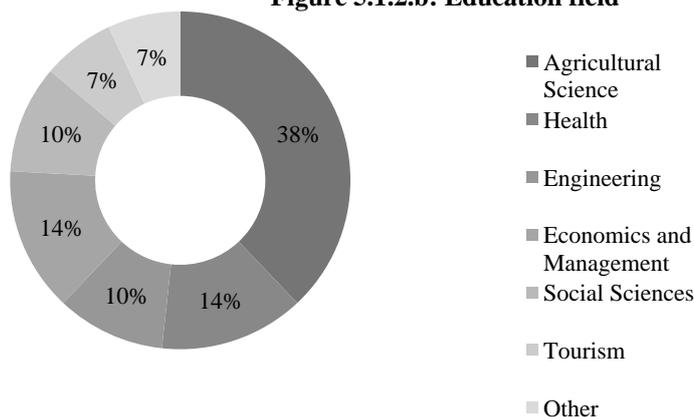


Figure 5.1.2.c Important skills



5.1.3 Needs

The next category measured the most relevant needs of the sample. The question was entirely based on the European Commission study “Pilot Project: exchange programmes for young farmers” (EC, 2015) and the variables are the same to allow the comparison of the needs of young farmers around the EU, the country and the region. All the variables presented in the next table had to be classified between “easy”, “neutral”, “difficult” and “non-applicable”. The question was “How easy or difficult was it for you to obtain these resources for the development of your project?”.

The results from the study showed which had been the biggest needs for young farmers around the EU, whether they were easy or hard to obtain⁴. The cells are colored in green if the percentage of respondents who consider the need is significantly lower than the EU28’s average. On the opposite, the cells are colored in orange if that percentage is significantly higher. As it can be seen in Table 5.1.3, the resources that represent a significant need for young farmers on a national and regional scale are “qualified labour” and “seasonal workers”. The need of “Machinery” is also considerable in TM. The other aspect that young farmers from Portugal and from TM considered more necessary that the EU28’ average is “Access to insurance”.

On the opposite, there were three variables that seem not to represent a problem on a regional scale, which are “availability to buy land”, “availability of land to rent” and “access to credit”. The three categories showed much lower values compared to the other two dimensions. These are related to certain specificities of the agriculture in TM. Certainly, the first two variables are related to the succession phenomenon with the young farmers frequently inheriting land, which has been already mentioned throughout the study.

⁴ Since this study does not explain how the results were obtained, the following analysis derives from the interpretation that was made of the data.

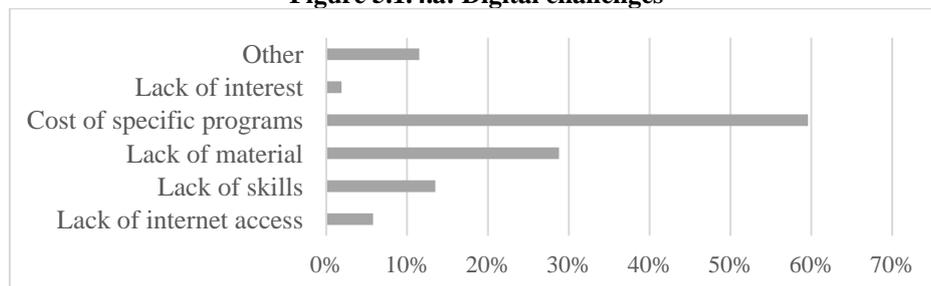
Table 5.1.3: Needs

Needs	EU 28 %	Portugal %	Trás-os-Montes %
Availability to buy land	60.8	61.6	23.1
Availability of land to rent	56.8	60.3	9.6
Access to credit	33.4	41.1	11.5
Subsidies	38.4	21.9	28.9
Machinery	27.0	26.0	46.2
Qualified labour	33.0	49.3	42.3
Seasonal workers	20.6	49.3	38.5
Advice of extension services	18.3	20.5	25
Advice of private consultants	11.1	12.3	21.2
Access to new and useful knowledge	21.3	21.9	25
Access to insurance	14.7	31.5	38.5
National inheritance law	22.3	30.1	15.4
Other legal issues	23.0	31.5	13.5
Access to trainings	18.8	26.0	26.9

5.1.4 Digital use

Given that TM has always been a region lagging behind, the efforts for innovation might be felt at a slow pace. Dynamic young farmers who intend to modernize their productions might face local challenges that are hard to overcome. For that reason, it was necessary to understand how they cope with the regional setback (see Figure 5.1.4a). The digital world plays an undeniable part in successful businesses, therefore having digital access is crucial for these young farmers as well. The “Digital use” category intended to measure the biggest challenges when it comes to digitization. However, contrary to common perception, the respondents did not consider “lack of internet access” as a relevant challenge. So that might have been a traditional challenge that has been overcome in recent years. The biggest challenges are actually cost and material-shortage related. The fact that the “lack of skill” option was not a frequent answer also points out to the very qualified forthcoming generation of farmers.

Figure 5.1.4.a: Digital challenges

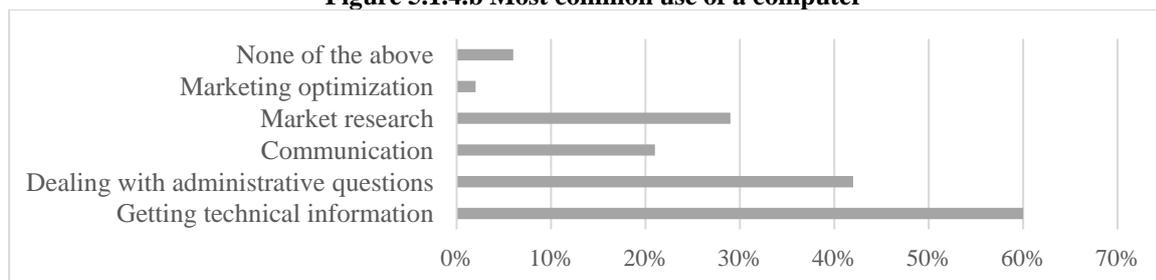


Since most young farmers do not seem to have internet access problems, the computer might be a common tool to get information and to many other tasks (Figure 5.1.4b). This sample stated that the most frequent usage of a computer in relation to their project was to get technical information (60%). Dealing with administrative issues was also a frequent reason (42%). The computer is also used for Market research (28%) and for Communication (21%).

To understand if most farmers use it regularly for those purposes, a question was also included about the most frequently used methods to obtain knowledge. This was also a question made by

the European Commission study (EC, 2015) and the variables included were the same, therefore all the data related to Portugal belongs to the study. But, although the question was essentially the same, the possibility of answers was structured differently. While in the European Commission study the young farmers were asked to classify each method between “disagree”, “neutral”, “agree” or “don’t know”, to whether they liked the following variables as a form of obtaining knowledge, in this research’s survey the answer option was simpler, asking only to name the three preferred ways of obtaining this knowledge. Since in the first column all the variables obtained an answer and in the second column only the top 3 did, the percental values end up not totally proportional. Still, a comparison was made by identifying the top 3 methods to obtain knowledge on a national scale and on a regional scale as well as the bottom choice.

Figure 5.1.4.b Most common use of a computer



The cells that represent the most popular methods are colored in green and the least popular ones are colored in orange. The only variable that was added in the Survey was the last one, “other farmers (family)”. In the conversations with the farmers’ associations that preceded the study, it was mentioned quite often how the succession phenomenon and the passage of knowledge within families from one generation to the other truly has a historical meaning for farmers in TM. So, even if that was not measured on a national level, it was imperative to be approached here, even if only on a regional scale.

In this analysis there were some differences between the national feedback and the regional one. For young farmers of the entire country, the most common way to obtain knowledge is through other farmers. Once again, it would have been interesting to know if in these farmers, family members who belong in the sector are also included since in the regional scale they are a more frequent knowledge source to the young farmers than just an average farmer. Getting knowledge through training or courses and through agricultural fairs is also extremely popular in the national results. The least common ways of obtaining knowledge for Portuguese farmers is through social media and through the local government. In the regional picture, farmers’ associations are the most important method of obtaining knowledge followed by the Internet and Individual advisers. Online training/e-learning was not used by any of the respondents to get knowledge despite the very high percentage on a national level. Agricultural fairs also played a much less important role in TM. The tendencies seem to agree when it comes to Local government, which ended up being an unpopular method to obtain knowledge on both levels.

Figure 5.1.4.c Methods to obtain knowledge between Portugal and TM

Methods	Portugal %	TM %
Individual adviser	68.5	46.2
Farmer jornal/magazine	79.5	13.5
Internet	87.7	59.6
Training or course	95.9	38.5
Agriculture fairs	94.5	1.9
Online training/e-learning	78.1	0
Social media	56.2	5.8
Farmer association	87.7	65.4
Local government	43.8	3.8
Other farmers	98.6	17.3
Other farmers (family)	-	21.2

5.1.5 Sustainable practices

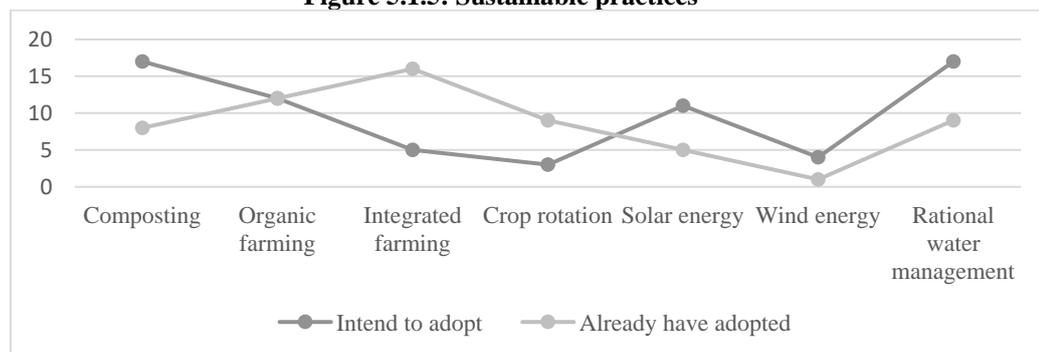
The final section is related to sustainable practices and it was meant to test if young farmers have a clearer sustainability awareness than the older generations and if they are developing their projects on an eco-friendly mindset. The results were quite optimistic.

First, it seemed pertinent to ask if the young farmers were familiar with the Circular Economy model which aims at minimizing the use of resources by decreasing waste and maintaining resources for as long as possible in the productive chain. This could be accomplished fairly easy in the farming sector, providing there would be the appropriate support, since it still entails higher costs than normal production. But since it is quite a recent concept, it was not expectable that a high number of young farmers would be familiar with it. It turned out than 46.2% of the sample was familiar with the Circular Economy model. Out of this 46.2%, a total of 52% were University graduates and 48% held lower qualifications. Initially, it was assumed that the balanced distribution between young farmers familiar and not familiar with the circular economy model would be correlated to the level of education, supposing that the percentage aware of the model belonged to the higher qualified portion of the sample. In the end, that was not confirmed.

The last question of this section and of the survey was an optional one and the figure below represents the number of answers obtained for each given option. It asked about the sustainable measures that these young farmers have already adopted or that intend to adopt. The options were between Composting, Organic farming, Integrated farming, Crop rotation, Solar energy, Wind energy and Rational water management.

Some respondents opted to leave this question unanswered. However, by the amount of answers received, it was possible to understand that there is a significant environmental awareness in this new generation of farmers and that many of them work towards a sustainable farming production. As seen in figure 5.1.5, the most common practices that are already being used are Integrated farming and Organic farming. Crop rotation and Rational water management are also common measures already adopted. But even if they haven't been able to develop their project through as many sustainable measures as they wished, they expressed the desire to adopt many other ones, mostly Composting and Rational water management and also Organic farming and Solar energy. The least popular measure for both options was Wind energy, perhaps for being costlier and less easily adoptable through own will.

Figure 5.1.5: Sustainable practices



Finishing the survey on this category allowed to conclude this major part of the study on a positive note. It confirmed the enthusiastic idea that there is indeed a representative new generation entering the farming sector who brings along an innovative mindset, who is aware of new dynamic tools and how to use them for the profit of the project and who is more and more qualified through a range of very different and relevant fields of study.

5.2 Interviews

The interviews were conducted during a period of two months. The interviewees were selected based on location, to make sure that every subregion was represented which would guarantee a fair representation of the territory. Out of seven interviews, five were done to

farmer's associations, one to Alfândega da Fé's town hall which is responsible for the biggest farmer's cooperative in the subregion, and the last to the Agriculture and Fishery Regional Representation of the Norte region, to get a more general overview on the significance of young farmers and on the role of farmer's associations as counselors (see Table A5.2.1, in Appendix). This diversified spectrum of testimonies led to a more rigorous characterization and understanding of the young farmers' dynamic in the region.

5.2.1 Young farmers' profile and education

Like in the survey, the first set of questions were related to the profile of young farmers. Questions regarding age, gender distribution and main activities initiated the interviews and the feedbacks were similar to the results obtained in the surveys. So, all interviewees confirmed that young farmers in Terras de Trás-os-Montes are mostly in their early thirties which means that they start submitting their farming projects already quite late, taking into consideration the age range allowed by the program. There is also a manifest tendency towards a balanced gender distribution compared to previous decades. Many more young women are starting farming projects and it is believed by the interviewees that not long from now there will be an equal amount of male and female farmers, which they consider to be a key-aspect to a fair and progressive development in rural areas.

Regarding the most frequent activities for young farmer, they believed nuts and dry fruits and orchard fruits to be the most common activities in the region. However, there is a gradual increase of young farmers who opt to develop pioneer projects with types of crop productions that are not typical for the region. During this research, it was frequent to come across highly successful young farmers whose farms cultivated berries, mushrooms, spices, honey, etc. However, most of this production ends up being exported, which is a situation that will be addressed later on.

Given the optimistic results on the pursuit of education by young farmers, the second part of the interview focused on the points-of-view of the associative leaders, which was necessary to either corroborate these results or to clarify any inaccuracy. The young farmers' sample had a total of 68% of University graduates. When asked about their perception of graduated young farmers, most of the interviewees believed that instead of 68%, the real percentage should be around 30% to 40%. They justified this large representation of graduates in the survey by the regular disinterest of less educated farmers to participate in academic studies. But despite this reality, they confirmed that amongst the University attendees, there is a very interesting variety of study fields besides agricultural science. They demonstrated that by consulting recent application forms where the applicants had equally random Education backgrounds. When asked if this might represent a constraint to the applicants for not having the appropriate knowledge, most interviewees did not agree and consider it to be an asset and a path to dynamize the sector and the region. Plus, with the mandatory farming training that candidates with no agricultural background must go through, the situation can be quickly surpassed.

5.2.2 Succession

But what they considered to be one of the most relevant aspect for the farmers' success is not so much education background but rather coming from families of farmers. That was considered by all interviewees to be the most valuable source of information and one of the most distinguishing features of a successful project. Although there have been cases of successful young farmers who begin their projects from scratch, it is undeniable that most profitable projects benefit from succession. The perks of being "children of the land" go from the succession of land to succession of machinery or of specific skills that end up being, many times, the true key to their success.

The most important conclusion for this part of the interview was the belief that a new generation of qualified and motivated farmers is growing. This is also a generation that lives in a highly globalized era and has easy access to information and training. So, with the right ambition and encouragement, they can build a substantial vehicle for rural innovation.

5.2.3 Challenges

Regarding the biggest challenges for young farmers, it was clear for the interviewees that the common young farmer masters the digital world and is able to research, communicate and further obtain project-related knowledge through the Internet, so that was not seen as a problem.

What they considered to be a significant hindrance on the progress aimed by these young farmers is the sustainable development situation. As seen in the survey, most young farmers are aware and willing to improve their farms according to sustainable practices. Many of them have already adopted several measures while others showed interest in adopting them in the future. What seems to be the problem, in the eyes of the farmers' associative leaders, is that the eco and sustainability efforts, on an EU and national scales, have not been drawn in the most efficient way which holds back the expansion of these practices. Contributing to this underdevelopment is also the fact that the consumption of products produced in an organic and environmental-friendly way is not yet massified in the region. It is a more expensive production that ends up not being valued in the TM's markets. The local consumers are still too cost-oriented and not paying attention to the origin of the product or the way it was produced. Even if there was the intention of buying local and biological products, the consumption capacity in the region still doesn't allow to make that choice.

The organic markets are mainly concentrated in the north of Europe. According to the farmers' associations, many young farmers who adopt sustainable practices in TM, export the totality of their production to the northern countries. There is a likely possibility of these markets developing in the south of Europe but it's not predictable that it will happen in the near future. However, some market niches are starting to arise in the biggest urban centers. If there would be an effective subsidy that would meet the extra costs that an organic production entails, it would be possible for these farmers to compete in the local market with an even cost compared to the costs of very large, non-organic, productions. Once these challenges are overcome, this type of production might finally be valued and massified in rural areas.

5.2.4 Limitations of the program

According to the interviewees, there are also some notable flaws in the program that demand an urgent intervention. Some of these are specific from the region. Agreeing that it is a region with a lot of potential to develop this program, the interviewees couldn't ignore the grave lack of *in loco* supervision from national authorities. They claimed that barely any national figure related to the program ever comes to the region, leaving a burden to the associations that are left in complete charge of supervision. They also considered that the endless bureaucratic process in the beginning of the project is not met throughout its development given that there is only an *in loco* check-up made in its beginning and end. For the five years in-between, the control is completely made through paperwork and receipts with very little professional supervision. Which leads to a concerning situation: if the project starts with some unnoticed structural complications, there is a huge likelihood that it will not have a successful outcome.

But this lack of supervision is related to another problem of the program itself: the very dense bureaucracy demanded in all steps of the processes. This change occurred in the last two rural development programs. However, according to the interviewees, there still isn't a balanced middle-term between total lack of supervision and excess of bureaucracy. This change in control led to an overload of paperwork to agricultural professionals, taking them out of the field and into an office desk. This includes all the professionals from farmers' associations that spend their working hours interpreting new directives, guiding the farmers processes and organizing new training sessions. There is barely any *in loco* supervision because there simply is no time.

5.2.5 TM's limitations

The region also has its own difficulties which have been hard to correct. For instance, the land structure is distinctly small compared, for example, to Alentejo, a southern region. In Alentejo the landowners possess much larger farms. In TM, the land is hard to obtain and the typical farm size often doesn't allow for very ambitious productions. The other mentioned difficulty is the lack of associativism between farmers. It is beneficial for a region to have few farming associations so that

the price harmonization and the cooperation between productions are more easily achieved. However, the incapacity of cooperation between farmers in the region is truly noteworthy. These incompatibilities lead to ramifications within the farmers' associations and the unnecessary multiplication of them when only a few are truly needed.

5.2.6 Interviews' conclusions

These interviews gathered some crucial conclusions. Overall, there are regional challenges that must be faced to guarantee that the program will bring the expected results to the development of the region. But the efforts must also come from national policies of rural development, making the processes clearer to allow the much-needed professional supervision throughout the young farmers' projects. Despite these requirements, there is an optimistic prospect for the farming sector which is related to the contributions from this new generation of farmers, progressively better qualified, motivated and a natural enabler of innovation. But certainly, the possibility of fighting depopulation and ageing on the region cannot only be achieved through this program alone and it must be a highly focused and premeditated effort from all parts. This starts with more practical bureaucracy met by motivated and qualified young farmers and associations with a balanced workload between office and land.

6. CONCLUSIONS

Throughout this research it became clearer that young farmers truly have the potential to bring change to a region under threat by rural exodus and ageing of the remaining population. The survey's interpretation allowed to portray a youth that is newly devoted to agriculture. It also showed that they are innovation enablers and contribute to a rejuvenation of the region and the farming activity. Concluding this research with the major outcomes of the interviews allowed to corroborate the survey's result and readjust some ideas. It also pointed out to some issues of the program and inherent obstacles of the region that must be dealt with to assure an efficient future of all parts involved.

This sample showed to be quite diverse regarding educational background, mindset, motivation and goals. Although these characteristics may not represent the totality of the young farmers currently settled in TM, they certainly exemplify a gradual change that can lead the region towards an enriching and ambitious future for its rural communities.

On the other hand, the farmer associations interviewed for this research pointed out some long-term setbacks and on-going difficulties that have been hard to overcome. These are not only related to the region's own challenges but to a program that sometimes lacks precision and fails to answer to the young farmers and the associations' frequent needs, which is the case, for example, of the rarely felt *in loco* supervision. Nevertheless, the testimonies gathered for this research have also maintained an optimistic perspective on the potential of the program and its results in innovating the sector. This is mainly due to the fact that there hasn't been such a qualified pool of farmers in the region.

It could be interesting and useful to replicate this research in another area, for future investigation. Knowing the young farmers program's reality in another EU member state could help drawing an interesting comparison and further understand the length of the program's results. An ideal comparison would be between TM and a similar region, both rural and peripheral, belonging to a northern Member State. This analysis could attempt to explain the reasons behind the disparities on the efficiency of the program, the farming sector and the young farmers between Portugal and another country.

Although a reasonable sample of young farmers was used, it would be interesting to enlarge this sample, improve the gender balance of its members and compare the results with those obtained for other regions of Portugal and other countries of the EU. Unfortunately, it was not possible to carry out a similar study due to lack of funding.

Lastly, this research may contribute to further understand the reality of the Portuguese northeast area, its threats and needs and to how modernization is achievable through the efforts of motivated young farmers, pro-active associative leaders and attentive rural development policies.

REFERENCES

- Almeida, M. (2017), Territorial inequalities: Depopulation and local development policies in the Portuguese rural world, *AGER – Revista de Estudos sobre Despoblación y Desarrollo Rural*, 22, 61-87.
- Avillez, F. (2004). *Política agrícola comum: situação actual e perspectivas futuras*. In: Romão, A. (ed) Economia Europeia. Celta Editora. Lisboa.
- Brinkmann, S. (2013). *Qualitative interviewing: understanding qualitative research*. Oxford University Press. Oxford.
- Camarero, L. (2017). Countryside workers and land families: The decline of agriculture in rural society at a glance [Trabajadores del campo y familias de la tierra. Instantáneas de la desagrarización]. *Ager*, 2017(23), 163–195.
- Carbone, A. and Subioli, G. (2008). The Generational Turnover in Agriculture: the Ageing Dynamics and the EU Support Policies to Young Farmers. *Paper prepared for the 109th EAAE Seminar*. University of Tuscia. Viterbo.
- Chien, S. (2008). The Isomorphism of Local Development Policy: A Case Study of the Formation and Transformation of National Development Zones in Post-Mao Jiangsu, China. *Urban Studies*, 45(2), 273–294.
- Christmann, G.B., Ibert, O., Jessen, J. and Walther, U.J. (2020), Innovations in spatial planning as a social process – phases, actors, conflicts, *European Planning Studies*, 28(3), 496-520
- Comunidade Intermunicipal (2018). *Comunidade Intermunicipal de Terras de Trás-os-Montes*. Accessed June 28, 2018, at: <http://cim-ttm.pt/regiao/>
- Cordovil, F., Dimas, B., Alves, R. and Baptista, D. (2004). *A Política Agrícola e Rural Comum e a União Europeia: Actos e políticas, futuro e opções*. Principia. Lisboa.
- Costa, J. S. (2002). *Compêndio de economia regional*. APDR- Associação Portuguesa para o Desenvolvimento Regional. Coimbra.
- Covas, A. and Covas, M. (2013). A construção social dos territórios-rede da 2a ruralidade dos territórios-zona aos territórios-rede. *Revista de Geografia e Ordenamento Do Território*, 3(Faro), 43–66.
- Cruz, J. and Collantes, A. (2017). Agricultura ecológica y de proximidad como herramienta para el desarrollo rural : el ejemplo de San Sebastián Juan Cruz Alberdi Collantes. *Ager: Journal of Depopulation and Rural Development Studies*, 191–224.
- Dentinho, T. and Rodrigues, O. (2007). *Periferias e espaços rurais: comunicação do II Congresso de Estudos Rurais*. Principia. Estoril.
- European Commission (2018). A monitoring framework for the circular economy. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, 1–11. Accessed June 3, 2018 at: [https://doi.org/COM/2018/029 final](https://doi.org/COM/2018/029%20final)
- European Commission (2017). Competitiveness in low-income and low-growth regions - The lagging regions report. *European Commission Report, SWD(2017)*. Accessed May 30, 2018 at: http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/lagging_regions%20report_en.pdf
- European Court of Auditors (2018) Renewable energy for sustainable rural development: significant potential synergies, but mostly unrealised. *Special Report no. 05/2018*. Accessed May 13, 2018 at: https://www.eca.europa.eu/Lists/ECADocuments/SR18_05/SR_Renewable_Energy_EN.pdf
- Eurostat (2015). Glossary: Predominantly rural region. Accessed September 12, 2018, at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Predominantly_rural_region
- Ferrão, J. (2018), Despovoamento em áreas rurais: entre a inevitabilidade e a capacidade de transformação, *Cultivar. Cadernos de Análise e Prospetiva*, 11, 13-19.
- INE (2015). *Nuts 2013 |As Novas Unidades Territoriais Para Fins Estatísticos*, 20. Instituto Nacional de Estatística. Accessed May 12, 2018 at: <https://doi.org/393127/15>, ISBN: 978-989-25-0341-7
- INE (2011). *Recenseamento agrícola - análise dos principais resultados: 2009*. Instituto Nacional de Estatística, I.P. Lisboa.
- Johnson, K.M., Lichter, D.T. (2019), Rural Depopulation: Growth and Decline Processes over the Past Century, *Rural Sociology*, 84, 3–27.
- Josselson, R. (2013). *Interviewing for Qualitative Inquiry: a Relational Approach*. The Guildford Press. New York.

Lobley, M., Butler, A. and Reed, M. (2009). The contribution of organic farming to rural development: An exploration of the socio-economic linkages of organic and non-organic farms in England. *Land Use Policy*, 26 (3), 723-735.

Madeira, P. M. (2014). Winning and losing regional dynamics in the European Union during the Economic Globalization. *RPER- Revista Portuguesa de Estudos Regionais*, no. 37, 43-56.

Masot, A. and Gascón, J. (2021), Sustainable Rural Development: Strategies, Good Practices and Opportunities, *Land*, 10, no. 4: 366

Ministério da Agricultura e do Mar (2014). Execução PRODER. *Ministério da Agricultura e Pescas*. Accessed May 1, 2018, at:

<http://www.proder.pt/Handlers/Relat%C3%B3rio%20de%20Execu%C3%A7%C3%A3o%202014-2015.pdf?id=4137&menuid=1535>

Ministério da Agricultura e do Mar (2014). Programa de Desenvolvimento Rural do Continente para 2014-2020: Ação 3.1- Jovens Agricultores. *Gabinete de Planeamento, Políticas e Administração Geral*. Accessed April 30, 2018, at:

https://www.portugal2020.pt/Portal2020/Media/Default/Docs/Programas%20Operacionais/VE-RSOES%20CONSULTA/PDR%202020_integral.pdf

Nègre, F. and Moller, J. (2018). Second pillar of the CAP: rural development policy. *Fact Sheets on the European Union. European Parliament*. Accessed July 23, 2018, at: <http://www.europarl.europa.eu/factsheets/en/sheet/110/second-pillar-of-the-cap-rural-development-policy>

PORDATA (2018). População residente, estimativas a 31 de Dezembro. *INE- Estimativas Anuais da População Residente*. Accessed July 26, 2018, at: <https://www.pordata.pt/DB/Municipios/Ambiente+de+Consulta/Tabela>

Portaria n.º 203/2018 de 11 de Julho. *Diário da República n.º 132- I Série*. Ministério da Agricultura, Pescas e Desenvolvimento Rural.

Rodríguez-Pose, A. and Ketterer, T. (2020), Institutional change and the development of lagging regions in Europe, *Regional Studies*, 54 (7), 974-986

Simeone M. (2006). Le determinanti del trasferimento intergenerazionale in agricoltura: un'analisi empirica basata sulla stima di un modello probit. *Rivista di Economia Agraria*, n. 4, 519-539.

Skinner, J. (2012). *The Interview: An Ethnographic Approach*. Bloomsbury Publishing Plc. London.

Soares da Silva, D., Figueiredo, E., Eusébio, C. and Carneiro, M. J. (2016). The countryside is worth a thousand words - Portuguese representations on rural areas. *Journal of Rural Studies*, 44, 77-88.

Sottomayor, M., Tranter, R. and Leonardo Costa. (2011). Likelihood of Succession and Farmers' Attitudes towards their Future Behaviour: Evidence from a Survey in Germany, the United Kingdom and Portugal. *International Journal of Sociology of Agriculture & Food*, 18(2), 121-133.

Šūmane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., Rios, I. des I. and Ashkenazy, A. (2018). Local and farmers' knowledge matters! How integrating informal and formal knowledge enhances sustainable and resilient agriculture. *Journal of Rural Studies*, 59, 232-241.

Wilson, G.A. (2007) *Multifunctional Agriculture: a Transition Theory Perspective*. Oxford University Press and Wallingford CAB International. New York

Zagata, L., and Sutherland, L. A. (2015). Deconstructing the “young farmer problem in Europe”: Towards a research agenda. *Journal of Rural Studies*, 38, 39-51. 10.1016. Accessed May 31, 2018 at: <https://doi.org/10.1016/j.jrurstud.2015.01.003>

Zondag, M.-J., Koppert, S., Lauwere, C. de, Sloot, P., and Pauer, A. (2015). Young farmers' needs in Portugal Annex I.22 to the Pilot project: Exchange programmes for young farmers. *European Commission, Directorate-General for Agriculture and Rural Development*. Accessed April 3, 2018, at:

<https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2015/youngfarmers/country-reports/annex-i.22-portugal.pdf>

Zondag, M.-J., Koppert, S., Lauwere, C. de, Sloot, P., and Pauer, A. (2015). Needs of young farmers: Report I of the Pilot project: Exchange programmes for young farmers. *European Commission, Directorate-General for Agriculture and Rural Development*. Accessed April 2, 2018, at: http://publications.europa.eu/resource/cellar/fa9c8e5e-eff8-11e5-8529_01aa75ed71a1.0001.01/DOC_1

APPENDIX:

Table A5.2.1: Interviewees

Interviewee	Entity	Sub-region
Eng.º Armando Pacheco	<i>Farmers' Association:</i> Federação de Agricultores de Trás-os-Montes	Bragança, Macedo de Cavaleiros, Vimioso, Mirandela, Mogadouro, Miranda do Douro, Vila-Flor, Vinhais, Alfândega da Fé
Eng.º Armando Bento	<i>Farmers' Association:</i> Monteval- Associação para o Desenvolvimento Agrícola e Rural da Terra Fria	Bragança, Vinhais, Miranda do Douro, Vimioso, Mogadouro
Eng.º Eduardo Tavares	Vice-President of Alfândega da Fé	Alfândega da Fé
Eng.ª Beatriz Pilão	<i>Farmers' Association:</i> Centro de Gestão do Vale do Tua	Mirandela, Vila-Flor
Eng.º Fernando Brás	<i>Farmers' Association:</i> Associação dos Beneficiários do Perímetro de Rega da Vilariaça	Alfândega da Fé
Eng.º Francisco Ribeiro	Direção Regional de Agricultura e Pescas do Norte	Norte Region
Eng.º Carlos Silva	<i>Farmers' Association:</i> PRORURIS Vinhais	Vinhais