NEWBIE: Deliverable 2.1

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Desktop research: national literature reviews and analyses of educational resources

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1 Introduction

The desktop research including national literature reviews and analysis of educational resources by the partner countries are presented in accordance with deliverable 2.1 of Newbie in this document.

"*Newbie*" is an acronym for New Entrant netWork: Business models for Innovation, entrepreneurship and resilience in European agriculture. It is 4 year EU Horizon 2020 funded project from 2018-2021with 10 partners from 9 countries working together.

This document contains the desktop research on new entrant business and entry models and analyses of educational resources, which each country prepared separately and which were summarised by the FH Südwestfalen and the TEAGASC team. The focus was to identify new business and entry models including their strengths, weaknesses, obstacles, and needs as well as to get an impression of existing educational resources. This stocktaking was done once at the beginning of the project and a second time in the third year (early 2020). The repetition allows to update the models described or used. Following the general introduction on European figures as well as socio-economic research in this field, each topic will first be introduced with a European overview, which will bring the country results together.

European figures

Of the 10.8 million farm managers in the EU-28 agricultural sector in 2013, there are relatively few young farm managers. Farm managers below 35 years account for only 6 % of all farm managers. More than half of the farm managers (55.8 %) are aged 55 or above and thus close to or beyond the regular retirement age. The age distribution in Europe is heterogeneous, so that obvious geographical tendencies cannot be detected (s. *Figures 1-3*). However, older farm managers tend to prevail in Southern and South-eastern European countries, like Portugal, Italy, Bulgaria and Romania. The highest shares of young farmers can be found in Central Europe, namely Austria and Poland. For more details, please see the maps of farm managers' age distribution of farm managers <45 years (s. *Figure 1*), >45 years (s. *Figure 2*), and >55 years (s. *Figure 3*). These 2013 data from the Eurostat database are now five years old. An overview of all percentages is summarised in table 1. About 90 per cent of the farm managers in Cyprus and Portugal are above 45 years, while about one third of the Polish and Austrian farmers are below 45 years old. 73% of the Portuguese farmers are older than 55 years – followed by Cyprus, Romania and Italy. The lowest proportions of farm managers above 55 years are in Austria, Poland, Germany, Finland, France, and Norway (less than 40 % of farm managers older 55 years). The majority of the farms that are designated to disappear in the coming five to ten years are comparable small and diversified farms (Roels, 2016).

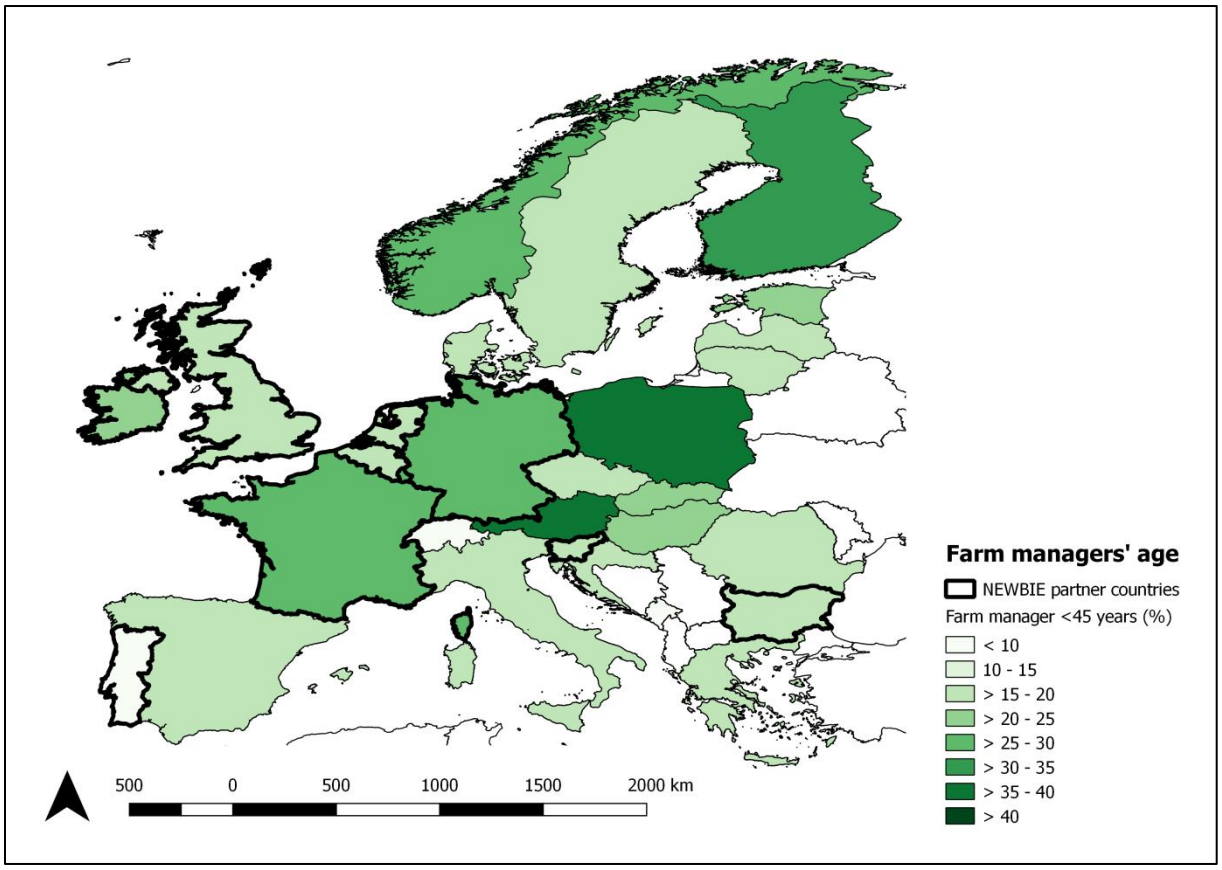


Figure 1: Proportion of young farm managers (<45 years) 2013; data source: Eurostat

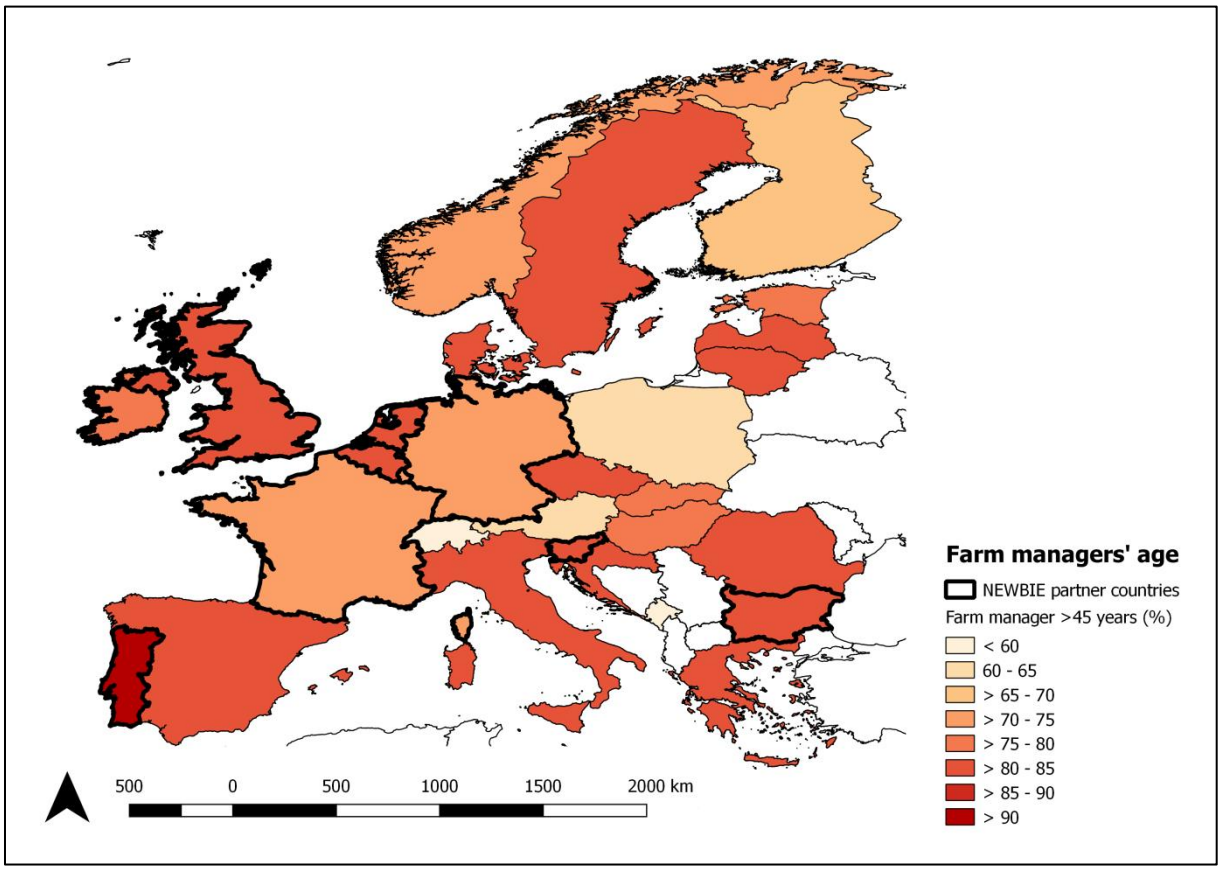


Figure 2: Proportion of farm managers >45 years 2013; data source: Eurostat

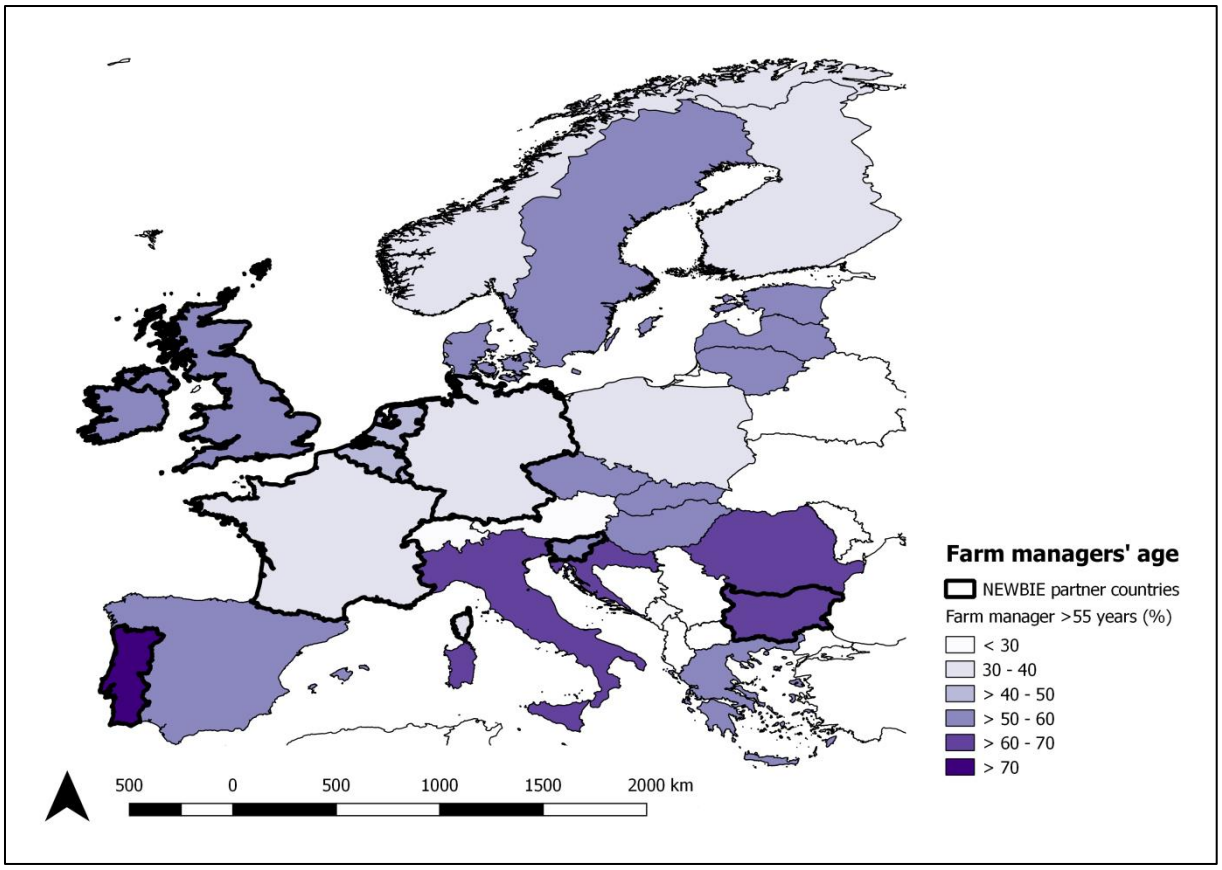


Figure 3: Proportion of farm managers >55 years 2013; data source: Eurostat

Table 1: Proportion of farm managers <45 years, >45 years, and >55 years 2013; data source: Eurostat

Country	Proportion of farm managers (%)		
	< 45 years	> 45 years	> 55 years
Austria	35.38	64.62	28.16
Belgium	19.17	80.83	47.96
Bulgaria	19.65	80.35	61.88
Croatia	15.90	84.08	60.31
Cyprus	8.54	91.49	70.04
Czech Republic	19.35	80.61	56.84
Denmark	17.22	82.81	51.80
Estonia	24.34	75.66	52.21
Finland	30.55	69.47	39.32
France	27.95	72.05	39.35
Germany	26.51	73.48	36.29
Greece	19.90	80.09	56.18
Hungary	21.03	78.97	59.53
Ireland	22.94	77.06	51.92
Italy	15.37	84.63	62.99
Latvia	19.55	80.44	54.19
Lithuania	19.48	80.52	54.89
Luxembourg	25.96	74.04	41.83
Malta	16.77	83.33	58.55
Netherlands	19.40	80.60	47.87
Norway	29.17	70.83	39.50
Poland	35.88	64.12	33.90
Portugal	9.70	90.30	73.66
Romania	18.65	81.35	64.42
Slovakia	23.55	76.45	51.59
Slovenia	19.15	80.85	54.42
Spain	16.44	83.56	58.53
Sweden	17.14	82.86	58.02
United Kingdom	15.00	85.00	58.38

This general European picture on farm managers' age builds the basis for national desktop researches on new entrants and entry models (s. Chapter 2 "Literature reviews") and analyses of educational resources of agricultural colleges and universities (s. Chapter 3 "Educational resources") within the nine Newbie partner countries. The guidelines for the literature review and analysis of educational resources are attached to this report (Appendix I & II). The chapters 2.1 and 3.1 provide summarising European overviews.

European research beyond Newbie

The age structure throughout Europe is heterogeneous (s. Figures above), but all countries have in common that on average agriculture is become an increasingly older profession. The research report for the AGRI Committee "Young farmers – policy implementation after the 2013 CAP reform" provides a suitable foundation of EU-wide information on new entrants, policy tools, and recommendations to improve existing support schemes and assist young farmers to overcome barriers to entering farming (Zagata et al., 2017). The overall objective is to support generational renewal in European agriculture covering both types of new entrants; successors and complete newcomers. Without young farmers it will be difficult to meet the challenge of better life for rural areas as defined in the declaration of the Cork 2.0 European Conference on Rural Development (September 2016).

The report provides information and major trends related to new entrance into European agriculture:

- Lack of data on new entrants in European agriculture
- Young farmers are in most cases taking over an existing farm (family and non-family succession of farms)
- Smaller farms are more often operated by older farmers (Zagata and Sutherland, 2015)
- Agriculture can partly be seen as a closed profession, so that quantitatively complete newcomers are only playing a niche role. However, they bring technological and social innovation as well as new entrepreneurial thinking into farming
- Traditional agricultural patterns are changing → process of individualization; lives of young people are less predictable and farming only one of several options
- Access to land is identified as the most prominent hurdle for new entrants
- Hurdles for takeover are twofold
    - "Entry problem": willingness of the young generation depends on farm's economic situation
    - "Exit problem": unwillingness of older farmers to pass over; CAP payments are seen as pension payments → barrier to pass the farm on
- New entrants engage more than established farmers in diversifying activities in or closely connected to agriculture and in setting up new markets

New entrants are named to provide a basis for renewal and enhanced vibrancy of farming, because of higher productivity and level of innovation in agriculture of well-trained, young entrants (Davis, Caskie, and Wallace, 2013).

Despite a long tradition in supporting young farmers and generational renewal in European policy, Zagata et al. (2017) conclude only little effectiveness of policy measures. Under the European CAP umbrella, each member state tailors the support measures with regard to their national conditions and priorities. Most important are the new Young Farmer Payments of the first pillar, which have been introduced with the 2013 CAP reform, and the already longer time established start-up aid for young farmers of the second pillar. Based on focus group discussions, Zagata et al. (2017) mainly recommend to continue support for young farmers, but with a more tailored approach towards the two main groups of successors and complete newcomers as well as the aim to mobilise land by re-evaluating direct payments and create new incentives for older farmers. Further barriers (skills, capital, etc.) need to be tackled as well including new innovative initiatives for new entrants stepping into agriculture. Some countries support early retirement financially, e. g. France, Ireland, and Greece (Caskie, Davis, and Wallace, 2008; Davis, Caskie, and Wallace, 2009). Based on their study with 350 farmers in Northern Ireland, farmers' retirements would be brought forward by an average of four years, while the economic case for the introduction of early retirement schemes has to be

summarized as weak. A couple of years later, the same three authors also investigated the effectiveness of new entrant schemes; namely working capital installation grants and interest subsidies on farm development loans (Davis, Caskie, and Wallace, 2013). So far, analyses of new entrant support measures show only little robustness and no clear evidence on their effectiveness. Young farmers have a longer planning horizon – they tend to invest more, expand production, and are on average less risk averse than older farmers.

Based on the findings of early retirement policies and new entrant support measures, the question remains open, whether new entrants exit agriculture after the period of financial support. This topic is unequivocally of importance, but clearly out of the scope of this deliverable. This includes also the question, whether there are new entrants not being registered as farmers and thus not eligible under public funding schemes.

Post 2020 CAP will be targeted towards nine overarching objectives, whereof one is named "support generational renewal" (European Commission, 2020). The 9 objectives of the future CAP are

- to ensure a fair income to farmers,
- to increase competiveness,
- to rebalance the power in the food chain,
- climate change action,
- environmental care,
- to preserve landscapes and biodiversity,
- to support generational renewal,
- vibrant rural areas, and
- to protect food and health quality.

This deliverable's national literature review on new entrants' business and entry models and analysis of educational resources is supposed to provide a basis for networking (WP3) and the development of toolkits (WP4). However, it is not aiming for classifying new entrants located in the nine Newbie project partner countries into typologies (like the New Entrant Typology Flowchart, see Grant Agreement figure 1.2).

When talking about business models of new entrants, it could be helpful to think about resilient strategies, which could be generic for new entrants to access markets. Based on this report, we cannot draw conclusions hereon, but especially the business models of diversification, differentiation, and Alternative Food Networks (AFNs). AFNs are of special interest for complete newcomers bringing social innovations into farming, while successors – either family or non-family – build on the existing farm by adding new farm pillars (diversification) or adding short value chains, niche markets, etc. (differentiation). Empiric research on these new entrants' business models seem to be valuable for answering open research questions. This document of the network project Newbie can only be seen as a starting point with special emphasis on new entrants – also by establishing links to the projects "SURE farm" and "Ruralization". The currently running EU project "SURE Farm" (Towards SUstainable and REsilient EU FARMing systems, 2017-2021) focuses on research bringing in additional information on these topics, e. g. farm typology and farming systems, scenarios for EU farming, etc. Additionally, the EU project "Ruralization" focuses on problems related to rural regeneration and access to land, and the implementation of policies and activities that facilitate the entry of new generations and newcomers to the farming sector.

2 Literature reviews

2.1 European overview

Project partners from all nine newbie countries (The Netherlands, Belgium, France, United Kingdom, Ireland, Slovenia, Bulgaria, Portugal, and Germany) followed the given guidelines by reviewing the relevant academic and grey literature. When reviewing the national reports (s. 2.2) it is evident that most references of value for the desktop research belong to the grey literature (including public statistical data), while presence of academic literature on new entrants is heterogeneous among Newbie partner countries.

The partner countries' reports (s. 2.2) cover four major components: (1) national agricultural situation, age and succession, (2) hurdles, (3) entry models of new entrants into farming, and (4) new entrants' business models. Within some Newbie countries regional foci have to be considered: Scotland within the UK review, Flanders (Belgium), and Alentejo (Portugal).

(1) National agricultural situation, age and succession

When discussing the entry models and business models of new entrants into farming, the national and regional framework conditions have to be thoroughly considered. Especially the natural-geographical and agrarian structural characteristics have to be briefly mentioned before focusing on entry models and business models.

Although agricultural characteristics vary from country to country as well as between regions within countries, some general inter-national trends over time are obvious:

- reduction of number of farms;
- increase of farm size;
- aging farming sector; and
- signs of growing farming interests of (young) people (with and without family background).

The North-western European regions (UK, Ireland) have a stronger emphasis on grassland, dairy, and cattle than most continental regions. For example in Ireland, more than half of the farms are specialised beef production, yet only representing one third of the agricultural gross output. Contrarily, dairy production is responsible for 28% of the gross output, although only eleven per cent are specialised dairy farmers. Dairy production takes place where land quality is superior. Pig, poultry, horticulture and cereal production are less important. The average age of farm managers in Ireland exceeds 55 years with less than six per cent of farm managers <35 years (CSO, 2013). Less than half of the Irish farmers name identified successors.

Continental North-western Europe (The Netherlands, Belgium, partly France and Germany) profits from being situated in highly and densely populated North-western Europe, including the ABC (Amsterdam, Brussels, Cologne) metropolitan conglomerate. Here, the question of new entrants is not new (van der Ploeg, 1974). Similar to UK and Ireland, dairy production builds the most important farm type in The Netherlands followed by other grazing (goats, sheep, etc.), field crops, and cattle. The number of Dutch farms in steadily declining along with increasing farm sizes. Larger farms do more often have a successor than smaller farms. More than half of the dairy and goat farms have a secured successor, while less than one quarter of the greenhouse vegetable producers does so. The large

majority of Dutch successors worked on their parents' farms, while only a small number worked on another farm respectively having no agronomic background (Sperings and Wolsink, 1986). In Flanders (Belgium) the average age of farm managers exceeds 55 years. The Belgian farming sector is highly specialised: 88% are focusing on livestock farming, arable farming or horticulture (Platteau et al., 2016). Additionally, Flemish farmers are named to be very innovative; both in production and marketing (Department of Agriculture and Fisheries, 2014; Vervloet et al., 2015). Short supply chains play in terms of all Belgian food sale turnovers only a minor role (<1%). The overall trend of decreasing numbers of farms and increasing farm sizes as well as an aging farming sector can also be confirmed for France and Germany. Landscapes and attached natural-geographical conditions are heterogeneous, which leads to uniform regional farming systems and types. Although being a lot smaller, Slovenia is also characterised by huge geographical heterogeneity resulting in large areas with natural constraints for farming (more than 80% of national territory) as well as land fragmentation (Potočnik Slavič, 2017). Therefore, farm sizes are small with on average only seven hectares. For the smaller farms self-sufficiency / subsistence holds a relevant role. Similar to other countries, average farm manager's age is with 57 years quite high. Many current farm managers have a rather poor education in farming, while younger farmers usually obtained higher levels of education, which is supported by special measures for young farm successors. Bulgarian agriculture is dichotomous: on one side nearly 90% of the farms cultivate less than five hectares, while only about two per cent of the farms (co-operatives/agro-companies) cultivate 84% of the country's farmland. The radical Bulgarian land reform in the 1990's plus subsequent land divisions between land heirs resulted in a severe fragmentation of land ownership and to some extent land uses. Portuguese farm structure is heterogeneous: Northern and Central Portugal has an average farm size of less than seven hectares, while the Alentejo region has a four times larger average farm size. Farm managers in Portugal are the oldest within the European Union. The majority of Portuguese farm managers are older than 65 years (EU: 31%). Most farmers in Portugal have only a basic education, while only 6% have a higher education level. Rural Alentejo region is dominated by large family estates (>100 ha) with the traditional extensive agro-forestry system *Montado*, olive graves, and vineyards (Pinto-Correia et al., 2011).

(2) Hurdles

Several hurdles occur for new entrants throughout Europe. These are in particular access to land, capital, labour, markets, and housing as well as business skills, knowledge development, and social networks. Access to land is consistently found to be the largest barrier to new entrants to farming across Europe (Sutherland, 2015; Zagata et al., 2017). Land competition is overlaid and intensified by increasing land prices. Rising land values and considerable emotional and time investment in operating a long-term farming business make older farmers reluctant to sell or pass over to the next generation (Gasson and Errington, 1993; Ingram and Kirwan, 2011). Lobley et al. (2010) argue that a succession planning ('easing-out'-'easing-in'), which would be able to prepare retiring farmers as well as new farmers for the future. Kerbler et al. (2012) do also highlight the need of careful planning for (family) farm succession: description of personal and business goals, family members' expectations, retirement plan, training and development plan, farm business action plan, operating plan, plan for management transfer, control and labour, plan for the ownership transfer, communication and contingency plan, implementation time schedule. It is also interesting to mention, that not only the successors face hurdles, but also that outgoing farmers face barriers relating to housing, retirement financing, losing the farmer's role, identity, and status (Conway et al., 2016). Personal values and land ties of retiring

farmers influence their decisions to who new entrants they lease or sell their land (Grubbstrom and Eriksson, 2018). Especially for smaller farms an intergenerational hurdle emerges within the handover period, in case the farm has to support and generate income for more than one livelihood (one family). It is quite common that during the transfer period the farm business has to provide two incomes.

In the UK, there are several pressures facing new entrants to agriculture, and influencing their entry to the agricultural sector. Access to land is named to be most important. Land is preferably leased, which allows elderly people to receive subsidy payments to finance their retirement (Grubbstrom and Eriksson, 2018; McKee et al., 2018). Land in more remote rural areas of UK is to some extent readily available, but new entrants might be reluctant moving to such remote regions establishing viable farming businesses. Furthermore, UK's taxation system is named to have an influence on taking over a farm / land. McKee et al. (2018) have identified a number of financial, socio-cultural, and personal/psychological barriers affecting succession processes in a Scottish research. For family successors a lack of succession planning is named to be the key hurdle accompanied by other hurdles also non-family successors/newcomers face when entering the farming sector: access to land, capital, labour, markets and housing as well as business skills, knowledge development, and social networks. The latter hurdles – especially social networks – are named as challenges of particular concern to non-family successors/newcomers.

For Ireland, it is highlighted that especially for new entrants from outside of a family farm sphere access to land is the key hurdle. Less than one per cent of the Irish land is sold annually creating intensive land competition contributes to high land prices. This makes access to land for newcomers into farming challenging. However, a recent press article argues that personal attachments to land is weakening, so that non-farming inheritors appear more willing to sell farmland (O'Brien, 2018). The taxation system is favourable for land transfer but careful succession planning to obtain the maximum benefit is required. Three main taxes (capital gain tax, capital acquisition tax, and stamp duty) influence the transfer of agricultural assets such as land, machinery, livestock and payment entitlements (Teagasc, 2017c).

For European standards, land prices in The Netherlands are very high. Dutch people in the process of becoming a farmer argue that the (1) possibility to expand, (2) financing, and (3) farm income are the key hurdles/challenges for them (van der Meulen et al., 2015). Around half of the interviewed people in the process to become a farmer name these hurdles. Still more than 30% of them name (4) rules, regulations, and subsidies, (5) sharing the farm with family members, (6) complexity of taxes, and (7) personal relations with family members as further relevant hurdles. Furthermore, young farmers (<40 years) highlight the importance of land available for buying or renting. In The Netherlands new entrants have to finance about 2 million Euro to buy an average-sized farm (32 ha) (CBS, 2018). As mentioned above, farm income is identified as one key hurdle. Most farm types experience years where income is marginal or even negative. Within these periods, new entrants are vulnerable with regard to farm viability and remaining in business. They may have to make use of savings, off-farm incomes, loans, etc. to survive. In Germany, successors and newcomers are also facing increasing land prices and growing land competition – also with investors without any background or links to agriculture. The Belgian report highlights not only access to land, access to capital, and access to markets as new entrants' key hurdles, but also the process of succession itself. The succession process goes along with technical, juridical, administrative, and psychological issues. In 2007, to help overcome these barriers, the government supported the foundation of an organisation, which helps farmers through (1) prevention and raising awareness of the diverse problems of farming and farmers' vulnerability, (2)

individual support, and (3) supporting policy. Similar to the UK report, differences between family succession and newcomers in terms of occurring hurdles is highlighted for France. Key hurdles for family successors are raising capital hurdles throughout the farm development process as most successors change (parts of) the farm business. For newcomers without family succession, hurdles from other Newbie partner countries repeat: access to land, to buildings, and to subsidies, but also housing and other financial issues beyond subsidies. Furthermore, additional hurdles after take over/foundation are named: administrative management, income, and work organisation, local and professional integration (social networks), acquisition of practical knowledge, and technical difficulties.

The Slovenian desktop research also highlights access to land one of the most problematic hurdles entering / starting a farm. Besides that, land fragmentation is identified to be a hurdle for farming concepts demanding a certain size of agricultural land. Access to land (complications in purchasing and renting, land fragmentation, and land leasing), access to labour force (low incomes, Bulgarian seasonal workers go abroad), access to markets (underdeveloped markets, intermediaries), bureaucracy, lack of agricultural knowledge, and a missing innovative milieu. Furthermore, agriculture is widely seen as an unattractive and old-fashioned occupation. With a focus on Alentejo region, most significant difficulties for new entrants in Portugal are access to land and high investment costs required to set up a farm along with insufficient access to credit. Existing policy support measures for young farmers are to the large majority perceived as inefficient to trigger generational renewal in farming (Eistrup et al., 2018).

Both successors and new entrants face significant challenges when becoming farmers. The development of new and promising entry models and business models and measures to support new farmers are necessary to maintain a viable and sustainable European farming sector for the future to come. As it is of importance for the present hurdles for new entrants, also the entry models (see below (3)) and business models (see below (4)) have to be differentiated between family succession on the one hand and newcomers into farming without family succession on the other hand.

(3) Entry models of new entrants into farming

Entry models are here defined as approaches, methods and/or instruments, which can help to overcome resource access barriers for new entrants in farming (see above). These can be, for example, new forms of farm co-operation between landowners and new entrepreneurs like partnerships including junior-senior-partnerships, contract farming, share farming, or land access with support by an incubator institution. New entry models can specifically address the issue of access to "key resources" and the juridical aspects of a new business, and present a quite important and decisive part of a business model of a new farming operation (Lorleberg et al., 2015).

Nearly 30 years ago, Symes (1990) argues that farming is a closed profession because of the resources needed to operate a commercially successful business. Throughout Europe **family succession** is the main route for the younger generations into agriculture. Parallel to the dominance of family succession, an increasing number of **(potential) newcomers / non-family entrances** into farming can be detected throughout Europe. **Inheritance** from parents to children is the most common way of family succession, which includes ownerships as well as tenancies of farmland and/or farm buildings. However, succession and inheritance can be very complex and depends largely on intra-family dynamics and individual personalities involved. Agricultural **tenancies** are the most common and well-established mechanism to provide access to land for new entrants to farming, while purchases are less

frequent due to the comparable high costs when starting the farm business. Parallel to entering / starting a farm business as a new entrant, working outside the farm (off-farm employment) may help to manage the initial risks when starting a business as well as providing a buffer against financial shortages – especially in the early stages of the takeover/start of the farm business. Newcomers without a family background in farming can be grouped into three categories of financing: self-funding (purchase, partnerships), external funding (crowd-funding, customer financed, investors), and sharing (share farming or partnership with land owners). Besides tenancy arrangements, **joint venture models** are highlighted in the national reports for what reason this brief summary focuses specifically on tenancies and joint venture models.

Tenancies

Agricultural **tenancies** (short-term renting and Long-term Leasing) are the most common and well-established mechanism to provide access to land for new entrants to farming. Contrarily, land purchase is most often not a mode of entry to a farm business for new entrants, unless they have significant (financial) resources from outside farming or from family members to be spent for land purchase. Unlike joint venture models, tenancies allow the new entrants to act independently from partners and/or land owners.

Several tenancy types suitable for new entrants exist for example in Scotland: short and modern limited duration tenancies, repairing tenancies, limited partnership tenancies, and crofting tenancies. Livestock tenancies can be performed in livestock hire agreements, as mentioned for Scotland in the UK report. Ireland has a unique and long tradition of short-term renting of land termed "Conacre". It is very well embedded in farming culture but does not provide security of tenure to new entrants or existing farmers. Therefore, Long-term land leasing was introduced in the mid 1990's and is linked with tax incentives for the land owner to improve uptake of the measure. In Bulgaria non-family new entrants usually rent land for a period of ten years, which is quite challenging due to land ownership fragmentation. Thus, often many negotiations and contracts are required to result in a feasible amount of farmland. Generally, land tenancies mean a low initial investment, which makes entrances into farming financially feasible and with low risks. In Slovenia, land tenancy is mostly practiced in two ways: (1) short-term renting (for arable land) and long-term leasing (for permanent crops, vineyards, olive groves, orchards up to 30 years) of state-owned land (state owns 9.5% of UAA); (2) frequent and wide practice of individual renting/leasing of UAA performed on (in)formal basis between private land owners, i. e. usually farmers.

Joint venture models

A **joint venture** is a "form of co-operation, formed in a legal manner, between two or more parties to form a business relationship, other than as landlord and tenant" (FAS, 2017: 1). This definition summarises especially **contract farming**, **partnerships**, and **share farming** under agricultural joint ventures. Another term to be used for agricultural joint ventures is collaborative farming. Joint ventures offer suitable frameworks and potentials to facilitate the entry stage of new entrants into farming. They are able to overcome hurdles by providing ways to access the necessary resources to establish a farm business. The establishment of healthy and productive working relationships is of utmost importance in joint venture farming models. Collaborating with existing farmers does not only provide access to physical resources (land, farming infrastructure, etc.), but also to labour, expertise, skills and experiences that new entrants can make use of to develop their own farm business model. In parallel, the land owner/existing farmer can also benefit from the youth, their new skills and ideas.

Contract farming outsources operational activities by the landowner for activities to be undertaken by another party ('contractor'). Typically, the contractor provides labour and machinery and in return receives contract fees and shares of the profit. It is most common in arable and vegetable production, but less in livestock production. Contract farming can be utilized by new entrants to access knowledge and experience. It does not provide land access, but business opportunities for new entrants into agriculture.

Partnerships cover a wide range and different ways of co-operation and interaction between existing farmers and new entrants committed and legally bound to run the farm business together. Common examples are equity partnerships and junior-senior partnerships. Partnership agreements define the shares of assets and profits between the two or more partners. Agricultural partnerships share both responsibilities and rewards of a farm and can be used to formalize succession processes. It is most often used for family succession, but can also be used for non-familial succession. Partnerships allow both the older and the younger generation to be actively involved in the farm business avoiding abrupt farm business changes in order to share experiences and knowledge in both directions. Typically, landowners put capital assets into the partnership, while new entrants bring in labour, new knowledge, and skills. Partnership can be a route into farm businesses otherwise not reachable for new entrants, because it avoids the need to buy or lease (expensive) land. Conway (2011) concludes that the partnership model can help to increase farm competitiveness, develop the sector's skills, attract young ambitious (new) entrants to the sector, and increase on-farm diversification. In junior-senior-partnerships the new farmer becomes a partner in the business and gradually takes the farm over.

Share farming is a form of co-operation whereby the involved parties join resources to operate the farm together, but they operate individual and independent businesses. This means that each partner faces full commercial risks as well as gains. The existing farmer typically provides land and other fixed assets and the new entrant provides labour and other variable inputs. Based on agreements between the parties, each party received a predetermined share of farming outputs (Price, 2014). It is an option for existing farmers to reduce their involvement whilst maintaining interest, status, tax benefits, and retaining control of the land asset. Furthermore, the share farming parties are not tied to tenancy or partnership agreement requirements. However, landowners are rather reluctant to apply alternative models like share farming, but share farming can provide a longer-term option than other joint venture models. Both parties have a joined interest in the farm viability and business success.

National wrap-ups

The Scottish Farm Land Trust reports about 1,000 potential new entrants without family background in farming in Scotland (SLFT, 2017). The Scottish government aims to support new entrants when facing the key hurdle of access to land. The government encourages models of **traditional tenancies**, **seasonal leases**, **community landownership**, and **joint venture models**, like **share farming**, **contract farming**, and **business partnerships** between existing farmers (transferors), new entrants, and land owners (SLC, 2017; SLC, 2018; McKee et al., 2018). Positive examples of Scottish share farming arrangements from dairy and sheep farms benefit from experiences of a well-established share farming system in New Zealand.

The Irish entry models are threefold: traditional family farm succession, collaboration with existing farmers, and land leasing/purchase. Traditional family farm succession follows some general developments, mainly maintaining the status quo, focusing on efficiency, expanding the farm business,

and beginning a new business. Collaborations with existing farmers are mainly run in the form of partnerships, share farming, producer groups, or as an employee. Leasing or buying of land is mainly connected with beginning a new entrant's independent enterprise – sometimes supported from the family farm. Parallel to the above mentioned "Conacre" system; longer term land lease for more than five years began in Ireland in the mid-1990s with growing importance since then. Long-term land of lease for up to 25 years is incentivized with tax advantages for the land owner. This tax incentive came into force in 2014. Since then an increasing share of land leasing arrangements is completed long-term. Collaborative farming arrangements in Ireland cover farm partnerships, share farming as well as contract farming, like contract heifer rearing, contract forage cropping, and machinery sharing. The partnership model in Ireland has proven to be a very good transition business structure to formally include the successor/new entrant to the farm business since its introduction in 2002. Since 2015, the Irish government supports the farm partnership model through available CAP measures, namely young farmer scheme, national reserve, and targeted agricultural modernisation scheme (DAFM, 2015). Additionally, an Irish collaborative farming grant scheme was also introduced to help farmers with the set-up costs associated with establishing a farm partnership. Furthermore, national taxation measures have been implemented to encourage the application of a partnership model as part of a holistic succession plan. They are not limited to families and allow also non-related partners to be involved. Share farming is operating in the Irish arable sector since 2008 and on a lower level also in dairy farming since 2015. New entrants that face the barrier of access to capital (s. (2) Hurdles), may utilise dairy cow leasing as an alternative to purchase. It is a contractual arrangement targeting new entrants, which is developed by Teagasc, the public advisory, education, and research unit of Ireland.

The majority of Dutch family successors use partnership agreements due to the fiscal benefits and security it offers (van der Veen et al., 2002). It is also mentioned that similar to family succession, newcomers do also often step into existing farm businesses with partnership agreements. Furthermore, crowd-funding is highlighted as another opportunity for new entrants to raise financial means in order to start / take over the farm business in The Netherlands.

Young (< 40 years) Belgian new entrants receive financial support measures between €40,000 and €70,000 when complying with certain conditions, e.g. first time starting a farm business. Furthermore, within the Belgian report a focus is laid on relevant organisations and media sources for new entrants, e. g. Groep Boerenbond, which has launched its knowledge centre on succession, Kenniscentrum Bedrijfsopvolging, in 2015.

French land transfer from older to younger generation is mainly realised by following a succession/takeover scheme targeting young farmers in order to receive financial aid. RENETA (Réseau National des Espaces-Test Agricoles), founded in 2012, works as French farm incubator agent. They support anyone with an agricultural project who would like to develop and establish his/her farming idea/project. Most candidates are newcomers to farming, often career changers. Supported projects need the business goal to result in family forms of farming, conducting short food chains including direct sale, organic farming, and/or community involvement, like Community Supported Agriculture (CSA). Projects can test their business ideas in so called incubator farms ('espace-test agricola'), which offer all conditions required for the trial period. The farming trial period enables candidates, particularly newcomers, to practice farming progressively and under low risks. The farm incubator RENETA provides a legal framework to support people initiating a farm business project under real conditions. RENETA is provides support with the legal, fiscal, and financial aspects. They also

provide/offer key farming resources, such as land, equipment, buildings, etc. that required to trial the farm business. Furthermore, RENETA is conducting a mentoring (business, technical, and social support) and coordination role.

Slovenian family farm succession has been characterised as problematic for several decades (Hribernik, 1995; Kerbler, 2012). Rural Development Programs aim to support new entrants, namely young farmers (<40 years). Recent beneficiaries of this financial support invest funds in ICT purchase, farm mechanization, and upgrading of production capacities. Furthermore, establishments of co-operatives, which are generally speaking gaining relevance in Slovenia, are mentioned as attractive entry models for new entrants in farming.

Nowadays a new generation of younger entrepreneurs is taking advantage from new market opportunities and public funds when establishing co-operatives in Bulgaria. It has to be considered that Bulgaria has a long tradition of co-operative structures from the historic socialist period. Due to the post-socialist privatisation of farmland and other agricultural resources, family succession is the most common entry model for new entrants into Bulgarian agriculture. Most common are inheritances and donations when taking over the farm from parents, but sometimes the purchase of farm resources is required. The EU CAP financial support for young farmers is recognised as a suitable incentive for Bulgarian new entrants – both for successors as well as for newcomers.

The economic crisis in Portugal has led to an increasing number of well-educated young people, who have lost their jobs in other branches, starting their own business in farming. It concerns especially people who have some family connections with agriculture and land ownership, which leads to the phenomenon of a third-generation returning to farming.

While Portuguese family succession is mainly performed in the way of inheritance, non-family succession and new entrants are mainly entering farming via purchase or renting of land as well as via partnership arrangements; or as an employee stepwise receiving higher value with takeover possibilities later on.

In a nutshell, the main entry models can be classified to be succession (family and non-family), cooperation / collaborative farming (share farming, partnerships, contractual arrangements, producer groups), and newcomers who are starting from scratch or taking over a derelict farm. The national priorities are summarized in figure 4.

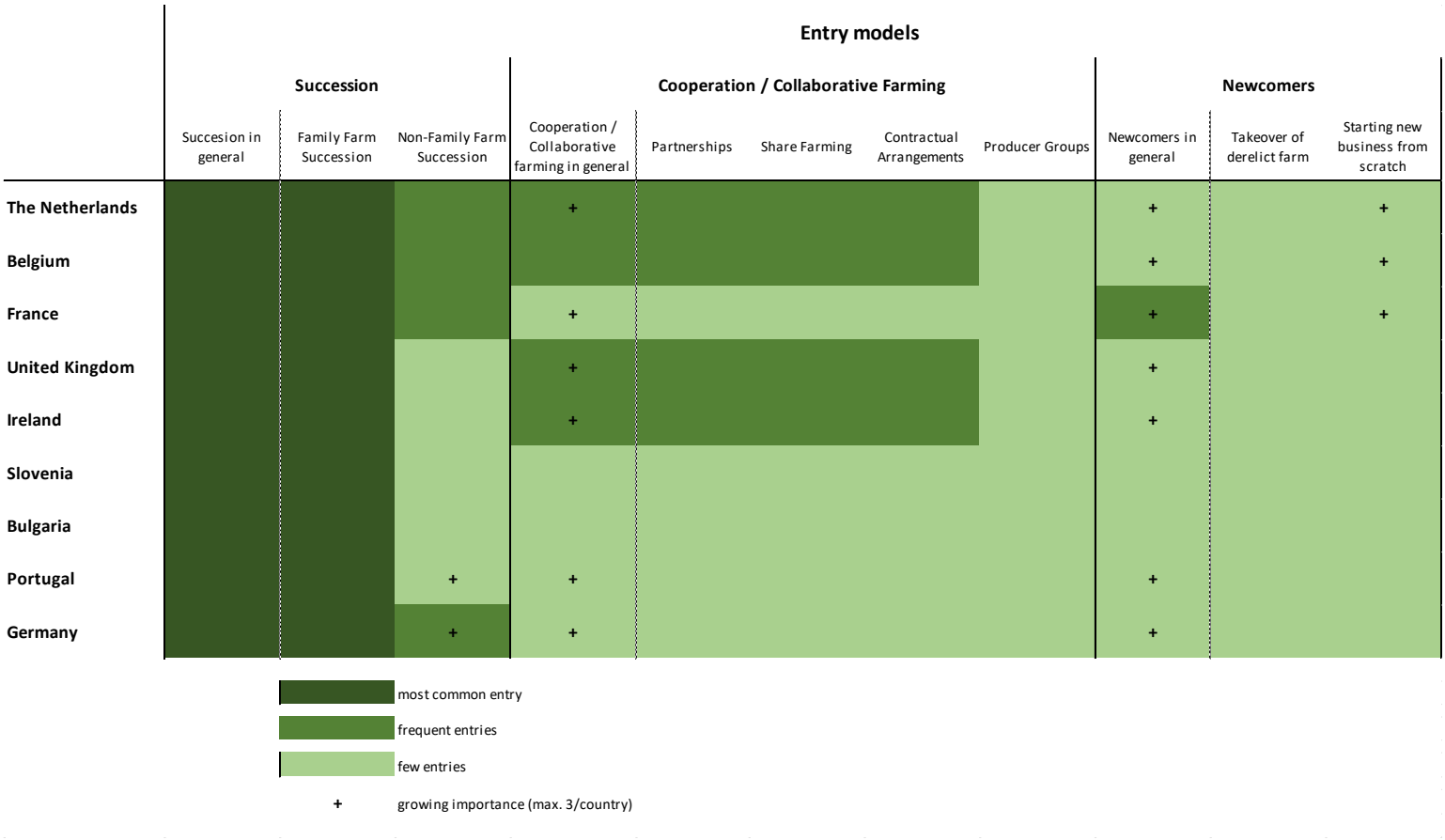


Figure 4: Overview of key entry models based on national reports

(4) New entrants' business models

Business models or entrepreneurial models describe "the rationale of how an organisation creates, delivers and captures value" (Osterwalder and Pigneur, 2009), represent the "design of organisational structures to enact a commercial opportunity" (George and Bock, 2011) and explain "how value is created for the customers and how value is captured for the company and its stakeholders" (Henriksen, Bjerre, Almasi and Damgaard-Grann, 2012). They consist of interlocking elements, which, combined, create values; e.g. identifying customer value propositions, profit formulas, key resources and key processes (Johnson, Christensen and Kagermann, 1996). Individual business models are often oriented on one or on a mix of business strategies like "cost reduction" or "diversification".

Suitable business models are the key to provide sufficient income for the members of the farm family or collaborators with the farm owner. Family successors typically either carry on the status quo or they try something new that is a variation of the current farm activity. Business strategies depend very much upon the current status of the farm and the capacity of the new entrant to invest time and money in developing the business further. Usually new entrants continue the model already existing, which is highlighted in all nine national Newbie reports (see below). Yet, within a few years quite a number introduce new business strategies on-farm. These developments can either concern the whole business or only elements of the farm by adding, deleting, or adjusting farm business pillars. It is for example mentioned for Ireland, that it is more likely for the new entrants' family succession generation, which is in their proactive and development phase of their farming career, to improve

technical efficiency or expanding the business. Despite continuing the parents' farm in the more or less same manner and business model new entrants bring in new ideals, skills, and technologies to the business. Younger farmers have higher agricultural education, can be highly skilled in contemporary technologies and farm management practices (Macken-Walsh and Roche, 2012). Van der Meulen et al. (2015) state based on a Dutch survey, that young farmers want to have capacities to expand and opportunities to innovate when taking over the farm. This is for instance also the case for most of the French and German family successors. For example in Ireland, dairy farming is the most profitable farm based enterprise. Average income per hectare for dairy farming is above €900, for tillage ca. €450, for beef rearing ca. €350 and sheep little above €300 (Teagasc, 2017b). Due to the economic advantage of dairy farming, many young family successors tend to change from beef, sheep or tillage to dairy farming.

For family successors, business adjustments ('trying something new') are generally speaking easier to implement due to resources available through inheritance (or sometimes donation) (see above (3) Entry models for new entrants into farming). On the other hand, new entrants typically do not have the resources to start a large-scale farm business (economies of scale), so that they are primarily looking for and entering **niche products** and **niche markets**. Niche production aims to achieve higher financial returns with lower capital investments.
For instance studies from the UK lead to the assumption that **organic farmers** are more likely to be new entrants, because they are younger and have less farming experiences in the overall national UK picture (Rigby et al., 2011; Padel, 2001; Lobley et al., 2009). This is also supported by observations from The Netherlands, Belgium, France, Germany, Slovenia, and for newcomers also from Bulgaria.
Short food supply chains are also found to be of special interest for new entrants' businesses. Several **direct sale** arrangements, like on-farm shops, farmers' markets, box schemes, and online food assemblies, but also **short chains** to local cafés and restaurants by eliminating further intermediaries are applied by new entrants to step out of competitive mainstream farming. Furthermore, these short food supply chains are sometimes also merged together with on-farm processing. On-farm processing and marketing of primary products demand high levels of entrepreneurism and commitment. Irish on-farm shops and on-farm cheese, butter or yoghurt production is named to be especially suitable when being located on the main tourist routes. Direct selling farmers are able to charge higher prices to the end consumers than paid by wholesale distributors or other food traders integrated within longer value chains. The Belgian, French, and Portuguese reports argue that newcomers from outside the family succession network prefer to work on smaller farms and carrying out short chain marketing. French new entrant projects supported by RENETA have to conduct short food supply chains organic farming, and/or community involvement, like Community Supported Agriculture.

Besides well-known niche products and markets, like organic farming, on-farm processing, and direct sale, **Alternative Food Networks** based on co-production, participation, strong relationships, and being part of the of the local community are named to be another feasible path for new entrants into farming. Here, **Community Supported Agriculture** (CSA) has to be highlighted as it is a concept applied especially by ex-novo newcomers. Examples from The Netherlands, France, Germany, and Bulgaria can be found in the national reports (see below). Other examples are open air supermarkets, self-harvesting and self-gardening (rent-a-field) offers.

Conway (2011) concludes that the partnership model can help to increase farm competitiveness, develop the sector's skills, attract young ambitious (new) entrants to the sector, and increase **on-farm**

diversification. On-farm (as well as off-farm) diversification can fill agricultural income gaps, which might occur due to new entrants' comparable small farm sizes or too low financial revenue streams from primary production and marketing. These on-farm diversifications are also named multifunctional agriculture or side activities. Revenues from on-farm diversification can outweigh the revenues originating from agricultural production. Well-developed Irish on-farm diversification covers for example farmhouse B&B, self-catering accommodation, cafés, and farm tours – especially when being located on well-travelled tourist routes. When considering all farmers (not only new entrants), less than one fifth of Slovenian farmers earn their income only from agriculture, while the large majority generates income also from other on- and off-farm activities. On-farm diversification tripled in Slovenia only in the ten-year time range from 2004-2014 (Potočnik Slavič et al., 2016b). Many Slovenian farmers use agri-tourism to capitalise the beautiful landscape they are situated in. Besides integrating agri-tourism offers into farm businesses when taking over the parents' farm, the Bulgarian report highlights also newly emerging social farms (care farms) as a business models for newcomers.

As already mentioned above when summarising the entry models, **off-farm income** is an option to safeguard the early stage of taking over respectively establishing an own farm business. In a sample of 200 Dutch new entrants, about 80 (40%) work also outside the farm to supplement their income (van der Meulen et al., 2015).

When taking the overall picture of all nine Newbie countries in mind, new entrants' business models – apart from the dominance of mainstream farming – are primarily belonging to (or are a mixture of) (s. Figure 5):

- **differentiation** (niche products and markets: organic farming, short chains, direct sale),
- **Alternative Food Networks** (Community Supported Agriculture, co-production), and
- **on-farm diversification** (pedagogical, social, recreation).

Many of these new entrants' business models are locally bound and highly socially integrated. This relates mainly to newcomers into farming and family successors who are changing the main farm business model when taking over the parents' farm. However, it has to be mentioned that quite a large number of new entrants from family succession continue the farm business of their parents without major changes – at least within the first years after takeover.

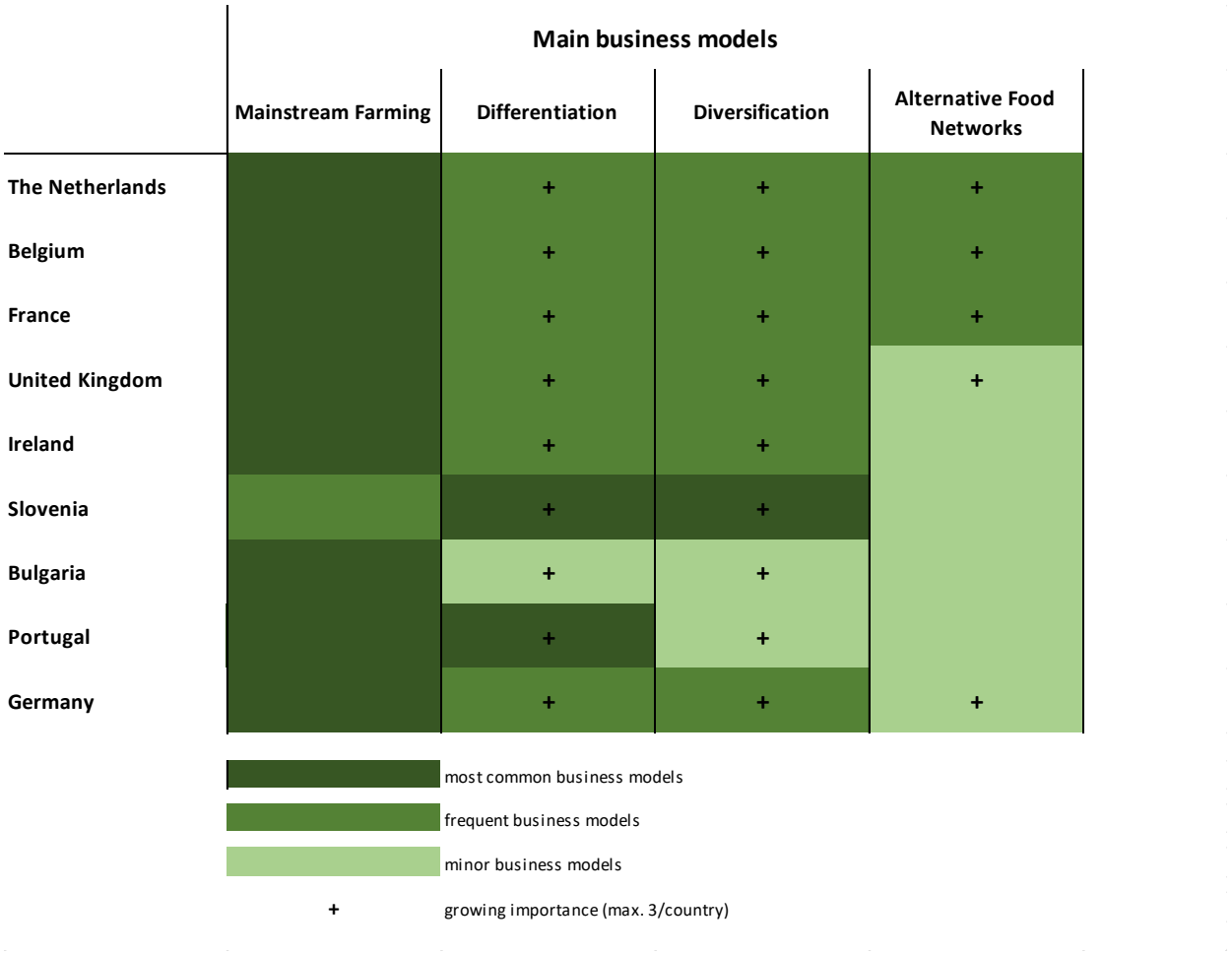


Figure 5: Overview of new entrants' key business models based on national reports

2.2 Newbie partner countries' reports

2.2.1 The Netherlands

Introduction

The question of obtaining enough new entrants/successors in agriculture was already considered over 40 years ago (van der Ploeg, 1974). Since then sporadic publications document the situation of succession and the characteristics of the farm, farmer and successor (Kloprogge, 1975; Spierings and Wolsink, 1986; Hoek and Spierings, 1992; Venema and Overgaauw, 1994). Very little attention is given to the newcomers in agriculture, the businesses they begin, or the business models that they develop. This is also the case for farm successors, there is no research documenting the success of transition, innovation and the development of new business models.

The predominant method of entry in The Netherlands is where new entrants become involved in and eventually inherit the family farm. It is common to continue the existing business model of the family farm. However, it is becoming more common to change and/or adjust the business model by new entrants e.g. towards food processing, local food chains, leisure and care services or nature inclusive agriculture. The main hurdles listed by new entrants are the capacity to expand, financing and farm income. Next to these issues it is difficult for new entrants to obtain access to agricultural land.

Methodology

The literature study was performed as suggested in the Newbie project guidelines in accordance with work package 2.1 of the deliverables of the project. Suggested key terms were utilised with the suggested search engines to explore the available literature. Searches that returned substantial relevant entries were continued until the relevance dropped. This was generally between five and 50 entries. The success of the different search engines and search terms was recorded qualitatively in a spreadsheet as poor, moderate or good. This may be helpful for future literature research, or in developing communication materials in the future, to ensure that the target group is reached. Generally there was very little scientific literature found using the suggested search engines and terms in both English and Dutch. The most successful search for scientific literature was found using the WUR library search engine with Dutch search terms. Agricultural statistics were found using the Centraal Bureau voor de Statistiek (CBS). For grey literature, google search in Dutch was most successful. For several search terms, such as "succession" or "nieuwe boeren" (new farmers) it was helpful to use advanced search and specify "not ecology" or "not zoekt vrouw" (not farmer seeks a wife) due to the frequency of entries on ecological succession and the popular Dutch TV program "boer zoekt vrouw".

In addition to the suggested terms, the following were also used:
Boeren opvolging, boerderij opvolging, nieuwe intreders landbouw, Opvolgers boerenbedrijf, nieuwe intreders boerenbedrijf, Bedrijfsovername landbouw, farm succession NOT plant NOT soil, Nieuwe boeren NOT vrouw, boeren die een nieuw bedrijf zijn gestart, bedrijfsopvolging in de landbouw, Nieuwe ondernemers in de landbouw, Agrarische Bedrijfsopvolging, Jonge boeren, Oprichtingen boerderij

Beyond the digital search, colleagues at WUR with knowledge of the topic were asked for literature. These provided additional materials in the form of books & leaflets.

The Netherlands farming structures

The percentage of farm holdings by different farming types can be seen in figure 6. The majority of farmers work in dairy, field crops and cattle, with fewer working in horticulture and livestock.

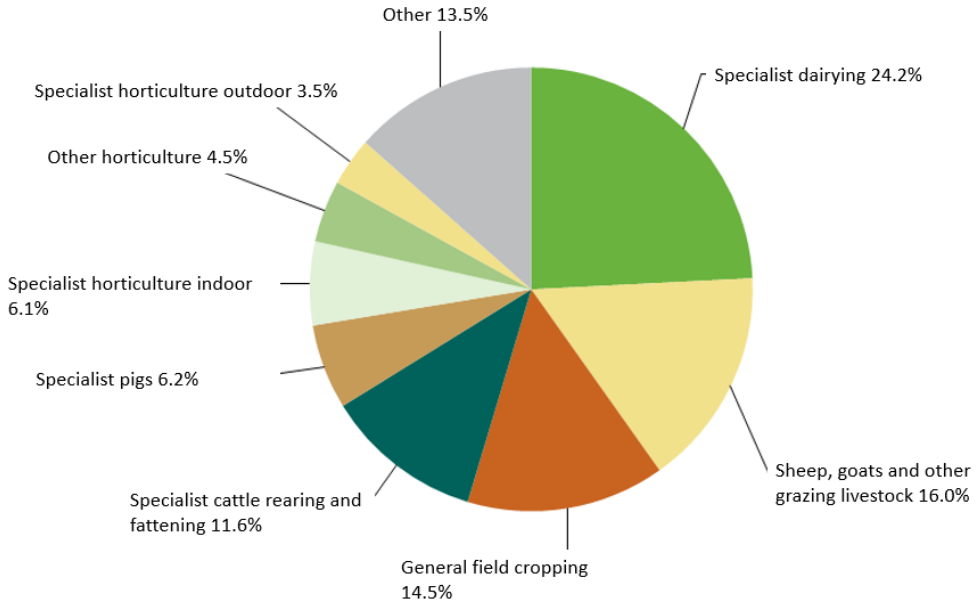


Figure 6: Number of holdings by main type of farming, the Netherlands, 2010 (%) (Eurostat, 2010).

The economic output of agricultural goods in The Netherlands is about 28 milliard euro (2018). Vegetables and horticultural products are the biggest output (38.3%) followed by the economic output of milk (20.2%). Pigs (9.8%), potatoes (6.4%) and cattle (6.1%). The Netherlands have a share op 6.7% of the total agricultural goods output of the EU (EU-28). The GDP of The Netherlands in 2018 is 773 billion euro, which is 4.9% of the total EU-28 GDP. This number shows that the agricultural output has above average importance in The Netherlands compared to EU-28. The total economic output of agricultural goods in the Netherlands is 3.6% of the GDP.

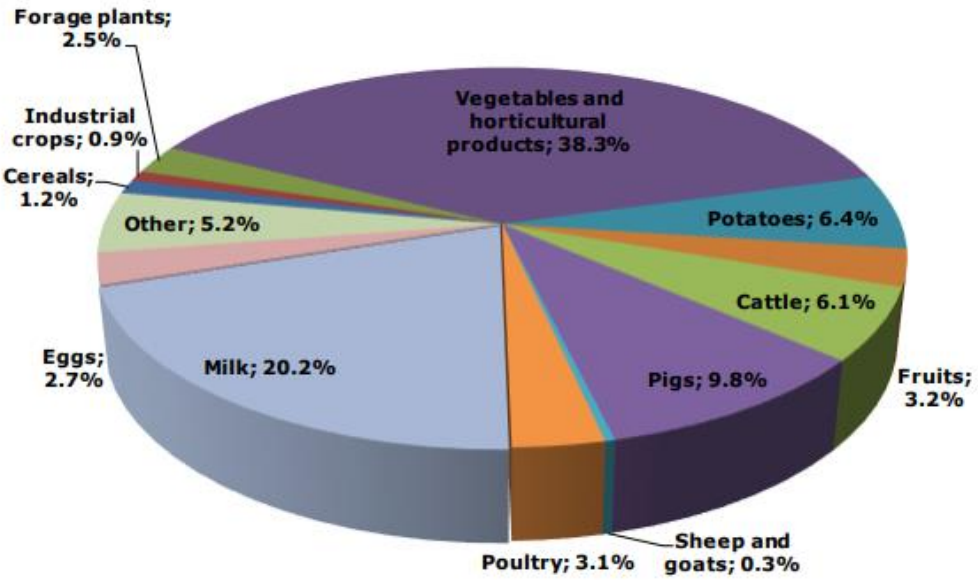
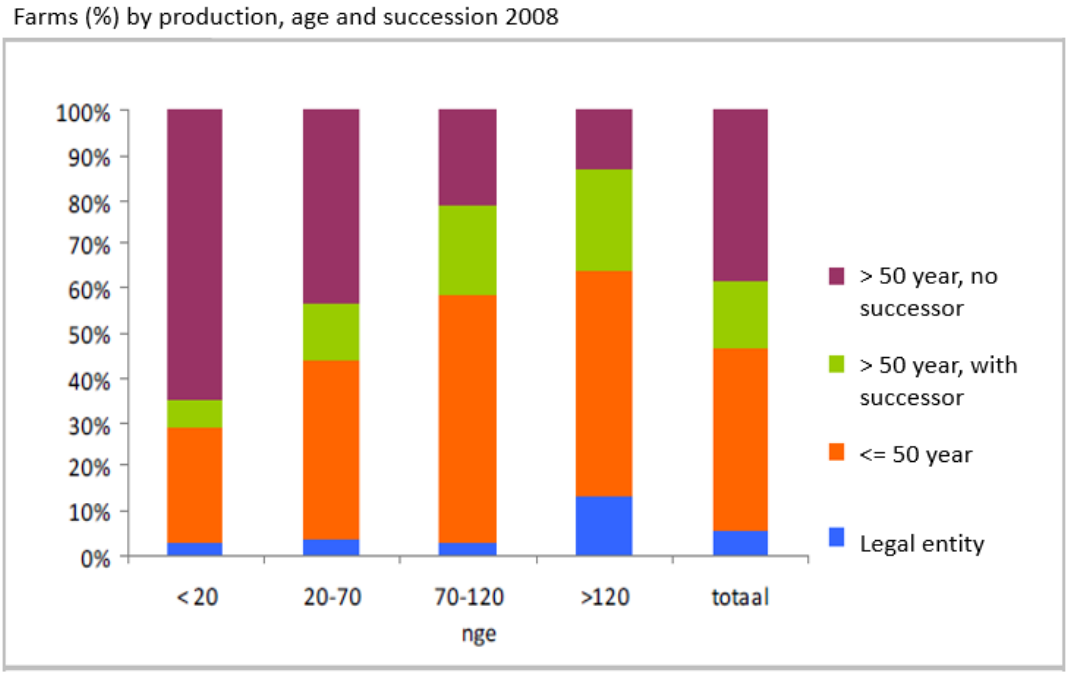


Figure 7: Economic output of agriculture (average 2016-2018), the Netherlands, 2019 (Eurostat, 2019).

Within The Netherlands the long term trend is that larger businesses are more likely to have a successor than smaller businesses. This can clearly be seen in figure 8. Over 60% of the smaller businesses (<20 nge; *a measure of the size of the holding based on the estimated gross margin of the farm*) have no successor, whereas most of the larger businesses (>120 nge) have a successor.



Nge: a measure for the size of the holding, based on the estimated gross margin of the farm.

Figure 8: Percentage of Farms, by production level (nge), farmer age, and succession (Voskuilen, 2017).

In addition to the larger farm businesses having more successors, certain farm types are much more likely to be succeeded than others. Figure 9 shows the percentage of farms with successors by farm type. Here it is clear that dairy has the greatest percentage of successors, followed by livestock and field crops.

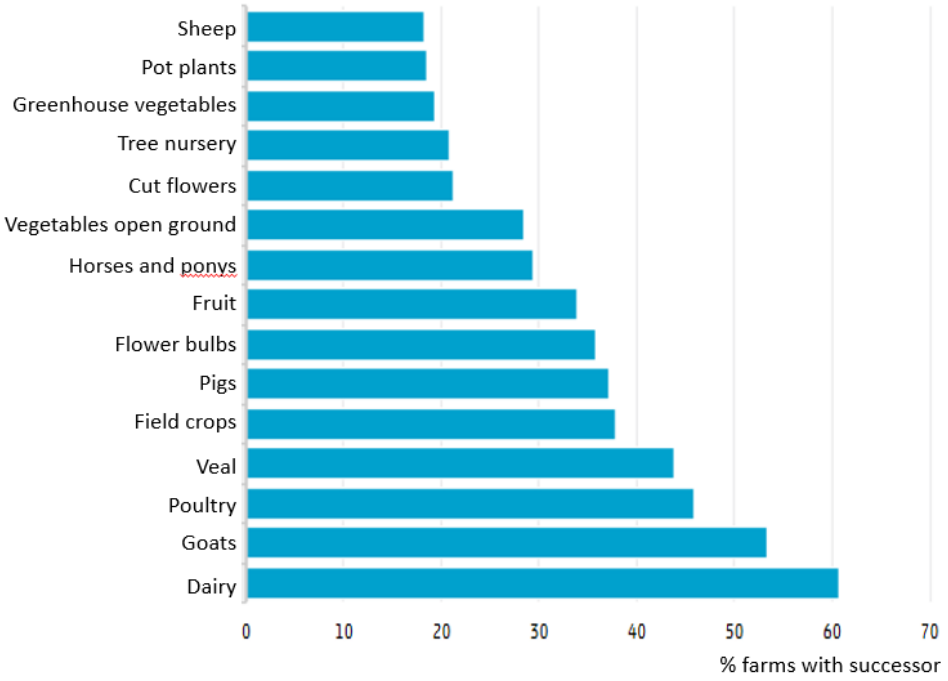


Figure 9: Percentage of farms with successors by farm type (CBS, 2016).

The lack of successors and new entrants in farming has resulted in the steady decline in the number of farmers in the Netherlands. This is clearly seen in figure 10 which shows the number of farms, by type, from 2000 to 2016. Here we see a reduction of around 5,000 farmers in each industry over the 16-year period.

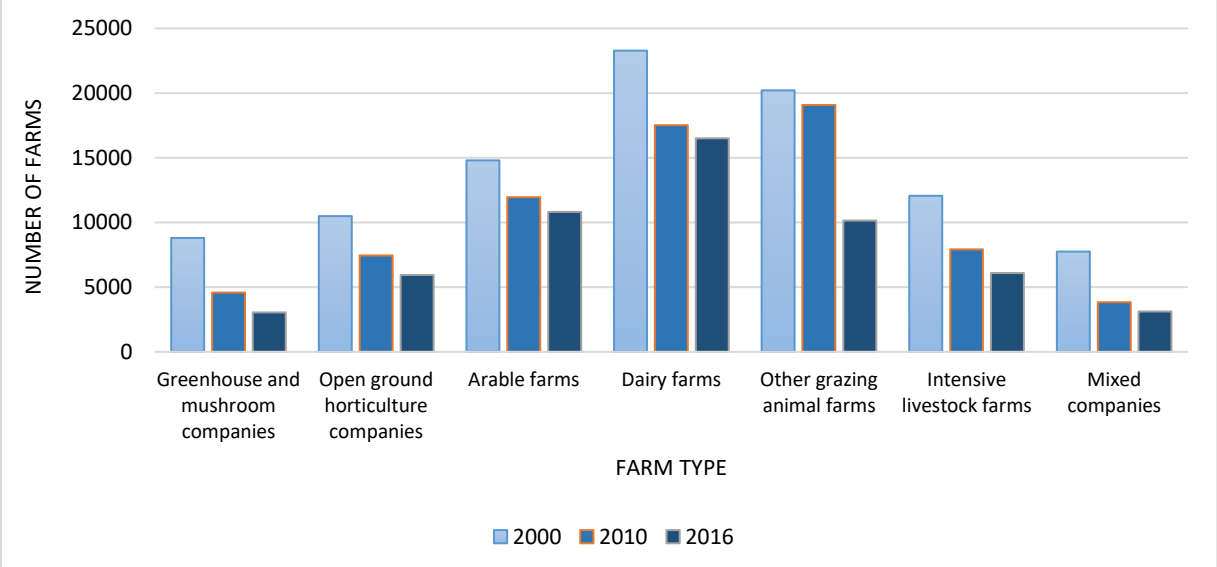


Figure 10: Number of farms, by farm type, from 2000 to 2016 (CBS, 2018)

New entrant topics in The Netherlands

Various topics are noted for their importance for successors and new entrants, such as: capital, knowledge, labour, housing, markets, and the social networks that enable access to these resources (EIP-AGRI, 2016). Literature suggests the importance of these different topics varies between successors and new entrants and farm types (Stokkers et al., 2010; van der Meulen et al., 2015). For instance, new entrants are likely to have more problems with knowledge and markets, than successors.

Hurdles

Roughly 50% of people in the process of becoming a farmer note: the capacity to expand, financing and farm income as important hurdles (van der Meulen et al., 2015). Further challenges include; the rules and regulations, family relations, taxes, opportunities for innovation and knowledge (s. Figure 11). For young existing farmers (<40 years) the most important topics are the availability of land to buy or rent (s. Figure 11). In 2017 the average price per ha was €60,000, given the average farm size of 32 ha (CBS, 2018) a new farmer would be expected to finance €1.92 million, simply for the land. Making such a financial investment is one of the greatest challenges for new farmers.

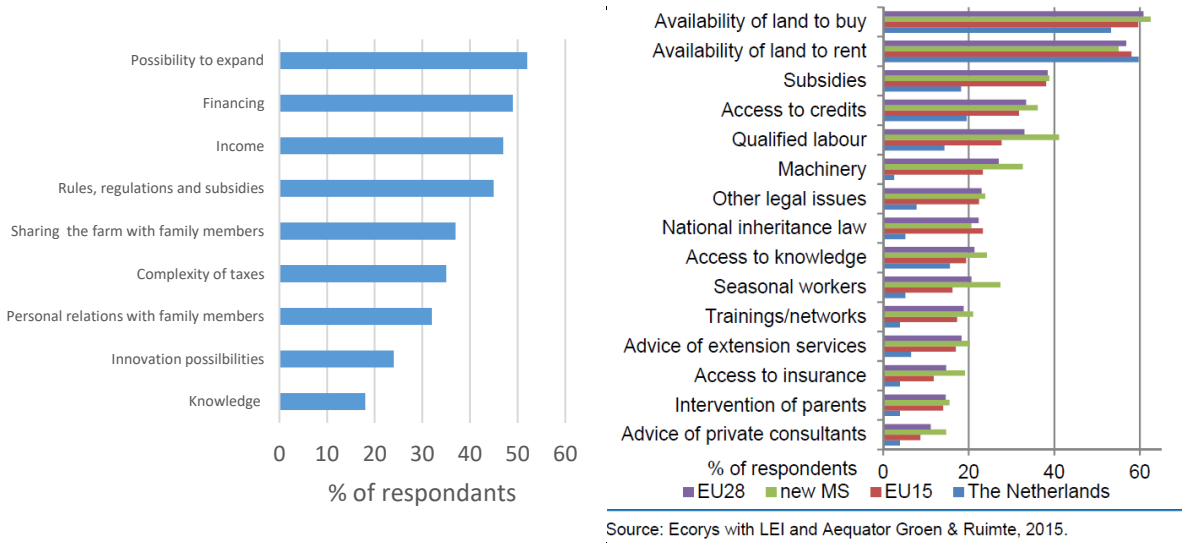


Figure 11: Challenges of importance to beginning farmers (van der Meulen et al., 2015; DG-AGRI, 2015).

For many successors and entrants farm income is also an obstacle. When looking at the average income, for different farm businesses, we see large variations by farm type and year. In figure 12 we can see how volatile the income is for different farm types. Most farm types experience years where the income approaches €0, and several industries experience significant losses in some years. In these years the farmer will have to rely on other money streams such as; savings, off farm income, further loans and benefits. New farmers are unlikely to begin with such prospects.

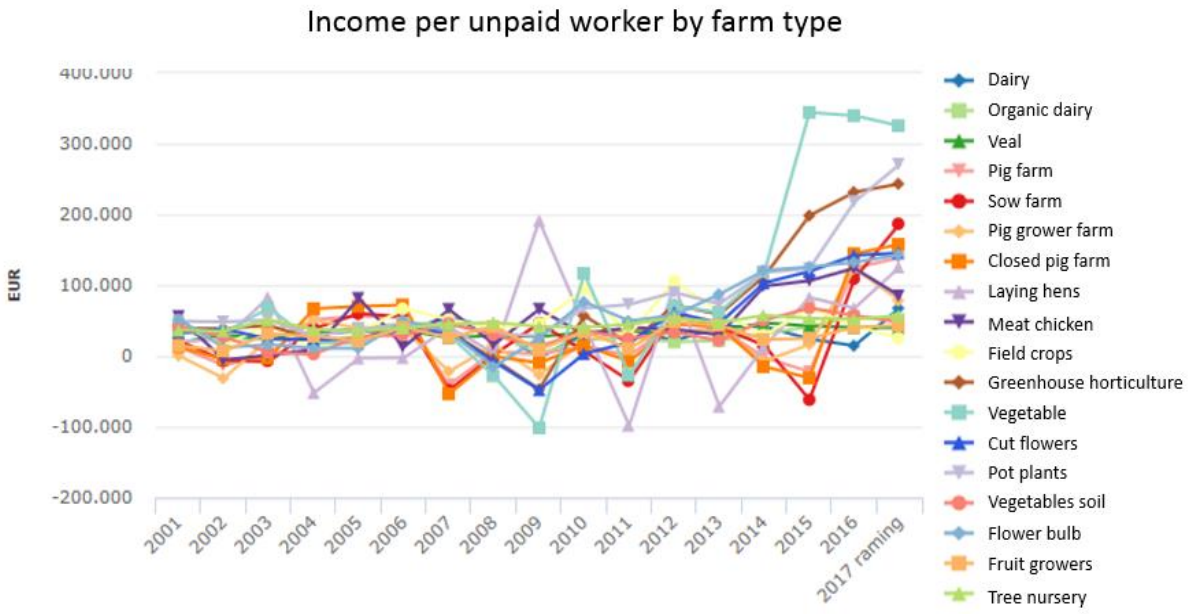


Figure 12: Average income per unpaid farm worker, for different farm types between 2001 and 2017 (Agrimate, 2018).

New entrants versus successors

Data concerning the actual numbers of family succession versus newcomers is limited to historical records. In 1972 the greatest percentage of successors (78%) worked on their parents' farm, 7% had worked on another farm and 15% came from a non-agronomic background (Kloprogge, 1975). In 1984, 83% of successors worked on their parents' farm, 6% had worked on another farm and 12% came from a non-agronomic background (Spierings and Wolsink, 1986).

Entry models

Entry models successors

The family farm succession with a junior-senior partnership remains the main form of entry for new farmers. Roughly 85% of successors use a partnership due to the fiscal benefits and security it offers (van der Veen et al., 2002). During the takeover, 98% of family farms are transferred at a discount. On average the family successor will pay 49.7% of the market rate (Flören, 2002 as in van der Veen et al., 2002). Furthermore, for 31% of transfers, the parents' venture capital is used in financing the takeover. An example of the financing of a Dutch arable farm is shown in table 2. To avoid a final tax bill, the successor is allowed to take over the book values of his predecessor and therefore also the tax liability. This is only allowed under certain conditions, and includes transfer from parents to children, or after a co-operation between successor and antecedent for at least 3 years (Van der Veen et al., 2002).

Table 2: Financing of the takeover of a sample Dutch arable farm (in thousands of euro, Van der Veen et al., 2001)

Take over price	800
Extra investments in first year	23
Necessary capital	823
Private means	113
Existing bank loan	244
Family loan	302
Including daring capital	94
Necessary extra bank loan	164

Entry models newcomers

The entry model of newcomers varies considerably based on the farm type they begin. No scientific literature was available to assess the prevalence of the different newcomer entry models, or the farms they begin. However, various examples are documented in grey literature. Generally, newcomers can be split between those doing a traditional farm takeover of an existing farm, and those starting a new farming enterprise. Many taking over an existing farm will follow a similar process as successors. Partnership formation often leads to the gradual take-over of the farm. In some cases, these newcomers have developed enough capital to purchase a farm immediately. Newcomers beginning a new farming enterprise can be categorised by 3 broad characteristics: self-funded, externally funded and land share (s. Figure 13).

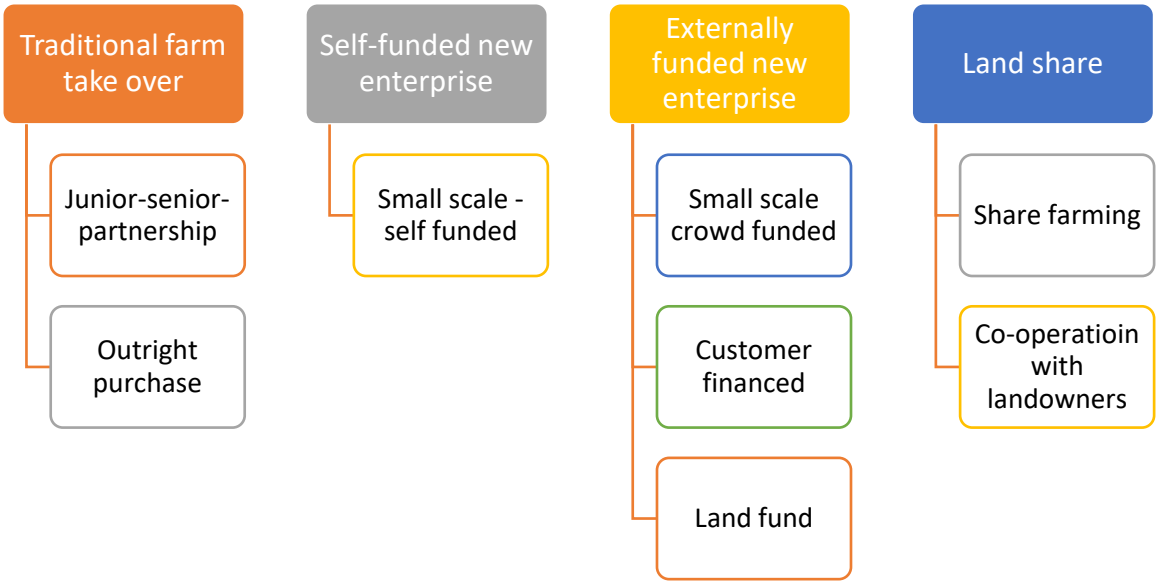


Figure 13: Overview of common entry models of newcomers

Several examples exist of small scale self-funded new enterprises, these are often CSAs (Community Supported Agriculture), or similar farm systems, that rent land and begin with a low initial investment. This makes entrance financially feasible and low risk. Several forms of externally funded enterprises are also apparent. Some very small scale enterprises have begun with crowd funding. For larger enterprises there is the recent development in which customers finance the start-up costs. This is currently used by a business, but is a promising model for newcomers too. The final example of

external funding is land funds. There are examples of investors purchasing land and, in some cases, providing the full investment for a new farm. The investor retains ownership of the land, and receives a percentage of the farm revenues. An additional entry model is land share; this can be on an existing farm, where a newcomer begins a new farm enterprise, or where a landowner allows the use of their land. There are examples of private individuals and charity landowners, who allow the use of their land in exchange for produce or services (such as grazing). Below we highlight some common entry models of newcomers in The Netherlands.

Junior-senior-partnership
This entry model can be described as a succession farm partnership. Just like in family farm succession this model is also used by newcomers. The newcomer and the 'retiring' farmer are both legal partners in the operation of the farming business. Within the partnership arrangements are made about the transfer of the agricultural assets towards the successor, the input of labour into the farm and the sharing of the profits and losses of the farm.

Small-scale self-funded
In this entry model farmers are starting on a small-scale farm with a personal investment or personal loan. This is often possible by using existing assets of the newcomer to make an investment in the farm and production assets. Because of the small scale, the business models used are often based on adding value to the produce (processing, services etc.) and are very labour intensive. e.g. a vegetable farm with on-farm processing, direct sales or a box scheme.

Small-scale crowd funded
Crowdfunding is a financing system that makes use of the crowd, a way to connect with people (through social media without making use of the traditional banking system)

Roughly there are two types of crowdfunding:

1. Pre-financing of the exploitation of the business.
   Examples are box schemes with vegetables or meat in which customers pay at the beginning of the year and get produce back during or at the end of the season. So the customer pays in advance and gets a return on his investment in goods.
2. Financing of capital.
   The crowd is used for financing capital for land or buildings. Legislation is here stricter than in pre-financing and often this is outsourced to a crowdfunding platform. At these platforms different kind of initiatives and entrepreneurs are gathered who need crowdfunding and so provide people the opportunity to invest in a business or initiative of their choice.

Some examples of business models with crowd funding are described in the next chapter.

Business models

Business models of successors
There is currently no clear documentation of the business strategies that successors adopt when taking over a new farm. In general, this depends upon the current status of the farm and the capacity of the new farmer to invest time and money in developing the business. Many young farmers express that capacity to expand and the opportunity to innovate as important factors when deciding to take over a farm (van der Meulen et al., 2015); however, their business decisions have yet to be documented.

What is apparent is that, in a sample of 200 starters, 40% worked outside the farm to supplement their income (van der Meulen et al., 2015). In 2016, there were a total of 11,823 farmers who worked outside the farm, the total number of entrants and successors within this group is unknown (CBS, 2018). Working outside the farm may help manage the initial risks when starting a business and provide a buffer against price shocks. It may also enable further investment in the early stage of taking on the farm. A further business model known to be used by some successors is to become organically certified (personal observation authors).

Business models of newcomers

Numerous business models are available for newcomers. Many of these aim to overcome the high initial investment costs and the low market prices that combined can make the farm business unviable. Many models aim to improve the profitability of the business through direct sales, branding or diversification. Figure 14 shows an overview of the common business models in The Netherlands.

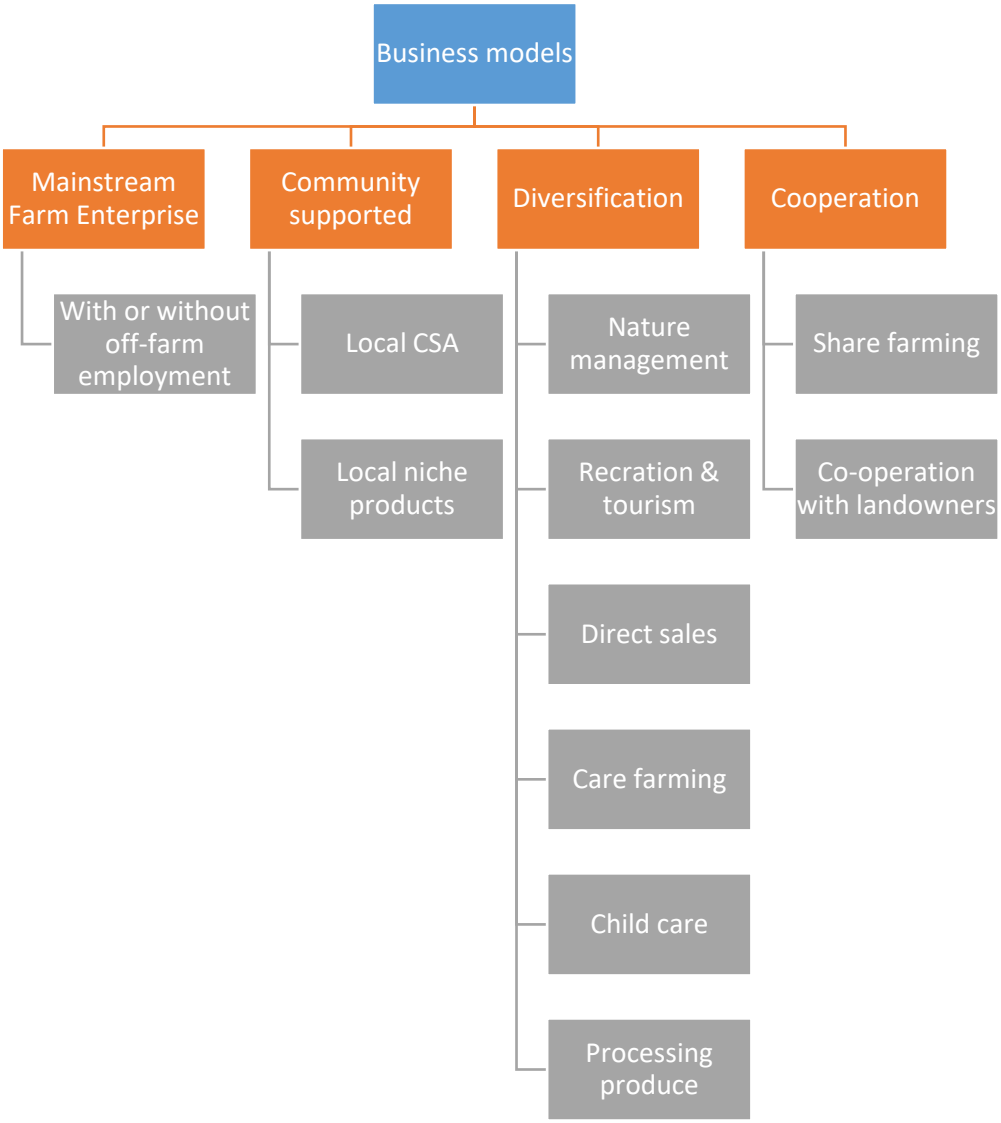


Figure 14: Overview of common business models of newcomers

Junior-senior-partnership

Much like the family successor the new farmer will often become a partner in the business and gradually take the farm over. In this case it is often business as usual. Though some will transition to organic and/or diversify their activities.

Local CSA (community supported agriculture), self-funded

Most commonly encountered is CSAs such as the 'Nieuwe ronde' (http://www.denieuweronde.nl/). Due to small start-up investment, roughly €10,000, for the purchase of materials and equipment. It offers a relatively feasible method of entrance. Risks are shared with customers who each pay in advance for the season. The financial aim is to have roughly 250 members paying €192 in advance for the year's vegetable subscription. The farmer offers local food with full transparency over production methods. Furthermore, a strong relationship is built with customers through self-harvest, open days and dinners. The self-harvest also saves the farmer time and achieves greater use of nonstandard and misshaped vegetables.

Local niche product, crowdfunded

A recent graduate of the organic farm school used crowdfunding to generate the capital to start a sustainable cut flower company (http://bloemenoogst.nl). Here social media and news briefs play an important role in providing contact with customers, and providing updates throughout the season. Transparent production methods, locally orientated and the personal customer relationship are key to this model.

Local CSA, customer financed

Herenboeren, (https://www.herenboeren.nl/) is similar to a CSA, however the initial start capital for the farm and investment is also obtained from the members using shares. Each member must pay €2000 for a share in the farm; they can sell this share to a new member if they wish to leave, so the initial investment remains in the farm. The minimal number of members when starting the farm is 50. Each member also pays a subscription fee for the vegetables. In this model the customer has an even greater say in the production methods and what is produced. Making it more personalised for the customers.

Direct sales and distribution

One such example is Veld en Beek (https://www.veldenbeek.nl/), the original business, is based on direct sale of organic milk to members; this has now expanded to include meat and vegetables. The farm has three cold storage units in local towns where members can collect their milk and other produce, seven days a week. It has built a strong connection with the members through open days and incorporating their feedback. Interestingly, to start the farm when the milk quota was in effect, the farmer made each member own a cow. Due to the legal right of Dutch citizens to drink milk from their own cow, they were able to begin the farm without buying a milk quota.

Share farming

Where entrants use part of an existing farm is also documented. Tuinderijdestroom (https://www.tuinderijdestroom.nl/) grows and delivers organic vegetables. They farm 3 ha of land from a farmer with 100ha. They produce vegetable bags, and provide various distribution points for customers.

Co-operation with landowners

Several examples exist of co-operation with land owners. For instance, a tree grower, who had difficulties accessing land, will provide a client with a free orchard in exchange for use of their land for a few years. An additional example is farmers grazing cattle in nature areas. The farmers gain access to pasture at little or no cost and the nature organisations benefit from the maintenance of the land. The meat is then sold as a higher value product.

These examples show several similarities. Often initial cost constraints associated with land are overcome by starting small, sharing land or through external investments. Many of the business models focus on the direct sale of higher value, or niche products. In general, they are locally bound and highly socially integrated through: news briefs, social media, open days, dinners and membership meetings. Many also emphasise convenience, either through own distribution or self-harvest.

Additional business models that may also be relevant to, but not documented for new entrants or successors, are forms of diversification. In literature this can often be found under multifunctional agriculture or side activities. Roughly 12,800 farmers currently incorporate additional activities into their business model (van der Meulen et al., 2014). This includes earnings from; nature management, recreation & tourism, direct sales, care farming, child care and processing produce. These additional activities generate on average 33% of the company turnover and about 40% of the family income (Kierkels et al. 2012). In some cases, income of diversification activities exceeds the income generated by the traditional farming activities.

Considerations to support succession and new entrants

Thought not conclusive, the following list highlights important aspects to be considered in making farming more attractive and feasible for successors and new entrants.

Access to affordable land

New entrants often struggle to find suitable land. Websites which document available land such as http://www.pachtbank.nl/ are available, but are not so comprehensive, and offer short term contracts. Municipalities could introduce measures to make land available for new entrants and improve the visibility of available land.

Access to farms

Connecting farmers with successors and new entrants remains an issue of importance. Schemes and organisations such as: Boer zoekt boer (farmer seeks farmer), Toekomstboeren, Landgilde and Nederlands Agrarisch Jongeren Kontakt, help to facilitate the connection. Further development and support of these schemes is necessary.

Policy provisions

That support successors and new entrants and new business models. In the Netherlands, a large part of the CAP payments go to direct payments of existing farmers and a limited part is directed towards rural development. In general newcomers would benefit if more would be invested in rural development.

Legal, rules and regulations
A coach to guide through relevant rules and regulations and help advise the most suitable legal business form to adopt.

Market reforms
To stabilise market prices, or provide better incentives for producing alternative goods and services.

Taxes
Favourable tax breaks on farm inheritance, or purchase by new entrants.

Business support
In the Netherlands many advisers are available that can advise on the business model and farming practices, however the cost can be prohibitive for new entrants. This support could be made available to new entrants and successors. This should also work on farm level innovation to ensure the farmer receives a reasonable income.

Education
Courses in agronomic entrepreneurship may help successors and entrants develop viable business models. Support of schools that teach new entrants, such as the Warmonderhof, would also be valuable.

Financial investment
The implementation of fiscal measures to encourage investment in agriculture.

Monitoring
Without data on the annual number of successors, new entrants and the farms they develop, it is difficult to access when they are successful, or what causes them to fail. Additional census data from the CBS would be valuable in developing further support for new farmers.

Concluding remarks
Both successors and new entrants face significant challenges when becoming farmers. Without the development of new business models and measures to support new farmers the steady decline in the number of farmers can be expected to continue. Opportunities exist to support new farmers and longer term research and development is necessary to provide a nationwide picture of the current status of succession, new entrants and the businesses they run.

2.2.2 Belgium

Introduction

In line with the European tendency, the number of farms is decreasing and the average size of farms tends to grow continuously. Furthermore, the average age of farmers is Flanders increases. In 2018, the average age of a farmer in Flanders is 55 years and for many farmers, succession is unsure. Only

13% of the farmers aged over 50 years are certain about succession. It is especially the size of the farm that determines whether a farmer has succession with the general rule 'the larger the farm the higher is the chance of succession'. Approximately 150 new farmers start every year in Flanders, and this number decreases continuously.

Methodology

This desktop research was carried out by reviewing the relevant academic and grey literature in a Belgian context, and foremost in the Flemish context. The Newbie guidelines were followed in accordance with work package 2.1 of the deliverables of the project.

Flemish farm structure

Flanders is the Northern region of Belgium, accounting for 57.68% of the Belgian population (Statbel, 2016). The population density in Flanders is 462 inhabitants per square kilometre, one of the highest in Europe, and is rather homogeneous due to the diffuse spread of economic activity throughout the territory. This does not leave out much space for agricultural land but enables a rather good proximity between the agricultural sphere and the peri-urban population.

At the European level, the Belgian food sector is shaped primarily by its excellent location in the centre of highly populated North-western Europe and by having the second biggest sea harbour, that is, Antwerp, after Rotterdam. From a historical point of view, the current food sector has been shaped to a great extent by two developments that have their origin in the 19th century. First, Belgian horticulturalists and institutions were part of the newest developments in horticulture, as the development of horticulture flourished in the urbanized North-western Europe. Second, following the imports of cheap cereals, Flemish farmers followed the example of Dutch and Danish farmers taking opportunity of cheap imported feed to specialize in intensive livestock production. These historical stylized facts still shape the specialization of the country as in 2015, 88% of farmers were specialised in one of three subsectors: livestock farming, arable farming or horticulture (Platteau et al., 2016). In 2018 50% of Belgian farms was specialised in animal production (s. Figure 15), the most important subsections being meat cows (26%) and dairy cows (24%).

In 2017 total agro-food imports in Belgium were estimated at 38.5 billion euro, while Belgian agro-food exports were valued at 45 billion euro (Vilt, 2019). These figures point to the very open nature of the Belgian agro-food sector. Belgium is the EU's fourth largest food exporter (following Germany, the Netherlands and France) and Flanders represents 83-85% of its trade. 57% of imports and exports relate to neighbouring countries, although products such as beer, chocolate and potato products are traded worldwide (Samborski and van Belleghem, 2016). According to FAO statistics, Belgium ranked eighth in the list of top food importing countries in the world, and ninth as far as food exports are concerned.

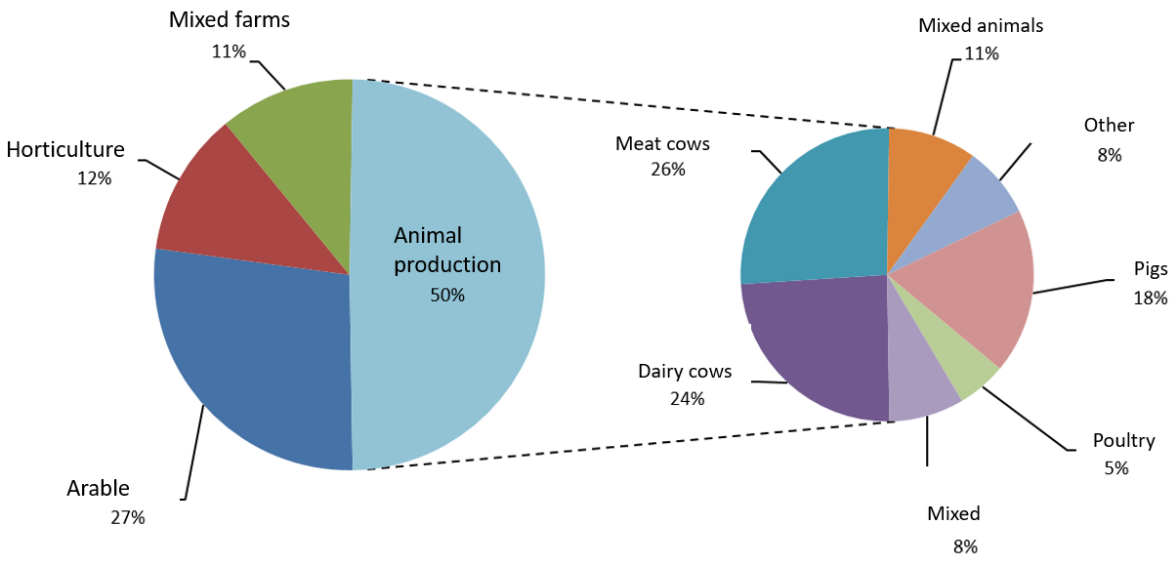


Figure 15: Share of total Belgian farms (23 361) in 2018 specialised in each product section. Source: Statbel

Entry models

Two main paths of new entrants can be distinguished. On the one hand, there are farmers taking over the existing farm. This is still the majority of the farmers. New entrants with this background follow agriculture in secondary school, or have followed a specialised formation within a university college or the university. On the other hand, there are farmers that start a farm from scratch. Given the issues of land access, most of this second group of farmers work on smaller farms and focus on short supply chains. Their educational background is diverse. Many of these newcomers have obtained the degree in professional organic and biodynamic agriculture. The available data on new entrants is limited. While the Department of Agriculture keeps track of the number of new farmers and new farming businesses it is difficult to distinguish between different types of new entrants. In 2018 a total of 1513 new farms were registered, managed by 1766 farmers. However, farmers can register new farm for many administrative reasons that do not necessarily mean that that they are new. Only 387 of these registered a new business as well as a new farm, indicating that this is a better approximation of actual new entrants. 50% of these new farmers are aged below 40.

Traditional farm succession

In 2018 Belgium counted 14586 professional farms (yearly income higher than €25 000) (Statbel, 2019). Of these farms 66% has an age higher than 50. Only 13% of these older farmers report having a successor ready to take over the farm. The causes for this uncertainty of succession can be grouped in three categories. Firstly, the children of the farmer might not be interested because they are either too young, have other interests or have already found another job outside agriculture. Secondly, both the current low agricultural income and large capital investment are a problem. Thirdly, some farms are simply too small, outdated or not profitable. The last category is confirmed by the data from Statbel, as the share of farmers with a successor for large farms (yearly income higher than €250 000) is almost 25%.

Succession planning

Research by Calus (2009) shows that farms that are certain about succession early on in their career perform better than those who only tackle this issue at the end of their career. She indicates that this effect even carries over to the successor after the succession has been concluded. Calus found a large knowledge gap with farmers about the administrative aspect of succession and what options they have (e.g. gradual succession through a joint venture). In 2015, Groep Boerenbond launched its knowledge centre on succession, Kenniscentrum Bedrijfsopvolging. This centre is a contact point for succession within family farms. It bundles expertise from several organisations: KBC, SSB, Boerenbond, Innovatiesteunpunt en Groene Kring. Among others, they organize training programs and individual advice. They produce detailed brochures and step-by-step guidelines to inform farmers about the process of succession, both financially, administratively and emotionally. In October 2019 they ran a "Week of farm succession" campaign to further stimulate awareness.

Support measures

Young farmers (below 40 years old) that take over an existing farm can rely on VLIF support (between €40.000 and €70.000) under the following conditions https://lv.vlaanderen.be/nl/subsidies/vlif-steun/vlif-overnamesteun-voor-land-en-tuinbouwers :

- It is the first time they start as farmer
- The farm provides sufficient reliability and is situated in Flanders
- The farmer keeps an accountancy
- The farmer follows all legal norms
- The farmer provides all required documents for taking over the farm
- Only after acknowledgement of selection, the farmer starts the take-over
- The farmer demonstrates the start-up documents.

If a (future) farmer wants to request for VLIF support, they need to have a minimum educational background in farming. This includes either (1) degree in agriculture education with a minimum level of a higher secondary education, or, (2) provide a proof of successful accomplishment of the installation test (which requires minimum 2 years of professional experience). Further details on both options are integrated in document D2.1 agricultural educational system Flanders. In 2018 140 new entrants received this subsidy (VLIF, 2019). New entrants have three options when taking over a farm in this way: (1) taking over the shares of the company, (2) taking over all the contents of the farm, continuing to manage them as a OPC and (3) taking over all the contents of the farm, continuing to manage them as a partnership. These options were chosen by 33%, 31% and 36% of new entrants, respectively.

Apart from regular education, which is described in WP3, new entrants can rely on various organisations and initiatives. Groene Kring is the largest youth organisation in the Flemish agricultural sector. They were first established in 1927 as youth organisation within the largest farmer union of Belgium. Groene Kring focuses on young farmers (aged between 16 and 35). They organize training sessions, meetings, exchanges, etc. They have a magazine, called *Stiel*.

Succession is a very complex issue and the fact that legislation on the inheritance law has been reviewed recently, makes the issue even more complicated. Inheritance comprises the transmission of land, buildings, but also capital, machinery and livestock. The Flemish government recognised the need for an organisation that focuses specifically on farmers that need help, called 'Boeren op een Kruispunt' (Farmers at a crossroad). The organisation was established in 2007 by the Farmers Union

Boerenbond, KVLV Agra, and Algemeen BoerenSyndicaat (ABS). Statistics so far demonstrate that farmers need specific help on various issues (from administration to moral support) in a phase of succession or exit without succession. Boeren op een Kruispunt receives over 100 calls per year form farmers that need help.

Buying or leasing land

New entrants looking to start a farming business without inheriting one will have to find land. However, access to land for entrepreneurs outside agriculture is extremely limited. The average price of agricultural land in Flanders was 52,137 EUR per hectare in 2018 (Platteau et al., 2018). This price has increased by 35% over the past 4 years, an enormous increase. However, the exact price depends on the size, the location, the soil quality and whether or not there is already a lease running on it. New entrants might not be able to fund this price and resort to land leasing. Land leasing of agricultural land in Belgium falls under a specific tenancy law called 'pacht', unique for agriculture. This law strengthens the position of the tenant in an attempt to guarantee a farmer career long land security. Roughly 30% of all agricultural land in Flanders is owned by the farmer cultivating it, 70% is leased from the land owner (Statbel, 2018). A study performed by the Flemish CSA-network surveyed its 55 members and found that 47% owns the agricultural land. This is in line with the data from Statbel that shows that smaller farms are more likely to own the land they cultivate. Of those that do not own their land, only 25% are using the official tenancy law. Those who don't often have only a verbal agreement with the land owner, which results in very high uncertainty and short cancellation periods.

One initiative to support new entrants is 'De Landgenoten'. This initiative aims to provide starting organic farmers with land at a reasonable price for a career long contract. The main strategy is to acquire land via crowdfunding, donations, purchases and leasing. On top of that they provide services for public (and private, but that is a minority) land owners who are looking for a farmer. The organization has struggled with the increasing land prices and the fact that the rent they had to ask from the farmers was simply too high.

Business models

Entrants usually choose one of three business models: conventional business models, hybrid business models—in which conventional business models are combined with diversification activities and alternative business models (s. Figure 16).

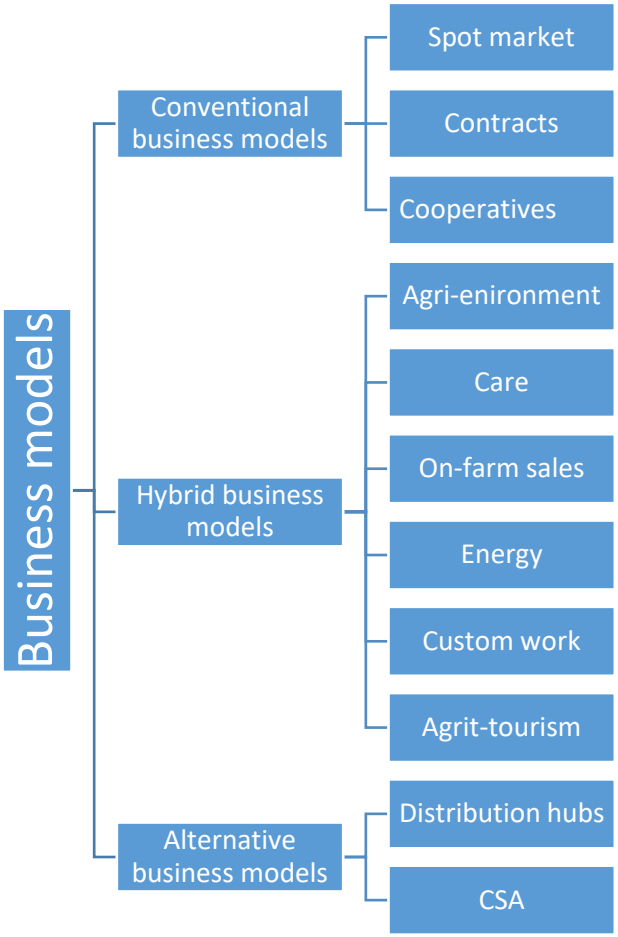


Figure 16: Business models in Flemish agriculture

Conventional business models

In terms of value proposition, conventional business models are based on cost-minimisation strategies, resulting in increasing commodity specialisation and increasing farm size. In some livestock sectors, farms even specialise vertically, that is, in a specific production stage, for instance by producing piglets that are sold to specialised pig fattening farms. Dairy and arable farmers tend to outsource some routine activities that require large machinery. Large farm sizes require large capital investment (particularly when labour is expensive), which forms a significant barrier for both successors and de novo entrants. Often, those aiming to take over the parental farm take on a job to save money in order to be able to make the necessary investments or buy out siblings (up to 70% of young farmers according to a 2013 survey – Groene Kring, 2013).

Value capture is a problem in conventional business plan, as farmers generally have a weak bargaining position vis-à-vis buyers such as food processing companies or traders. In some sectors, there has been a strong cooperative response, most notably in the dairy sector and the fruit & vegetable sector. Horizontal cooperation through producer organisations is rather limited in the arable and other livestock sectors. Moreover, the intensive livestock sector is characterised by tight vertical

coordination with feeding companies, with contracts that not only fix volumes and prices, but also specify input use.

More recently, farms are engaging directly with retailers without intermediation of cooperatives or wholesale companies. Such contracts tend to last much longer, as they are based on mutual trust. In other words, these contracts are relational rather than transactional. Having a good contract has become an important asset when negotiating with banks for investment loans. Moreover, retailers see such contracts as opportunities to strengthen their own private labels by differentiating these from the private labels of other retailers.

Income diversification is mainly sought by off-farm work performed by one of the partners.

Mixed business models

A significant amount of farms have diversified into on-farm, non-agricultural activities, taking advantage of the unique location-specific resources farms dispose of. Often, the spouse will engage in such activities as an alternative to off-farm work. An important prerequisite is that other skills and networks are needed to carry out these activities in a successful way. The total number of farms engaged in such activities is unknown as one farm may take on several activities simultaneously. In 2016, the Flemish government reported the following numbers (share of total number of farms in Flanders between parentheses – Platteau et al., 2018): 446 care farms (1.9%), 361 farms with agri-tourism (1.5%), 80 open-house farms (0.3%), 2952 farmers with agri-environmental measures (12.3%), 857 farms offering custom machinery services (3.6%), 2002 farms with on-farm shop (8.3%) and 252 farms producing energy (1.1%). Most of these activities are actively supported through the Flemish Rural Development Programme, mainly in the form of capital subsidies for investments. In addition, both government and private sector have set up dedicated initiatives to support such activities, such as care farming, on-farm processing and sales, agri-environmental measures and agri-tourism. Farmers specialising in delivering machinery services for other services is a private initiative, not supported by government.

Alternative food networks

Alternative food networks (AFNs) differ from mixed business models, as AFNs emerged as a response to the conventional food system rather than as a set of diversification strategies that complement low income from a conventional business model. As a result, most of these farms use organic production methods, resulting in a value proposition that combines ecological aspects with social aspects by adding the personal relationship and trust between producer and consumer. Within AFNs, a distinction can be made between independent farms contributing to these networks one the one hand and farms that have a fundamentally different business model based on consumer participation (i.e., community-supported agriculture, CSA).

The number of farms contributing to AFNs is unknown, as these AFNs are usually organised around distribution hubs that are run by volunteers (often consumers). It is estimated that there are 54 ‘buurderijen’ (initiatives based on the French platform ‘La Ruche qui dit Oui!’) with almost 55,000 members (consumers), 172 food buying groups (‘voedselteams’) with around 3,500 members and 406

pick-up points for vegetable boxes involving around 10,000 members (Platteau et al., 2018). Farms supplying these networks typically use different sales channels, including also conventional sales channels. These initiatives are mainly to be found in the fruit and vegetable sector.

CSA farms have a radically different business model, both in terms of value proposition and value capture. CSA farms are relatively small (1-3 ha) and produce a wide range of vegetables in long rotations. Consumers pay the CSA farm a fee at the beginning of the season and usually pick fruit and vegetables while they become available. Alternatively, CSA organise box schemes for their members. In this way, risk is shared between farmer and consumers in two ways. First, the farmer is certain about his income which is prepaid. Second, consumers adapt their demand and preferences to what is available at the farm, thus avoiding waste. The first CSA farm was established in 2007. Over the last decades, the number of CSA farms has increased continuously, with about 41 CSA farms currently. The majority of the CSA farms (if not all CSA farms) in Flanders are run by farmers with no farming background. The small scale and alternative business model make CSA an attractive business model for de novo entrants.

Finally, the number of urban farms is rising. They are typically not registered as a farmer, but as an ordinary business. Urban farming can be very diverse ranging from rooftop gardens to mushroom production using coffee waste. Some are specifically focused on the circular economy, combining for example fish and tomato production. They are usually using direct sales channels, experiment with using new spaces and infrastructures, are creative in finding money (e.g., crowdfunding), but are quite distinct from conventional agricultural networks (Van Bogaert et al., 2017).

2.2.3 France

Introduction

Agricultural structures are characterised by a large majority of individual family farms whose capital is held by the farmer. However, the development shows a growing interest in collective structures. The agricultural output is very diversified but conceals regional specialisations.

The main model of entry into farming remains the takeover of the family farm by a family member. For reasons of competitiveness and rationalisation of work, another way is to join an existing farm. Finally, there is the development of small farms, mainly run by people who do not come from an agricultural background.

The arrival on an existing farm is generally followed by a restructuring of the farm: expansion, new production workshop, diversification or association. For new farm's establishment, the models are based on short supply chains, a product with high added value or production that does not require a lot of space. These are mainly for questions of values and economic reality.

Methodology

This desktop research was carried out by reviewing the relevant academic and grey literature in a french context. The Newbie guidelines were followed in accordance with work package 2.1 of the deliverables of the project.

France Farming Structures

In 2016, there were 437,000 farms in France (a steady decline during the last 50 years) with an average surface area of 60 ha. This hides great disparities, with approximatly 17% of french farms who use of 36% of the agricultural surface area.

For a long time, individual family farms have been the unique model in agriculture. Although they are still a majority today (64%), they are declining in favour of associated farms (36%). This trend can be explained by a need for competitiveness by rationalising and enlarging the farm but also for a better work organisation between partners.

The graph shows the diversity of French production (Eurostat, 2018). While crop production remain dominant over livestock, these global data conceal the reality of regional specialisations. Crop production is concentrated mainly in the centre (cereal zone), the north (beet, potatoes) and the south-west (maize). The west is favourable to livestock farming (cattle, pigs, poultry) while the small and high mountain areas, which are difficult for farming, are focused on cattle, sheep and goat farming. Fruits and wine can be found in specific areas due to climate and on the Mediterranean rim. Wine occupies little surface area but remains a high value-added production, mainly for export (18%).

These regional specialisations have an influence on establishing farmers: the proximity of a local economic fabric will facilitate or constrain the establishment, depending on the choice of production.

The vast majority of farms are based on leased lands, a trend that is accelerating with the gradual decline in the number of farms and their expansion. This observation can be explained by a strong land policy and a state-supported market. This does not prevent the difficulty for new entrants to gain access to land due to competition between farmers and ever-increasing urbanization.

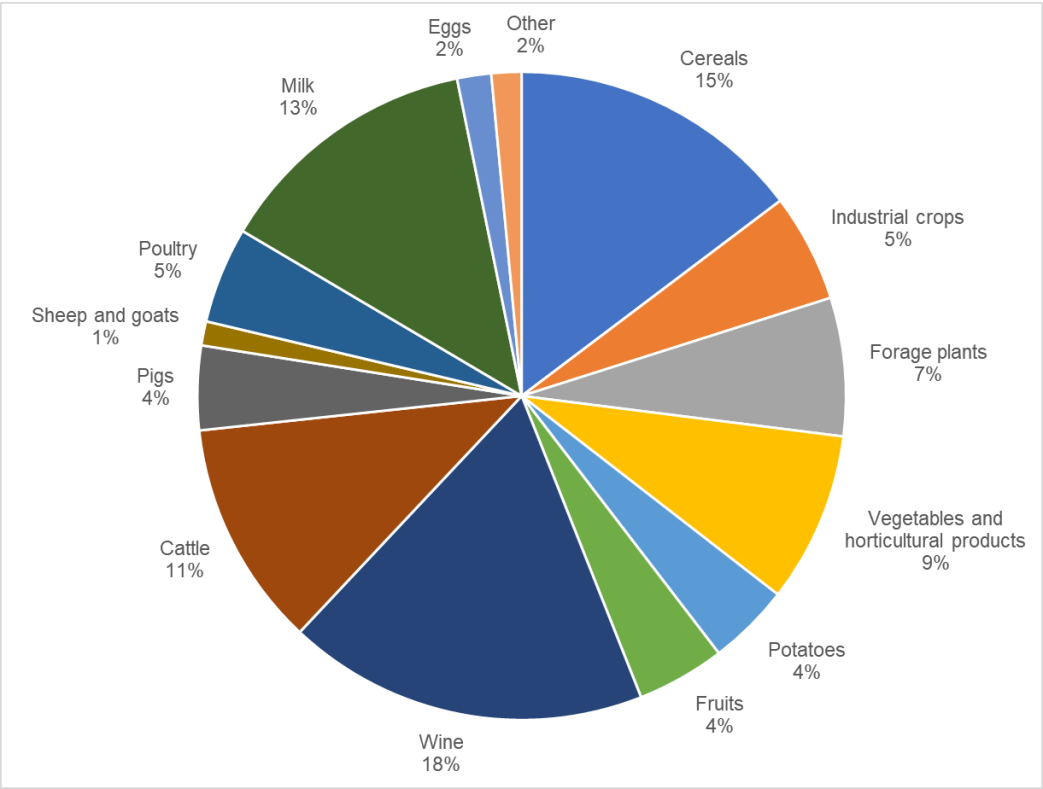


Figure 17: Output components 2015-2017 average (Eurostat, 2018)

Entry models

In the context of this review, entry models represent the mode of entry that new entrants use to begin their career in farming.

In France, the common term as “non-family successors” include the people not raised in a and farmers’ children which start farming on a farm outside the family farm. Most studies draw on this definition. For the Newbie project, the steering group offers to enlarge and consider as new entrants the following cases:

- Takeover of an existing farm with a major change to the farm operation (the new entrant was raised or not in a farm)
- Partnership of an existing farm and maintain status quo (the new entrant was raised or not in a farm)
- Establishment of a new farm (the new entrant was raised or not in a farm)

The people in the following cases wouldn’t be considered as new entrants : takeover of an existing farm and maintaining status quo

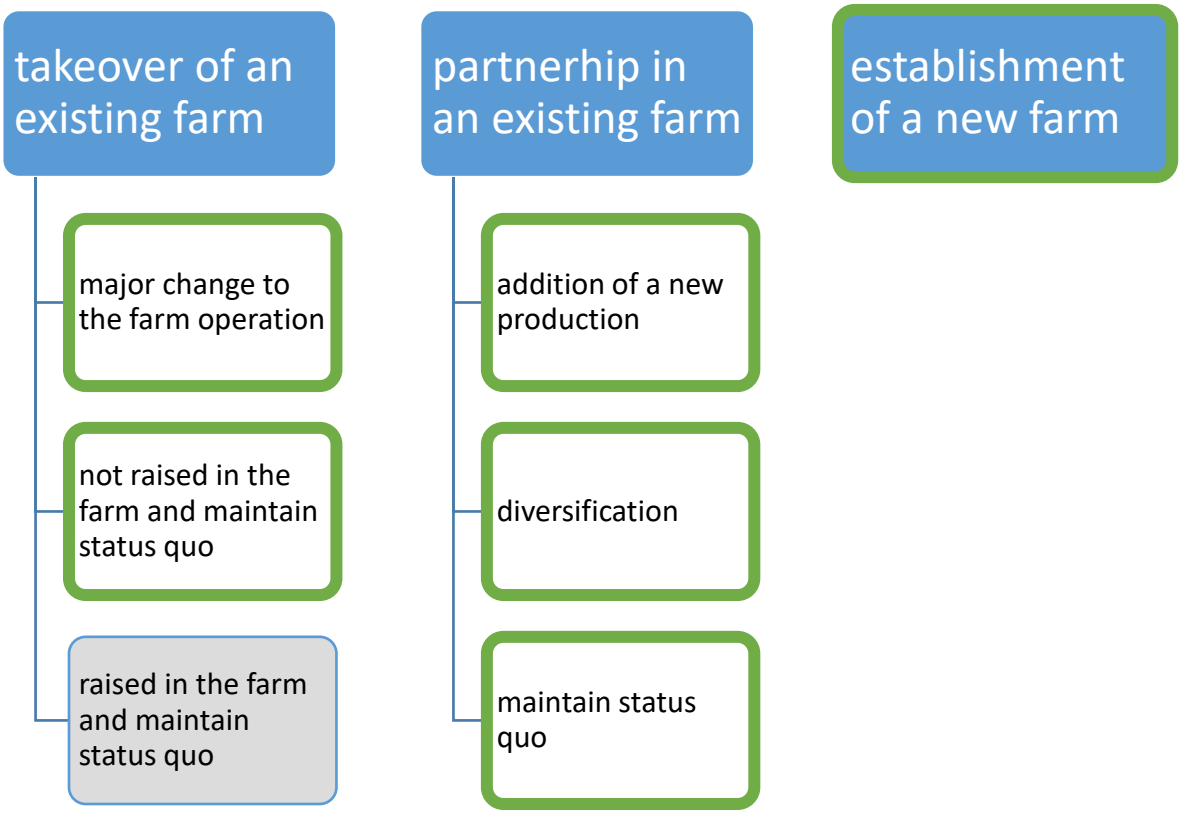


Figure 18 shows the key methods of entry to farming for new entrants.

The “non-family successors” represent 30% of farm’s establishment which received European aid, a constant growing number, among which 27% are not from a farming background. There is a large disparity of the origins depending on chosen productions. In livestock production, the share of the people out of the family context is really low.

The main entry model to farming is succession in the family which represent 2/3 of new farms in 2017.

While this form remains dominant, it has been steadily declining over the last twenty years in favour of installations outside the family environment (32% of installations receiving assistance in 2017). For those without land, they choose to take over all or part of a farm, choose to join an existing farm or create their own farm.

Concerning *family succession with significant change in the operation farm*: the succession of the family farm is generally accompanied by a bring up to the standards of the facilities along with an expansion of the farm lands to comply with the economic goals expected. This is due to the need to generate more value, bring facilities up to standard or improve work organization. There are a number of possible scenarios: adding new production, diversification, economic value added, association…

Depending the production, raising capital necessary to the succession can be a major hurdle : for example, the succession of a suckler-cow farm needs a high forage area with appropriate buildings coming with a low profitability.

Inter-generational transfer of land goes through a phase of association between parents and children with the creation of GAEC, and in the future the children purchase the shares in the GAEC. The transfer is mainly realised by following the young farmer’s installation scheme to get the installation aid.

Concerning Establishment of a new farm - the identified issues:

The access to means of production: the first difficulty encountered by project leader is the access to land. In addition to the land cost, the strong concurrency between farmers and the assignment conditions to access land can penalise the project leaders (depending on his situation, the project leader is more or less a priority in the attribution of land)

The access to funding, including installation aid: for the ones who are eligible for a Young Farmer Grant (YFG), the candidate and his project must fulfil criteria (age, education, minimum farm surface…) but the project also has to conform to economic goals. According to the project, the installation aid may be vital (in particular in livestock productions). It can be a serious impediment for innovative projects or for people who do not fulfil the criteria. We estimate that 2/3 of the new entrants are excluded from the YFG.

The incorporation in the agriculture sector and on the territory: depending their paths, new entrants can add up to three migration forms (social, geographic and professional). The capacity to mobilise external support (helping hands) is a determining factor to sustain the farm.

A few elements from a study completed in 2013 by the MRJC (Rural Youth Organisation) and the JA (Young Farmers) on a sample of 230 newly-established farmers:

- Almost half (48%) have a family member which was a farmer
- 75% have a diploma higher than baccalaureate (level V)
- Two thirds of them have a professional activity longer than 5 years before they take up a farm

In France, installation can be supported by the CAP as a condition of being eligible. That access condition influences the project and acts as a regulation and orientation tool.

According to data published in the black book of installation, the number of supported installations keeps lowering and represents one third in 2010.

The idea that renewal of generations in agriculture issue needs installation of newcomers is followed by everyone, but it is burdened by installation aid conditions which limit innovation capacity driven by newcomers.

The setting up of non-family successors/newcomers and their eligibility for the installation aid scheme depends on their situation and their wish regarding the installation aid.
If he/she is eligible for installation aid and if he/she wishes to take benefit from it: they follow the young farmer's installation scheme and they have to present a project which will produce a minimum income in the 5 next years. Consequently, they have to make the investment necessary for achieving their economic goals.
If they are not eligible or do not wish to take benefit from it: they are free to ensure a progressive investment. In terms of funding, they can use personal or family savings, apply for crowd-funding or a bank loan.

Progressive establishment of new entrants can mean a different starting time between several enterprises, pluri-activity (accumulation of farming work and employment).

In those two cases, new entrants can rely on facilities provided to start or enter a farm that offers placement or agricultural test-area.

2.2.4 United Kingdom

Introduction

Access to land is consistently found to be the largest barrier to new entrants to farming across Europe (Sutherland, 2015; Zagata et al., 2017). New entrant access to land issues differs between EU countries, and within the UK. In the UK, there are several pressures facing new entrants to agriculture, and influencing their entry to the agricultural sector. Critically, the price of UK agricultural land is typically higher than could generate a return from agricultural production. The rising value of the land makes it a good investment opportunity, thus increasing competition for land and creating a disincentive to sell. In remote, rural areas land is more readily available, but it is more difficult to establish viable farming businesses, and potential new entrants may be reluctant to move to such remote areas with increased travel requirements and reduced connectivity (e.g. broadband issues). Even so, remote areas of

Scotland are experiencing 'gentrification' – the influx of household seeking attractive rural lifestyles is driving up land prices in visually appealing remote areas (cf. Stockdale, 2010).

Long-term familial occupancy of land also makes farmers and crofters reluctant to release their properties. Family succession remains the main route into agriculture for younger generations (ADAS, 2004; Lobley, 2010; Chiswell, 2014)[1], with non-familial access inhibited due to land access issues and high capital requirements. Nonetheless, a recent report by the Scottish Farm Land Trust identified almost 1000 potential new entrant farmers in Scotland (SLFT, 2017). A concern relating to smaller-scale farming, identified by McKee et al. (2018; see also ADAS, 2004), relates to the capacity of farms to support more than one livelihood, and raises intergenerational transfer issues. When land becomes available, new entrants find themselves competing for land with existing farmers, who are attempting to achieve economies of scale (see also Cook et al., 2008). Due to a high concentration of private landownership, an ongoing process of land reform in Scotland is creating both opportunities and challenges to new entrants. The Scottish Government aim to increase the availability of land for new entrants to agriculture, in particular through encouraging community landownership, traditional tenancies, and mechanisms such as share or contract farming, as well as other joint venture models, between existing farmers, landowners, and new entrants (SLC, 2017; SLC, 2018). However, many landowners are reportedly choosing to bring farming within their main land-based activity (farming 'in-hand') or though contract farming arrangements, rather than provide tenancies, due to the perceived risk of tenant right-to-buy. This policy agenda is specific to Scotland; further detail on the entry models to agriculture across the UK will be considered in Section 3.

Methodology

This desktop research was carried out by reviewing the relevant academic and grey literature in a UK context. The 'Newbie' project guidelines were followed in accordance with Work Package 2.1. This report was informed by the recent research report commissioned by the Scottish Land Commission by McKee et al. (2018).

Entry models

Qualitative research illustrates a range of new entrant business models in existence in the UK, and proposed, including inheritance of existing businesses, the establishment of farm business partnerships, joint venture options such as contract farming and share farming, as well as more traditional tenancies and seasonal leases (cf. McKee et al., 2018). Farming successors gain entry to agriculture through inheritance of farmland ownership and/or through inheritance of a farm/croft tenancy. Newcomers to agriculture are required to gain entry through becoming tenants, contract or share farmers, or through purchasing farmland.

Agricultural tenancies are the most common and well-established mechanism for providing access to land for new entrants to agriculture. A number of tenancy options exist in terms of timescale,

[1] The Farm Business Survey for England reports that 27% of farm businesses surveyed had no nominated successor in 2013/2014 (DEFRA, 2015). It may be interpreted that this reflects the ratio of family succession vs. non-family succession/newcomers in England (i.e. approximately three quarters family succession, one quarter non-family/newcomer), and arguably across the UK due to common issues facing succession in England, Scotland, Wales and Northern Ireland.

conditions for renewal, and release from contract; these are summarised in table 3. Agricultural tenancies are tightly regulated in Scotland. The wide-ranging Land Reform (Scotland) Act 2016 increased the rights granted to tenant farmers, in particular, including controversial provisions for secure '1991 Act' tenants to sell their tenancy back to the landlord on retirement, or on the open market as a secure tenancy to a new entrant or for a farm expansion. These complex agricultural tenancy reforms are described in detail by Lean (2016); however, it is suggested that purchase of an assignation is less likely as an entry model given the capital costs associated.

Table 3: Agricultural tenancy types in the UK suitable for new entrants

Country	Tenancy type	Description
Scotland*	Short Limited Duration Tenancies (SLDT)	Up to 5 years, introduced by the Agricultural Holdings (Scotland) Act 2003 (the '2003 Act').
	Modern Limited Duration Tenancies (MLDT; replacing LDT)	A minimum 10 years (with break clause), as introduced by the Land Reform (Scotland) Act 2016 (the '2016 Act').
	Repairing Tenancies	A minimum 35 years, as introduced by the Land Reform (Scotland) Act 2016 (the '2016 Act'), but not yet enacted.
	"1991 Act Tenancies" or "secure tenancies"	Entered into under the Agricultural Holdings (Scotland) Act 1991 (the '1991 Act') or preceding legislation, where the tenant's security of tenure is protected by the legislation (can be let for a term of years or lives of the tenant).
	Limited Partnership Tenancies	The landlord or their agent is the limited partner and the tenant is the general partner. The limited partnership lasts for a minimum term specified in a partnership agreement. At the end of the term specified in the partnership agreement, either the landlord or tenant can bring the partnership to an end, which ends the tenancy.
	Crofting tenancy	"Crofting tenure gives wide-ranging rights to crofting tenants including the right to pass on the tenancy to members of their families, and to purchase either the croft house site or the croft land"[2]
England and Wales	1986 Act tenancies, 'full agricultural tenancies', or Agricultural Holdings Act tenancies	"These tenancies usually have lifetime security of tenure. Note that 1986 Act tenancies created before 12 July 1984 can also carry succession rights on the death or retirement of the tenant as long as the potential successor meets certain criteria. Close relatives of a deceased tenant can apply to succeed the tenancy within three months of the tenant's death. Two tenancies by succession can be granted. This means that the grandchildren, for example, of the original tenant will be able to continue the farm business"[3]
	Farm business tenancies, subject to the Agricultural Tenancies Act 1995	"The landlord and tenant have a lot of freedom to agree matters between themselves. The requirements of a Farm Business Tenancy are as follows:

[2] From: 'Crofting Law', available online: https://www.solicitors-scotland.com/pages/crofting-law (accessed: 6.7.18; last updated: 2017).

[3] From: 'Agricultural tenancies', available online: https://www.inbrief.co.uk/agricultural-law/agricultural-tenancies/ (accessed 6.7.18; last updated: unknown).

		• at least part of the land must be farmed throughout the duration of the tenancy, and; • the landlord and tenant must have exchanged notices before the tenancy began confirming their intention for the tenancy to remain a Farm Business Tenancy throughout the tenancy, or; • the tenancy must be primarily agricultural. The landlord and tenant have the right to negotiate terms relating to length of term, rent levels and rent reviews" (see footnote 2; see also: Downing and Pratt, 2016).
Northern Ireland	'A fee farm grant'	"A hybrid form of land tenure. A fee farm grant is similar to a fee simple (i.e. a freehold estate), but subject to payment of an annual rent ("farm") and covenants" (Wade and Boitel-Gill, 2015: 80).
	Conacre	Seasonal grazing agreements or licenses for agricultural activities; very short term.

*Please note: this list does not include tenancies contained within the Small Landholders Acts.

As detailed in the Scottish Land Commission's Strategic Plan, a long term outcome is that the "the number of agricultural units managed through a lease or joint venture will be rising" (SLC, 2017). A joint venture maybe defined as: "form of co-operation, formed in a legal manner, between two or more parties to form a business relationship, other than as landlord and tenant" (FAS, 2017:1). Joint venture models therefore include (i) contract farming, (ii) partnerships, and (iii) share farming.

Contract farming

This involves the outsourcing of operational activities on a piece of land by the landowner, whereby an agreement would be put in place for activities to be undertaken by another party ('the contractor'). The contractor would typically provide labour and machinery and is remunerated with a contract fee and share of profits associated with farming on that land. A detailed description of a standard Contract Farming Agreement (CFA) is provided by the Farm Advisory Service in the Guidance Note on Joint Venture Farming (FAS, 2017). Contract farming offers opportunities for all types of agricultural enterprises, but has traditionally been suited to arable and vegetable production, as explained by focus group participants. Whilst there is perhaps less experience of contract farming with regard to livestock (in Scotland in particular), case studies exist of successful business arrangements utilising livestock hire agreements. There is a need for further research to establish the scale of contract farming in the UK, the sectors utilising contracting, and the 'risk-to-return' ratio for farm businesses.

New entrants may utilise this as an opportunity to access knowledge and experience held by the existing farmer, pertaining to the land and/or farming activities and practices. It is less likely to constitute the 'first rung' on a farming career ladder for individuals entering agriculture, due to the need for capital investment (e.g. machinery to use to undertake the contract), or previous agricultural training. In instances where a farming successor is not in place, relationships and trust built around

this type of arrangement may underpin new entrant career progression (e.g. expanding area of contracting activities, creating new tenancies, etc.). In the first instance, contract farming does not provide land access, but a business opportunity for a new entrant to agriculture. There are market challenges to new entrants seeking contracting opportunities; and successful contracting businesses across Scotland with no connection (i.e. through tenancies or ownership) to land. In this regard, it is difficult to assess the scale of the sector and the potential for new entrant access (in particular, in Scotland).

Partnerships (e.g. equity partnerships, junior-senior partnerships, etc.)
As a set of options, these represent different ways of co-operation and interaction between existing farmers and new entrants committed and legally bound to run the farming enterprise together. Partnerships consist of a number of partners in a business, governed through a partnership agreement which sets out the partnership share of assets and profits. Two owners of a business constitute a partnership. Each partner is taxed on their share of the partnership profits. Farm partnerships can be used to formalise succession processes, and to share both responsibility and reward in a farming business. A partnership allows for older and younger generations to be actively involved in the farm business together, and to share experience and knowledge. Uptake of partnership arrangements is most often amongst families, but the mechanism may also be considered an option for non-familial succession. In order to build trust between the potential partners, a pathway to partnership approach is recommended, for example through initiating an employment relationship, or through a land matching service (e.g. Land Mobility in Ireland).

A new partnership presents an opportunity for pooling resources in a way that benefits both parties. Typically, the existing landowner would input capital assets and the new entrant might input labour, new knowledge or skills. The land title may be safeguarded through licensing or leasing of land for use by the partnership. The existing farmer can retain full ownership of assets and may decide to transfer all or some of assets at later points in the partnership process. In contrast to tenancy agreements, the duration of a partnership can be defined by the partners whilst drawing up the agreement document. Partnerships can have positive benefits in terms of support payments; provide tax saving opportunities, and income tax credits, where partnerships are formed in succession planning.

Similar to contract farming arrangements, partnerships are unlikely to represent the first rung on the farming career ladder (except in familial succession), but may represent a progression where trust has been built through another type of arrangement (e.g. contract farming, tenancy, employer-employee relationship). As explained in the detailed guidance provided by the Farm Advisory Service, a partnership may be a route to farm ownership otherwise out of reach to a new entrant
(FAS, 2017).

Share farming
Share farming represents a form of co-operation whereby parties join resources to operate the farm together, but operate as independent businesses, therefore jointly accepting full commercial risk as well as production gains. Typically, the existing farmer provides land (retaining tenure) and other fixed assets and the new entrant party provides labour and other variable inputs. A 'farm plan' forms the basis of agreement between parties; each party receives a predetermined share of farming outputs (Price, 2014). Share farming agreements govern the asset and profit split of share farming

arrangements. Depending on which assets from each party within the agreement are used within the share farming operation, the share of the income and expenses are divided up to give a return on the assets or work put into the enterprise. This split will give the share of income and expenses derived from the enterprise attributable to each party within the share farming arrangement.

Share farming offers an opportunity to step back from the day-to-day, physical aspects of farming (Price, 2014), and provides an option for existing farmers to reduce their level of involvement whilst maintaining interest and status, including tax benefits due to retaining control of the land asset. All parties are not tied to the requirements of a tenancy or partnership agreement. Share farming may also be considered an opportunity for farmers who wish to expand their farm business, but have financial limitations (e.g. with regard to land rental prices) or do not wish to enter tenancy agreements themselves. There are positive examples within the dairy and sheep sectors in Scotland, with learning transferred from an established share farming system in New Zealand. Indeed, the key informant interviewees describe the positive impact on farm business profitability where a share farming arrangement has been established with a new entrant, as an alternative to 'winding down' pre-retirement. Share farming provides an opportunity for farmers to transfer skills and knowledge to new entrant farmers, ensuring the ongoing legacy of their farming career and enhancing the experience of new entrants to agriculture.

This option is considered less appealing to existing farmers where farm profitability is low, however the counterview is highlighted by the key informant interviewees (i.e. depending on the reasons behind low profitability, the potential exists to increase profitability through increased human capacity). Share farming agreements are not 'one-size-fits-all' and the definition of 'share farming' appears to need greater clarity from a legal perspective. The key informant interviewees highlight a lack of translation of share farming templates (i.e. from New Zealand or England) to the Scottish legal system regarding, and little awareness within the industry regarding the distinctive benefits of share farming vs. contracting arrangements[4]. The discourse around share farming appears to relate to concerns of land renting on the part of landowners and owner-occupiers, whilst there is a will, landowners are reluctant to enter into alternative models such as share farming. Nonetheless, share farming provides a mechanism for new entrants to develop experience and learn from an existing farmer, whilst also building capital (e.g. a livestock herd) and gaining access to the land resource. It also can provide a longer-term option than other joint venture models, as both parties have a joined interest in the viability and success of the farming enterprise.

Business models

Succession is by far the most common entry point into agriculture in the UK. Symes (1990) argued that farming is a closed profession because of the resources needed to operate a commercially successful business. Successors typically either carry on the status quo, or they try something new that is a variation of the current farm activity, due to available resources (cf. Sutherland et al., 2012). In contrast, new entrants to farming typically don't have the resources behind them to start a large-scale commercial operation, so they focus on niche markets. We are not aware of any comprehensive research on new entrants to farming in the UK, but we know from studies of organic farming that new

[4] However, overcoming this lack of awareness is currently in focus, see for example: SLC (2018) and definition by FAS (2017: 4).

entrants are common, i.e. organic farmers are consistently found to be younger and also to have less farming experience, and therefore are more likely to be new entrants (Rigby et al., 2001; Padel, 2001; Lobley et al., 2009). The business model arising is to produce a niche product to achieve higher financial returns with lower capital investment. Organic farmers are also more likely to be involved in direct marketing.

From the Scottish perspective, there exists little quantitative data regarding the most common business strategies for family successors when taking over the farm business. This lack of data will change with the forthcoming 'Farmer Intentions Survey' establishing a baseline of information regarding new entrant businesses, planned for autumn 2018.

Hurdles

Depending on individual and regional circumstances, new entrants face considerable challenges in entering the farming sector, particularly access to land, capital, labour, markets and housing, but also business skills and knowledge development on both applied and theoretical levels, as well as the social networks that enable access to these resources. A common issue affecting both familial succession and succession by unrelated new entrants appears to be underpinned by a lack of succession planning in terms of a process of 'easing-out/easing-in', which ultimately could better prepare older and younger generations for the future (Lobley et al., 2010). Previous research and focus group discussions (cf. McKee et al., 2018) have identified a number of financial, socio-cultural, and personal/psychological barriers affecting succession processes and the eventual retirement of farmers.

The succession process has been linked to business development and investments on farms. Potter and Lobley (1996) identified what they termed the 'succession effect', whereby farmers build up resources in anticipation of a successor. Studies demonstrate that successors are more likely to become part of successful businesses. However, there is debate over whether this is because taking over a profitable farm is more appealing to young people (Carbone and Subioli, 2008; Glauben et al., 2009), or because it is the successors themselves who contribute to the profitability of the farm prior to formally taking over the farm business (Lobley and Baker, 2010). In this type of succession pathway it is likely that outgoing farmers will still retain links to the farm and land (CLA, 2018; Riley, 2016), but may face barriers relating to housing, financing their retirement, and relinquishing their role, status, and identity as 'the farmer' (Conway et al., 2016). As a result, they may chose not to 'give up' their farm, opting instead not to retire or lease-out land or bring in a contractor to continue with day-to-day operations. Indeed, it has been found that personal values and ties to their land influence farmers' decisions relating to who they may lease (or even sell) their land to (Grubbstrom and Eriksson, 2018). Riley (2016) explores this 'fuzzy work-retirement boundary', which sets farming apart from other occupations where retirement represents a distinct point in time. The situation described here also illustrates how a 'forgotten army' (as described by focus groups contributing to McKee et al., 2018) of future successors are working in agriculture, but not represented in terms of statistics as they may have small shares in existing businesses, but no legal status as 'the farmer'.

Suggestions of negative ascriptions, or that retirement might be considered as a 'failure' among farmers, is recognised and proposed as an issue to be tackled (Riley, 2016; St Georges House, 2014). The rising capital value of agricultural land, in addition to the considerable emotional and time investment of operating a long-term farming business, makes farmers reluctant to sell their land or

pass meaningful control onto the next generation (Gasson and Errington, 1993; Ingram and Kirwan, 2011). Land may be leased rather than sold to prevent it and associated properties from being lost to the family; under current UK policy structures, this also enables elderly farmers to draw on subsidy payments associated with the land to finance their retirement (Grubbstrom and Eriksson, 2018). Indeed, prospective loss of support payments was acknowledged as the 'elephant in the room' in focus groups undertaken in research by McKee et al (2018) in relation to succession. The UK taxation system is believed to be having an important impact on decision-making and impeding land from being let, shared or changing hands (cf. McKee et al., 2018; Moody, 2018).

In the UK, farming is viewed as a "closed profession" meaning that only those individuals who inherited farming resources could afford to continue farming (Symes, 1990). However, a recent research project found that the way that farm children identify themselves as successors is changing, i.e. regarding choosing farming as a future career choice (Chiswell and Lobley, 2018). This can lead to a lack of farming successors, as farm children evaluating agriculture against other non-agricultural career options; but in some cases it is resulting in by-passing traditional processes of inheritance in favour of positive decisions by farm children to select farming as a career. It was suggested that making the industry more attractive to new entrants (including familial successors and unrelated new entrants) would help to address issues relating to farm succession (McKee et al., 2018).

As well as financial barriers associated with the loss of land and cultural barriers associated with the loss of family heritage identified above, there have been important suggestions made in focus groups relating to a lack of perceived support for farmers in a gradual 'easing-out' process, as a counterpart to supports for new entrants 'easing-in' at the other end of their farming career (Lobley, 2014). Davis et al. (2013) also suggest that counterpart schemes supporting farmers at either end of their careers sees greater efficacy among new entrant schemes relative to those supporting retirement. In the literature, examples of schemes put in place to encourage farmers to retire have generally been found to be unsuccessful (Bika, 2007; Conway et al., 2017; Macaulay Institute et al., 2008). At best these schemes have primarily enabled the earlier retirement of farmers who would otherwise have retired within a few years (Bika, 2007), and at worst, they enable older farmers to lease out land and then recover it several years later (Mazorra, 2000).

So-called 'easing-out' support for retiring farmers may include: awareness raising regarding the importance and benefits of succession and retirement planning, peer support going through the personal psychological journey, opportunities for farmers to act as mentors to younger generations, and potential for a form of succession 'matching system' where no successor is in place (cf. McKee et al., 2018). Alternative opportunities for farmers to confer skills, knowledge, and experience to new generations in the context of a business arrangement can be explored (e.g. through share farming), on the basis that farmers 'like passing stuff on'. This type of opportunity is explored by Ingram and Kirwin (2011), referencing the 'Fresh Start Initiative', which offered a matching service in the south of England. These authors found a 'deep-rooted reluctance' to establish formal long-term ventures where an informal relationship had not already been established, but suggested that future policy support should focus on facilitating and formalising already existing partnerships.

To summarise, in the UK, the key hurdles for family successors when taking over the farm are: (i) lack of succession planning (including 'easing out' support for retiring farmers) and the 'succession effect' on farm business investment. Family successors also share many of the hurdles facing non-family

successors/newcomers to farming in the UK, including access to land, capital, labour, markets and housing, as well as business skills and knowledge development, and the social networks that enable access to these resources. It is likely that the latter challenges are of particular concern to non-family successors/newcomers as they do not have access to the social networks established through family connections, as well as the accessibility of mentorship and knowledge exchange afforded through succession.

Desktop research in a nutshell

- Succession is by far the most common entry point into agriculture in the UK, with non-familial access inhibited due to land access issues and high capital requirements.
- New entrants face considerable challenges in entering the UK agricultural farming sector, in particular, access to land, capital, labour, markets and housing, but also business skills and knowledge development on both applied and theoretical levels, as well as the social networks that enable access to these resources. Critically, the price of UK agricultural land is typically higher than could generate a return from agricultural production. The rising value of the land makes it a good investment opportunity, thus increasing competition for land and creating a disincentive to sell.
- Farming successors gain entry to agriculture through inheritance of farmland ownership and/or through inheritance of a farm/croft tenancy. Newcomers to agriculture are required to gain entry through becoming tenants, contract or share farmers, or through purchasing farmland.
- Successors typically either carry on the status quo, or they try something new that is a variation of the current farm activity, due to available resources. In contrast, new entrants to farming typically don't have the resources behind them to start a large-scale commercial operation; therefore, they tend to focus on niche markets.
- A range of new entrant business models exist in the UK including the establishment of farm business partnerships, joint venture options such as contract farming and share farming, as well as more traditional tenancies and seasonal leases. Land reform processes in Scotland are seeking to increase land availability for new entrants to agriculture, e.g. through encouraging joint ventures between existing farmers/landowners and new entrants.
- A common issue affecting both familial succession and succession by unrelated new entrants appears to be underpinned by a lack of succession planning and the 'succession effect' on farm business investment. Non-family successors and newcomers to agriculture are disadvantaged through a lack of established social networks, mentoring, and knowledge exchange opportunities afforded through succession.

Figure 19 shows a summary of the main new entrant challenges and business models. The image provides a comparison of the challenges between 'ex novo' new entrants and farm successor new entrants.

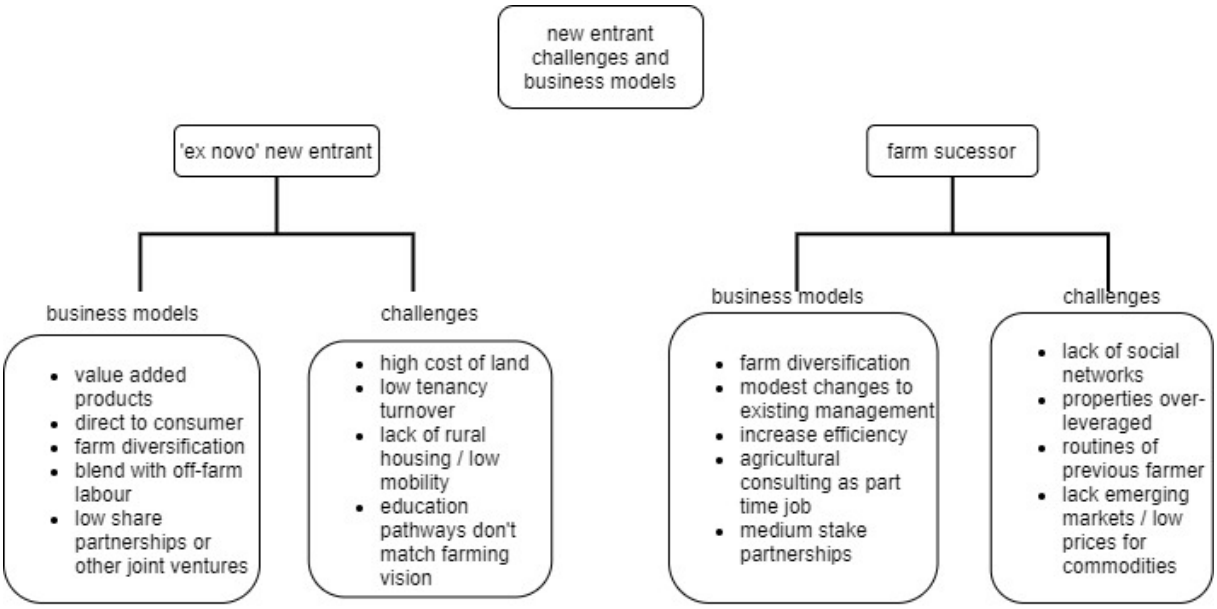


Figure 19: New entrant challenges and business models in UK

2.2.5 Ireland

Methodology

This desktop research was carried out by reviewing the relevant academic and grey literature in an Irish context. The Newbie guidelines were followed in accordance with work package 2.1 of the deliverables of the project.

Introduction

The context of the introduction of new entrants to Irish farming is twofold. The primary context is the method of entry as illustrated in figure 21 and the second context is the business model employed by the new entrant as can be seen from figure 22. In Ireland, the predominant method of entry is where new entrants become involved in and eventually inherit the family farm and the family business model. In recent years we have seen some new entrants change the business model from beef, sheep and tillage to more profitable dairy farming. The second context is that it is difficult for those outside of that family farm sphere to gain access to land on which to farm. To gain access to land, new entrants must either: inherit the land from a relative; buy or lease land or collaborate with an existing owner to operate the land. Ireland has developed, promoted and incentivised many forms of farmer collaboration since 2002, but the cultural change required to create significant uptake has been at a much slower rate.

Irish Farming Structures

Figure 20 illustrates the diversity of enterprises in Irish agriculture and the contribution of each enterprise to gross agricultural output (Eurostat, 2018). Over 55 % of Irish farms are classified as specialist beef production, while the European Commission data from 2018 shows that cattle production represents 30.4 % of gross output. While beef farms are spread throughout the country, they are predominantly located in the western seaboard on more marginal farming areas. Therefore,

the stocking rate in livestock units per hectare tends be lower as the land cannot carry more stock. Eleven per cent of farms are classified as specialist dairy production, producing 29.6% of gross agricultural output. Again, while dairy farms are distributed throughout the country, they tend to be located in areas where the land quality is superior in the south and the stocking carrying capacity of the land is higher. A further eleven per cent of farms are classified as mixed grazing livestock and 13,600 farms are classified as specialist sheep production (CSO, 2010). The data from the Irish central statistics office and Eurostat show that farm enterprises such as pigs, poultry, horticulture and cereal production tend to be less important in relation to gross agricultural output.

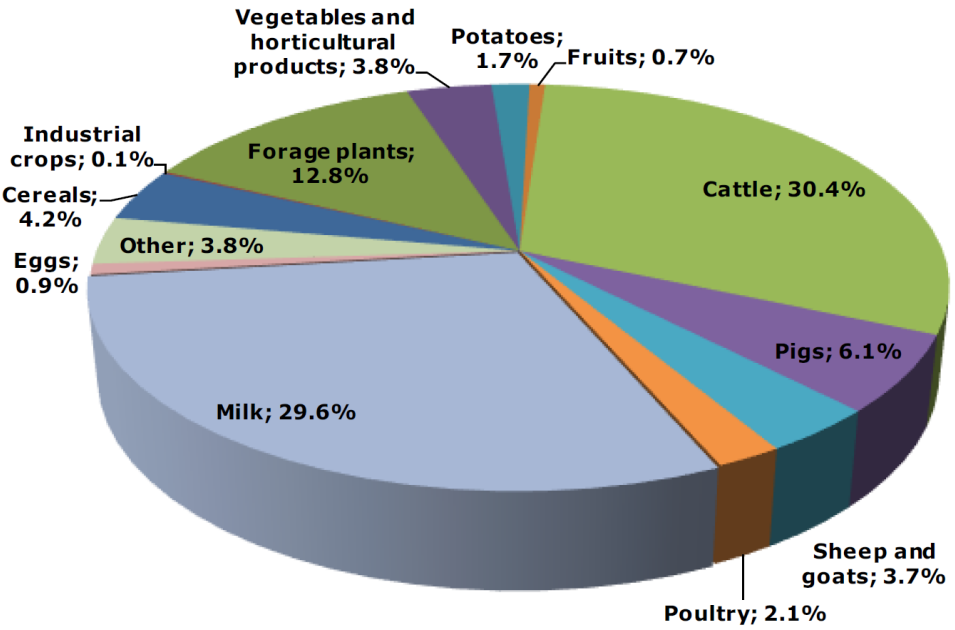


Figure 20: Output Components 2016-2018 Average (EC, 2019)

Entry Models

In the context of this review, entry models represent the mode of entry that new entrants use to begin their career in farming. Figure 21 shows the key methods of entry to farming for new entrants.

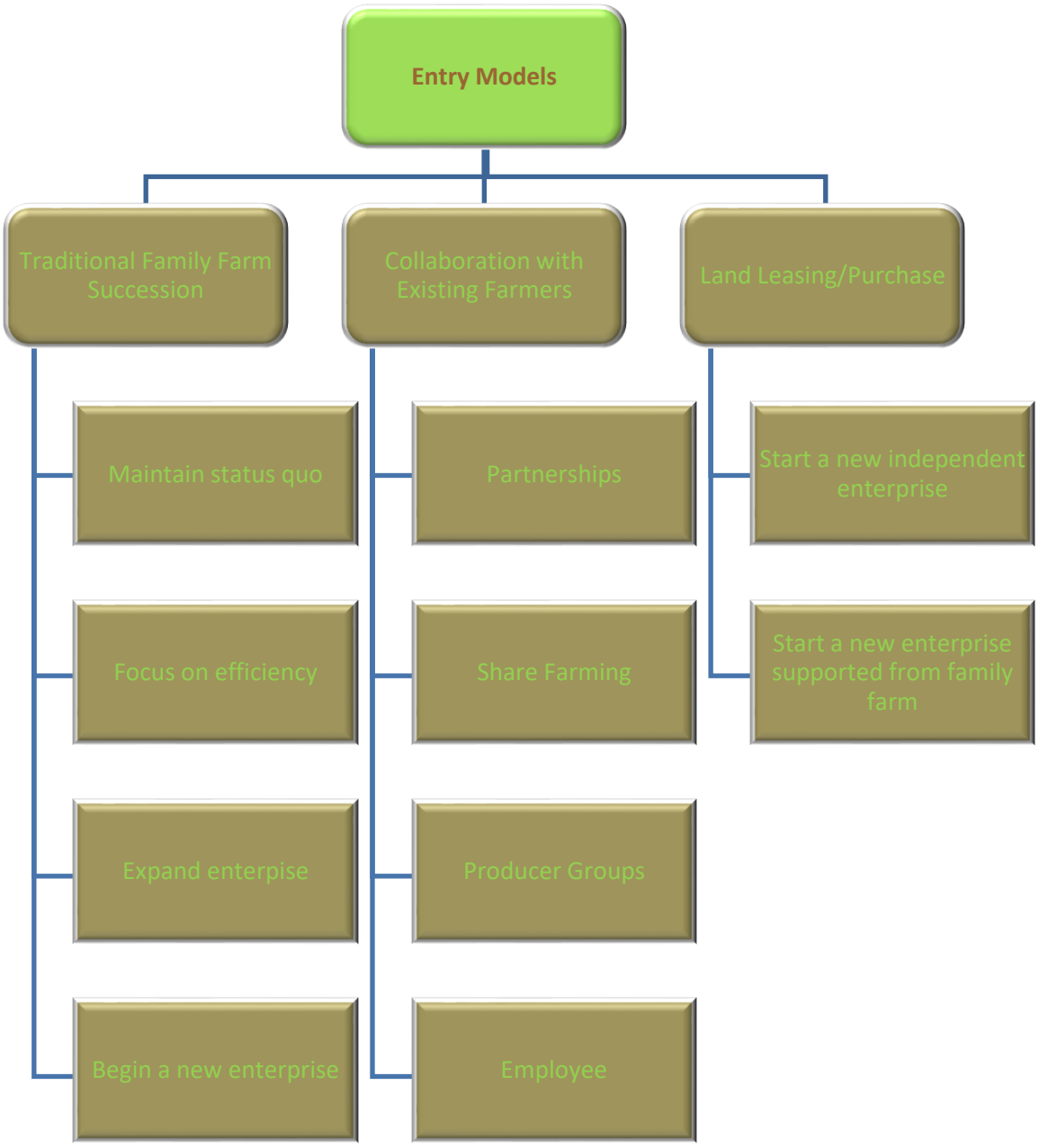


Figure 21: Entry into farming in Ireland

Traditional Family farm Succession

The traditional method of accessing land on which to farm in Ireland is through family farm succession and inheritance. It is still the predominant way in which new entrants enter the agricultural sector. However, succession and inheritance is very complex and is very much dependent on the intra-family dynamics and the individual personalities involved. There is no "one size fits all" for the farm family, (Teagasc, 2017(c)). Sharma et al (2000) cited in Conway (2017), states that for succession in the family business to materialise there must be three fundamental components: an incumbent, who hands over the leadership role of the business; a successor, who takes over and a mechanism by which the transition process takes place. Using this logic, it would appear that currently in Ireland we have the incumbents or older farmers, and the processes by which succession takes place but the number of farming successors is falling. However, this also provides opportunities for existing farmers to expand

their enterprises through leasing or collaboration and also opportunities for new entrants to join the sector.

Background:
Agricultural census data shows that there were 137,500 farm units in Ireland of which, 137,100 (99.7%) were family farm units (CSO, 2016). The average age of farmers in Ireland in 2016 was 55 years of age while the number of farmers who were aged less than 35 years old was just 5%. This age profile is similar to other member states as shown by Eurostat figures in 2013.

In a further study commission by the young farmers association (Macra Na Feirme), up to 48% of farmers indicated that they had not yet identified a farming successor, (Bogue, 2013). This study also showed that the identification of a farming successor was not influenced farm enterprise of area of land farmed. Similar trends have shown up in numerous other studies conducted by private entities such as dairy co-operatives among their milk suppliers. While this statistic is alarming, one has to drill deeper to explore further. The reasons why there was no successor at the time that the survey was carried out, are varied. Some farmers (29%) had no immediate family to inherit. Some farmers (20%) know that their children are not interested in farming, while other farmers (24%) have children but do not yet know if they will become a farmer (Bogue, 2013). It must be said that a proportion of these farmers may have a successor in the future and those who have immediate family will most likely inherit the land even if they do not wish to farm it. Farm inheritors, who inherit land from their parents or other family members but do not wish to farm it themselves, are important candidates for collaboration with new entrants who wish to begin a career in farming in the future.

Succession Planning
Succession planning is widely promoted by various stakeholders including amongst others Teagasc and the Department of Agriculture through the written media and public events. Over the past number of years Teagasc have hosted a national campaign "Transferring the family farm clinics "where farm families can interact directly with solicitors, accountants and other relevant professionals in relation to farm transfer (Teagasc, 2017 (c); Teagasc 2019). Due to the age profile of Irish farmers, these events are targeted at farm families to encourage them to engage with the succession and inheritance process at an earlier stage.

Taxation
Taxation can have a major impact on the length of the succession process and on key decisions around inheritance of land or a farming business through a lifetime gift or on the death of the transferor. Therefore, it impacts directly on the timing of the introduction of New Entrants to farming. There are three main taxes that impact of the transfer of agricultural assets, including land, machinery, livestock and payment entitlements (Teagasc, 2017(c); Teagasc 2019). These taxes are:

Capital Gains Tax
A tax on the increase in value of an asset over the period of ownership. The rate is 33% and is chargeable by the person transferring the assets. The main relief available to business owners is retirement relief where the owner is over 55 and has owned and farmed for the previous 10 years before transfer.

Capital Acquisitions Tax

Known as gift tax and charged at 33%. The main relief for this is Agricultural relief which reduces the value of the asset buy 90% provided that the beneficiary owns greater than 80% agricultural assets (including the gift) on the date of transfer.

Stamp Duty

A once off charge on the transfer of an asset currently charged at 6%. There are two relief's available against this tax for farmers. Young trained farmer relief reduces stamp duty from 6% to zero. It applies if the successor has completed a minimum of QQI Level 6 agricultural education and is under 35 years on the date of transfer. Consanguinity relief currently reduces stamp duty from 6% to 1% where the successor is over 35 or does not have the agricultural education completed. This relief is a significant trigger to motivate farmers to transfer land before the successor reaches 35 years.

In the absence of early succession planning, there may be a significant tax liability where poor decisions are made. When availed of correctly, the relief's can reduce or eliminate tax liabilities on the transfer of a farm.

Inheritance of land is likely to remain the predominant method by which new entrants enter the Irish agricultural industry. However, with fewer farming successors available and an increase in non-farming inheritors, there is likely to be more opportunities for new entrants to collaborate with landowners/non-farming inheritors through partnership, share farming or land leasing.

Purchasing land

Less than one per cent of the total land area in Ireland is offered for sale on annual basis (Central Statistics Office, 2010). While the intensity of competition for land varies geographically, this miniscule proportion creates strong competition for land and can lead to high prices that are beyond the reach of many existing farmers and new entrants alike. The average price paid for land in 2017 was €22,457 per hectare or €9,088 per acre, (Irish Farmers Journal, 2017) rising slightly in 2018 to €9,300 per acre (Independent 2019). Therefore, to purchase a farm of the average farm size in Ireland (32.7 hectares) would cost in the region of €750,000.

However, a press article relayed the experiences of auctioneers involved in farm sales, that there is an increase in the number of smaller holdings coming onto the market as the attachment to the land weakens (O'Brien, 2018). O'Brien goes on to say, that the traditional Irish attachment to the land is weakening and more non-farming landowners appear willing to dispose of the family plot. If this recent experience develops further, perhaps more land will become available to purchase. An increased amount of land available to purchase, may potentially result in a reduction in the price per hectare. In the current climate, it is unlikely unless a significant increase in the land available for sale/purchase materialises, that land purchase would become a viable mode of entry for New Entrants to begin a farm based business venture. A review and outlook of the land market conducted by Teagasc on behalf of the chartered surveys of Ireland showed that forty-nine per cent of those who inherited land and did not intend to farm it, were active in the land market in terms of selling land (SCSI, 2018). However, fifty-one per cent of this group retained the inherited land. One could deduce from this statistic that if the inheritor retained the land but did not intend to farm it, they may opt to collaborate with existing or new entrant farmers (ibid).

Therefore, land purchase is unlikely to be a mode of entry to a farm based enterprise for new entrants unless, they have significant resources from outside farming or from family members.

Leasing Land

The agricultural census in 2010 indicated that seventy per cent of farms were owner operated, while 30 per cent of farms had some rented land from landowners (CSO, 2010). Ireland has a long tradition of short-term renting of land termed "Conacre" that is very well embedded in farming culture. The conacre system is unique to Ireland and is used as an add-on to an existing land base in most cases. This system of land rental developed as practical solution to legally preventing the user of the land claiming ownership rights after a specified tenure of unbroken occupation. It is based on an annual eleven months' rental system where the rental agreement was broken for one month in the calendar year to prevent such claims being made against the owner.

However, the conacre system provides no security of tenure to the tenant as the rental period is only 11 months. This is a disincentive for the tenant to invest in the land or plan a business effectively. Therefore, it is very difficult for farmers to plan their business without long-term security of the land on which they farm.

Long-term leasing of land for more than five years began in the mid 1990's and has grown in importance since. Template lease agreements are available from a solicitor or through the farm organisations in Ireland. Income tax incentives for long-term leasing have been in place for a number of years and were further strengthened in 2014 agri-tax review. This review increased the long-term leasing of land for up to 25 years by providing an income tax incentive targeted at landowners. The income tax thresholds are shown in table 4.

Table 4: Long-term land leasing income tax incentives

Long-term Land Leasing Income Tax Incentives	
Lease Duration	Tax-free Threshold
5 – 7 years	€18,000
7 – 10 years	€22,500
10 – 15 years	€30,000
> 15 years	€40,000

Since the introduction of the tax incentives, a recent study of the uptake of long-term land leasing shows a significant shift to long-term land leasing in response to this policy initiative. Between 2011 and 2015, long-term land leasing has almost doubled to 6,830 leases (DAFM cited in Teagasc, 2017) by 2017 this had increased to 9,790 leases (Teagasc 2019b). Leasing farmland is an increasingly widespread practice for farmers as it allows the property to stay within their family and on their bank balance. It provides a flexible and tax free alternative to selling. (SCSI, 2018)

While the cost of leasing is a significant fixed cost on the farming enterprise, it provides security of tenure on which to build a successful farming based enterprise. Another key advantage of leasing is that it allows the new entrant to be independent of the landowner in operating the business they establish. However, for new entrants, who may experience other challenges such as access to financial capital, the cost of leasing can be prohibitive to starting a new farm enterprise. This is especially true where the land requires capital investment to get the enterprise started and is very much dependent on the nature and profitability of the enterprise established.

Collaborative Farming

Partnerships: Policy makers in Ireland have recognised that collaborative farming business models such as farm partnerships offer great potential to facilitate the entry of new entrants to the agricultural industry. A report on the collaborative farming business structures, states that greater use of these business structures can help to redress the current industry deficits and help deliver on ambitious industry targets (Teagasc, 2013). They offer advantages to new entrants in terms of accessing the necessary resources to establish a business. Farm partnership play a key role in family farm succession while also Collaborative farming options avoid the need to buy or lease expensive land and in certain circumstances reduce or eliminate capital investment as the facilities and infrastructure may already be in place (Curran, 2017; Teagasc 2019). Conway, (2011) concluded that greater uptake of the partnership model can help to increase farm competitiveness, develop the sector's skill set, attract young ambitious entrants to the sector, and increase on farm diversification, while also addressing the social challenges of the 'one man' farm model. The biggest challenge to overcome in a collaborative farming arrangement is to establish a healthy and productive working relationship with the owner of the farm.

In 2015, the Irish Department of Agriculture, Food and the Marine included and supported the farm partnership model through the various schemes available under the current Common Agricultural Policy (DAFM, 2015). Such schemes include the Young Farmer Scheme, National Reserve and the Targeted Agricultural Modernisation Scheme (TAMS) while also ensuring that farmers who operated in a farm partnership were not disadvantaged in terms of scheme benefits under the Green Low Carbon Agri Environment Scheme (GLAS), Area of Natural Constraints (ANC) and the organic scheme. A collaborative farming grant scheme was also introduced to help farmer with the set-up costs associated with establishing a farm partnership.

In addition to the Common Agricultural Policy (CAP), national taxation measures such as enhanced (50%) stock relief against income tax and the recent Succession Farm Partnership income tax credit have been introduced to encourage farm families to take up the partnership model with the farm successor as part of an overall succession plan. Working with key agricultural industry stakeholders, the agricultural development authority in Ireland, Teagasc has developed many forms of collaboration such as farm partnerships, share farming and various contracts such as contract heifer rearing, cow leasing or contract forage cropping. New collaborative farming models such as machinery sharing co-operatives are being developed on an on-going basis.

The attraction of these collaborative business structures for new entrants is to provide access to the necessary resources is to reduce the set up costs for all farmers including new entrant farmers. Collaborating with existing farmers not only provides access to physical resources such as land and farming infrastructure but also to labour ,expertise, skills and experience that new entrants can tap into to further their personal development and ultimately their business model. The landowner is also benefiting from the infusion of youth, new skills and ideas to their farming business model.

Succession Farm Partnerships

In Ireland, the partnership model has proven to be a very good transition business structure to formally include the successor or new entrant to the farm business since its introduction in 2002. Farm partnerships can represent for them a stage towards farm inheritance where they are legal partners in the operation of the farm enterprise (Macken-Walsh & Roche, 2012). More recently the Department of Agriculture, the Revenue Commissioners and Teagasc collaborated to introduce a new Succession

Farm Partnership income tax incentive. The initiative involves an incumbent farmer and his or her successor (s) entering into a partnership for up to 10 years ending in the transfer of at least 80% of the agricultural assets to the successor (s) (Teagasc 2017(d)). The incentive is not limited to families and allows for a situation where a non-related partner could be gifted or sold the farm by the farmer. It is available from the 2017 tax assessment year onwards (Section 667D of the Taxes Consolidation Act 1997).

These specific partnerships between a farmer and a successor involve an annual income tax credit of five thousand euro for a maximum of five years to encourage farmers to develop a succession and inheritance plan with either a family or non-family successor.

Share Farming

Share farming is a similar model to partnership but rather than sharing profits, the parties involved share in the income receipts and also pay a share of the production expenses. They then calculate their own personal profit from the farm business. This model, may suit where an existing landowner wants to step back from the day to day running of the business and this role is handed over to the share farmer. Share farming has operated in the arable sector in Ireland since 2008 and to a lesser extent in dairying from 2015 (source, www.teagasc.ie).

Contractual Arrangements

There are a number of contractual collaborative arrangements operating in Ireland. Contract dairy replacement heifer rearing is where a farmer or landowner is paid an agreed daily rate to rear the replacement heifers for a set time period. There are key weight gain and breeding targets to be achieved. Many New Entrant farmers in Ireland have changed from beef and sheep to this heifer rearing arrangement due to its superior profitability levels over beef and sheep.

One of the main barriers for new entrants is access to capital. A new entrant may be able to access a limited amount of capital and this may not be sufficient to begin the enterprise. Dairy cow leasing is a contractual arrangement developed by Teagasc that is targeted mainly at new entrants to the dairy sector. It also offers an avenue to achieve a financial return on surplus stock for existing dairy farmers. Leasing of cows for approximately 10% of the market value allows the new entrant to have the benefit of production from those animals with the full initial purchase cost. In a short –term arrangement over 2-3 years, the same cows are returned to the owner minus and culls and including new replacements. The criteria must be set out at the beginning and included in a written agreement (source: www.teagasc.ie).

Business Models

Business models are key to the ability of the farm business to provide sufficient income for the members of the farm family or collaborators with the farm owner. This is especially important in the transition phase between one generation and the next or indeed the success of the farming venture for a new entrant. Apart from the scale, technical efficiency and ability of a farmer, there is a wide variation in the profitability of the various farm based enterprises. For example, in Ireland dairy farming is by far the most profitable farm based enterprise when compared with all other land based enterprises. The Teagasc National Farm Survey for 2018 shows that average family farm income for dairy farming was €1047 per hectare, while tillage was €675 per hectare. The income for beef rearing

enterprises was €270 per hectare and sheep was €276 per hectare (Teagasc, 2019 (c)). The various business models that may be used by famers and new entrants are summarised in figure 22. When the level of profitability of the main farm enterprise is combined with the issues of small farm size and land fragmentation a gap may be created between income sources and income requirements.

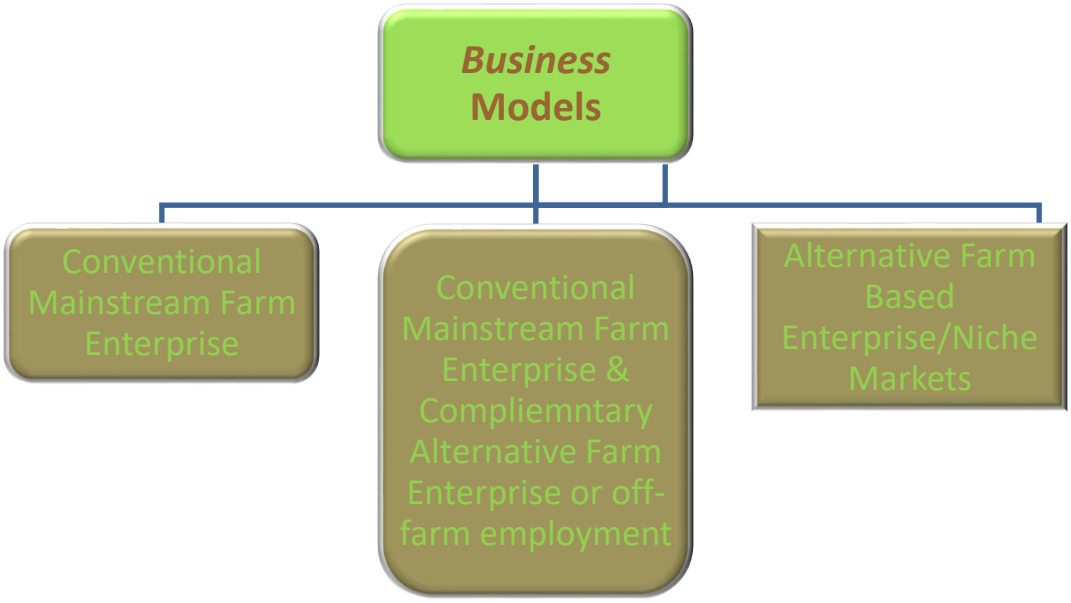


Figure 22: Business Models used in Ireland

In the past and certainly in the present many farm families have filled this income gap through diversification on farm or by securing off-farm employment to meet income requirements. This is reflected in the statistic that forty nine per cent of farm households had a source of off-farm income in 2016 (ibid). (Kennedy, 2002) refers to the option of taking an off farm job as "giving up" in relation to their reaction to poor farm gate prices and the inability to earn a sufficient living from unprofitable or small scale mainstream enterprises. This is an unfair assertion in that not all farmers or new entrants are suitable for beginning a new enterprise. They may not have the ideas, the location, the determination or the passion to develop an alternative but may have the skills to engage in an off-farm job while maintaining a small scale mainstream farm enterprise. The enterprise may in fact become profitable, albeit at a low level, once the requirement to provide the total household income is lifted from its shoulders.

Conventional Mainstream Farming Enterprise

In many cases with traditional farm succession and transfer, the new entrant generally takes over the existing farm enterprise or business model. While these young farmers are taking on an existing farm enterprise and in many cases not changing the nature of the business model, they are nonetheless, "New Entrants" to farming. In the context of age demographics, they are younger than their predecessors and will therefore impact on the average age of farmers in Ireland. However, as they are in the proactive and development phase of their farming career, new entrants generally improve technical efficiencies and in many cases expand the enterprise. In a 2014 study of new entrants to

dairy farming prior to milk quota abolition in Ireland, themes in the New Entrants' narratives relevant to known characteristics of entrepreneurship were evident. Themes such as active financial risk assessment; entrepreneurial 'drive' to create a profit or financial gain, and risk. Entrepreneurial drive and motivation was evident throughout the interviews carried out, with a strong focus on enhancing the productive capacity and economic performance of their farms. (McDonald et al., 2014). The new entrant brings in new ideas, skills and new technologies to the business. Younger farmers have higher agricultural education attainment and can be highly skilled in contemporary technologies and farm management practices (Macken Walsh and Roche, 2012). This can be said of across all farm enterprises. A recent trend in Ireland is the change of enterprises from beef, sheep or tillage to a more profitable dairy farming enterprise. This change is generally instigated by the New Entrant and supported by the parents. Combined with expansion on existing farms, this changeover to dairying is partly responsible for the increase in dairy cow numbers to 1.343 million cows in 2017. Over all dairy cow numbers increased by 4 per cent from 2016 to 2017 (CSO, 2017) this number further increased to 1.465 million cows in 2019. However, it is in the less profitable mainstream farm businesses such as beef, sheep and tillage that new entrants are challenged to look at more profitable alternatives.

Conventional Mainstream Farming Enterprise & Complementary Alternative Farm based enterprises or off-farm employment

A key challenge during the transition from one generation to the next or because the farm in its' own right is unviable, is the ability of the farm business to provide two incomes during this period. Where resources allow, this may come from the expansion of the existing enterprise or improving technical efficiencies and therefore the profitability on farm. In many cases to provide sufficient income, an alternative farm based enterprise may be started or the young farmer will work in an off-farm job for a period until such time as the farm business can meet the income needs of both parents and their successor.

There is a long tradition of establishing alterative farm based enterprises in Ireland, especially on the main tourist routes. In some situations, farmers have moved away either partially or completely from the mainstream farm enterprises such as dairy, beef, sheep and tillage on small or unviable farms. Other farmers have started complimentary enterprises where they process their own farm produce. Both options require high levels of entrepreneurism and a very big commitment to the project on the part of the new entrant. Developing a new product, and new skills, requires an awful lot of training and research into production and marketing (Roche cited in Kinsella, 2018). Roche goes on to say that tenacity is what you need more than anything else (ibid). Some farmers have developed agri-tourism enterprises especially when they are located on well-travelled tourist routes. This may include farmhouse B&B, self-catering accommodation, opening a café, a farm shop or providing access to archaeological site locate don't the farmers land. A recent example involves collaboration between a local hotel and three farmers who take in farm tours from the hotel on specific days each month. (See https://www.westcorkfarmtours.com/)

In Ireland, the Rural Development Plan (RDP) through initiatives such as Leader supports the commencement of a new farm based enterprises such as: farm tourism, farm-based accommodation, farmhouse cheese production, butter or yoghurt production (RDP 2014-2020). This support is provided in the form of financial set-up grant, business planning and marketing advice to new entrants. There is a wide varied of start-up business courses available through agencies such as Teagasc and

third level colleges as well as commercial entities such as supermarket chains. However, in order to create a successful business, prospective new entrants must look at the resources available to them, the environment and locality where they are located to see where ideas and opportunities for successful businesses lie. Farmers need to look at what's going on in their areas, make sure the product is right for them, that there's a market for it and that they can raise the right capital to match any grants there might be. We would also encourage them to look at their own skills and resources and come up with fresh ideas (Kennedy, 2002). For farmers engaged in selling through direct agricultural markets price is clearly an important consideration for it determines their level of income and their ability to sustain a farming livelihood (Sage, 2003). Being attuned to marketness, then, is necessary in the interests of economic viability as is an awareness of instrumental decisions that balance rational self-interest with a concern for non-economic goals. For example, selling through farmers' markets enables many farmers and small food producers to benefit from a premium over prices paid by wholesale distributors (ibid).

In Summary, the vast majority of new entrants in Ireland are in the mainstream farming categories and will continue to be. For those who want to establish complimentary or alternative enterprises. There is widespread support through the national development plan (RDP 2014-2020) and both private and state funded agencies to help new entrants start alternatives businesses. While the key barriers remain in terms of access to land, capital, the collaborative farming business structures can help new entrants to either minimise or overcome these challenges. A key challenge to new entrants that is not a tangible challenge is to adopt a can-do attitude and pursue the necessary training, and gain the experience to position themselves to start a successful farming based enterprise. The support networks are there for people who come forward with well thought out ideas and a good business and marketing plan.

2.2.6 Slovenia

Introduction

This desktop research is focused on three elements: (1) the brief reflexion on agriculture in Slovenia, (2) the identified entry models of new entrants into farming (successors and newcomers) and (3) some insights into the existing business models of new entrants.

Slovenia (2 mil. inhabitants, 20,273 km2 territory) is characterised by huge geographical heterogeneity being reflected in the high share of areas with natural constraints (more than 80% of agricultural areas) as well as very fragmented land structure (Potočnik Slavič, 2017). Therefore, farm sizes are small with on average only seven hectares. For the smaller farms self-sufficiency / subsistence holds a relevant role. Similar to other countries, average farm manager's age is with 57 years quite high. Many current farm managers have a rather poor education in farming, while younger farmers usually obtained higher levels of education. The Slovenian desktop research highlights access to land as one of the most problematic hurdles for entering / starting a farm. Besides that, land fragmentation is identified to be a hurdle for farming concepts demanding a certain size of agricultural land.

The identified entry models of new entrants in Slovenia are: 1) Traditional family farm succession which is supported by special measures for young farm successors, 2) Land easing/Purchase and 3) Inheritance by coincidence. When considering all farmers (since there is no data only about new entrants), less than one fifth of Slovenian farmers earn their income only from agriculture, while the

large majority generates income also from other on- and off-farm activities. On-farm diversification tripled in Slovenia only in the ten-year time range from 2004-2014 (Potočnik Slavič et al., 2016b). When the level of profitability of the main farm enterprise is combined with the issues of small farm size and land fragmentation a gap may be created between income sources and income requirements. The identified key business models of new entrants in Slovenia are: 1) Conventional mainstream farm, 2) Diversification (farm with supplementary activities and/or off-farm employment) and 3) Alternative Farm/Niche markets.

Methodology

Academic and grey literature in Slovenia is mostly focused on young farmers and (family) farm successors: we are referring to the official statistics on agriculture (Agrarian Censuses in 2000 and 2010, Annual reports on agriculture, SORS), and relevant literature from different scientific disciplines (agrarian economics, rural sociology, rural geography). Since there is no systematic and holistic research approach to newcomers in agriculture, we managed to collect data: by analysing different programmes (Rural Development Programme 2007–2013, 2014–2020), research reports and reports on RPD measures, by participating at various meetings (4. Slovenian Rural Parliament in 2017, Congress of Slovenian Local Action Groups in 2018, Award for the most innovative young farmer in 2018, etc.), workshops (European Innovative Partnership in 2017), etc. We wanted to provide the inventory of several relevant institutions which co-create a stimulating environment for new entrants into farming: we collected data with semi-structured interviews (agricultural advisory service, Association of Slovene Rural Youth), by e-mail correspondence or telephone conversation.

Slovenian farm structure

Slovenia (2 mil. inhabitants, 20,273 km2 territory) is characterised by a huge geographical heterogeneity being reflected in the high share of areas with natural constraints (more than 80% of agricultural areas) and very fragmented land structure (Potočnik Slavič, 2017). Legislation and official statistics use the term agricultural holding, which is determined with reference to a baseline of productive resource usage (e.g. the size of the land area, the number of animals). According to the official statistical data (SORS, 2016) there are nearly 70,000 agricultural holdings in Slovenia, which are cultivating 480,000 ha of utilised agricultural area (UAA). There are important regional inequalities (s. Figure 23) regarding the spatial distribution of UAA: fields prevail in the Eastern part (Sub-Pannonian region), while the Western part is predominated by permanent meadows and pastures (Alpine, Pre-Alpine, Dinaric-Karst and Sub-Mediterranean region); on the other side, the permanent crops are more relevant for terraced landscapes of vineyards, orchards and olive groves. The average agricultural holding cultivates 6.9 ha of UAA and rears 7.2 animals. Forest covers approx. 60% of Slovenian national territory (SORS, 2016): private individuals own around 73% of approximately 1.2 million hectares (Slovenia Forest Service annual report 2014).

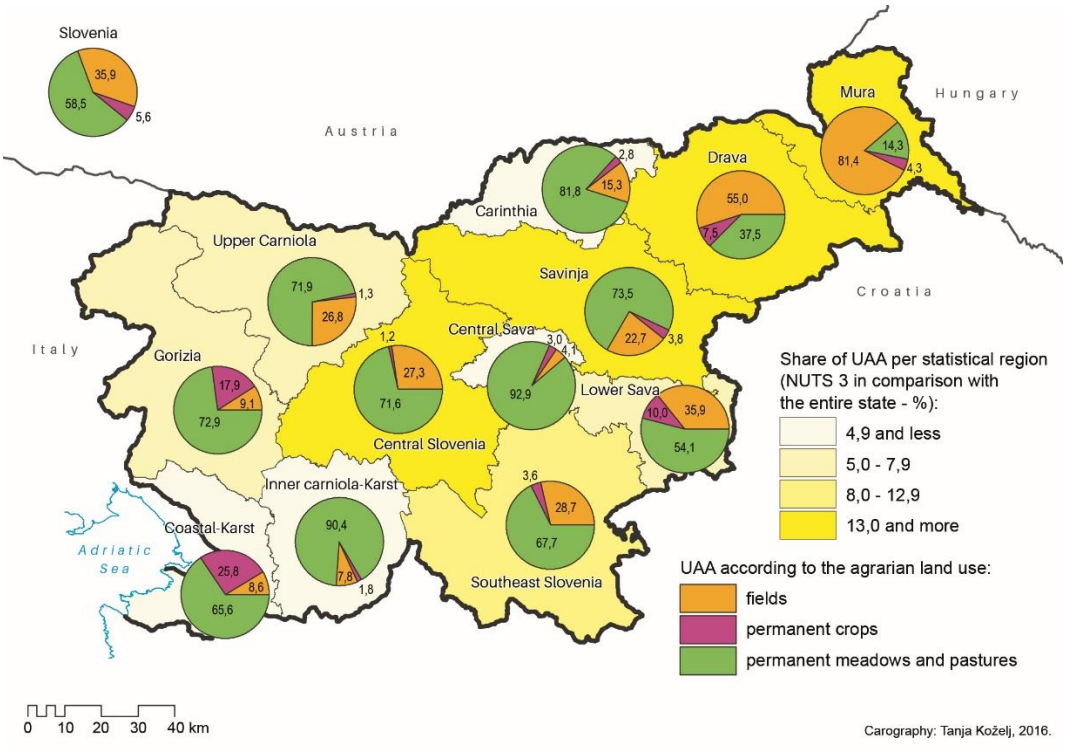


Figure 23: Utilised agricultural areas in Slovenia (according to the NUTS 3 level); source: SORS, 2010; Potočnik Slavič, 2017.

Comparison between the last agricultural censuses (2000 and 2010) indicated the processes of land concentration: the number of agricultural holdings decreased for 14%, the number of active population in agriculture diminished by 19%, the share of UAA dropped for 2%, the number of animals per agricultural holding increased; but on the other side the number of organic agricultural holdings has increased (5% of all agricultural holdings) and they are cultivating almost 10% of UAA (SORS, 2016; RDP 2014–2020, 2018).

Table 5: Agricultural holdings according to the size of UAA in Slovenia (comparison 2013-2016), source: SORS, 2016.

	Year 2013		Year 2016		Index 2016 / 2013	
	Number of agricultural holdings	Area (ha)	Number of agricultural holdings	Area (ha)	Number of agricultural holdings	Area (ha)
Total	72.277	477.023	69.970	476.682	96,80%	99,90%
under 3 ha of UAA	29.105	46.887	28.170	45.736	96,80%	97,50%
3 to under 10 ha of UAA	31.786	176.602	30.044	165.834	94,50%	93,90%
10 to under 20 ha of UAA	7.882	107.004	7.942	107.669	100,80%	100,60%
20 to under 50 ha of UAA	2.999	86.272	3.228	93.428	107,60%	108,30%
50 an more ha of UAA	505	60.258	586	64.015	116,00%	106,20%

Almost 60% of small agricultural holdings (up to 5 ha of UAA, s. Table 5) are exclusively or predominately producing for their own needs (subsistent farms). As a consequence, the contemporary Slovenian agrarian space is very fragmented, since they are cultivating approx. 22% of available agricultural land. Due to changes in agricultural markets, agricultural policies, lifestyles and dominant social processes (e.g. globalisation, environment degradation, economic shocks) a significant

proportion of small agricultural holdings in particular have, to a greater or lesser extent, deliberately started using their resources (productive, human, financial) more rationally, also through the registration of on-farm supplementary activities (4,473 farms in 2017; Register kmetijskih gospodarstev …, 2017) and practice pluri-activity (Renard, 2005).

According to SORS data on structure of agricultural holdings, the total standard output of Slovenian agricultural holdings in 2013 reached 1,009 billion euro (increase of 14% in period 2007-2013), i.e. on average 13,944 €/agricultural holding. In 2013, almost two thirds of Slovenian agricultural holdings created a standard output up to 8,000 euro, and cultivated 28% of all agricultural land. Important is the group of agricultural holdings creating from 8000 to 25,000 € (market-oriented agricultural holdings) of standard output: it includes one quarter of all agricultural holdings, cultivating 30% of UAA and 30% of agricultural working force. Only 10% of agricultural holdings exceed 25,000 euro of standard output. Figure 24 illustrates the diversity of enterprises in Slovenian agriculture and the contribution of each enterprise to gross agricultural output (Eurostat, 2019).

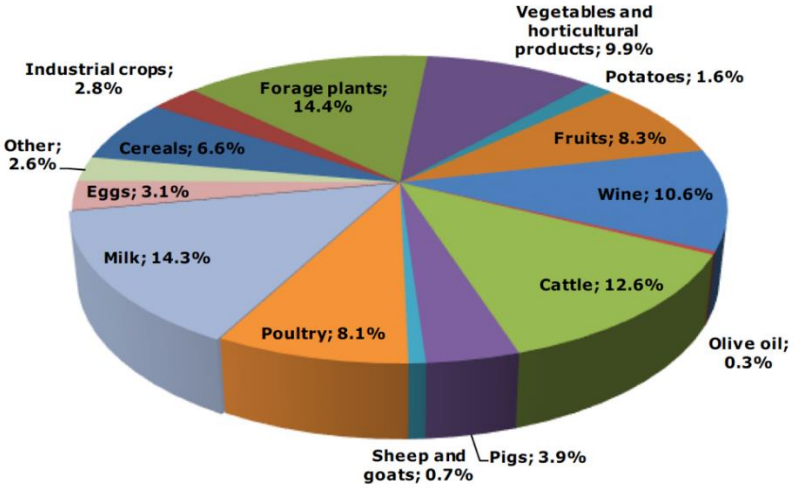


Figure 24: Output components 2016-2018 average (Eurostat, 2019).

The age structure of farm holders is unfavourable as the average age reached 57 years in 2016 (SORS, 2016): therefore, a special measure for young farm successors has been employed since 2007. Slovenian agriculture is facing with the issues of poor educational structure of farm holders since the later usually attained lower formal education (50% are without formal education in agriculture, and 35% participated in various agricultural courses; SORS, 2016), whilst the young members of farm family usually obtained higher levels of education (but they do not own the agricultural holding).

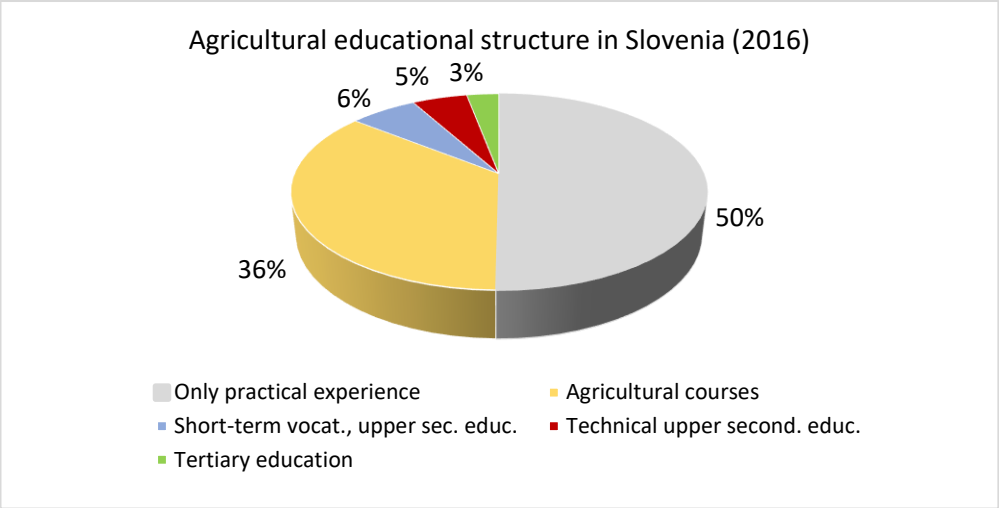


Figure 25: Agricultural educational structure in Slovenia (2016)

Entry models

We identified three entry models of the new entrants: 1) Traditional family farm succession, 2) Land Leasing/Purchase and 3) Inheritance by coincidence.

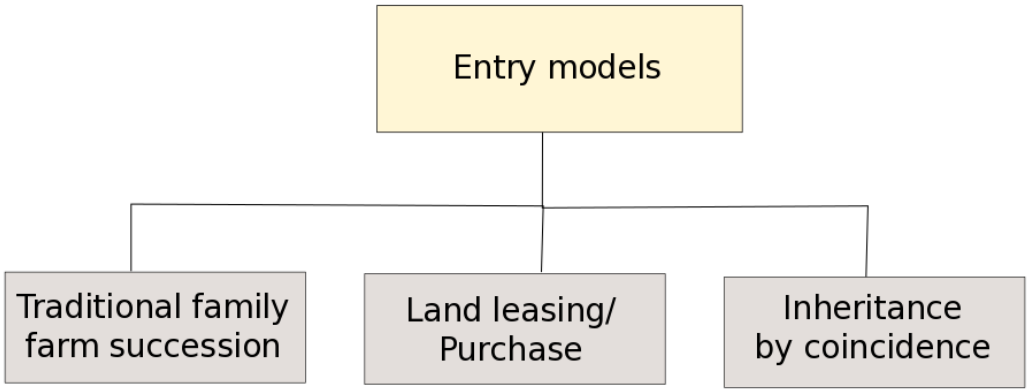


Figure 26: Entry models

Traditional family farm succession

Family farms dominate in Slovenia and usually new entrants start their career in farming as family farm successors. The farm succession in Slovenia has been characterised as problematic for several decades (Hribernik, 1995; Kerbler, 2012). We understand the farm succession as a process, which should include (according to Kerbler, 2012) careful planning: a description of personal and business goals, as well as family members´ expectations, a retirement plan and a training and a development plan for successors, a farm business action plan (future direction), an operating plan (roles and responsibilities), a plan for the transfer of management, control and labour, a plan for the ownership transfer, a communication and contingency plan and an implementation timetable.

In practice, the *setting up of young farmers* (aged from 18 to 40 years) has been a part of the Rural Development Programme (RDP 2007–2013, 2014–2020), addressing the young farmers with intention to take over and manage the family farm. The main objective of the adaptable policy measure was improving the age- and educational structure on farms and speeding up the transfer of the farms onto the successors. On seven public calls of 2007–2013 period, 2590 applicants were granted 55 milllion euro altogether, representing 4.7% of RDP expenditure (Measure 112, AKTRP 2016). Also 36,638 ha of UAA were transferred to young farmers (Poročilo o napredku ..., 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015; Flajnik, 2016).

In the period 2014–2020 there is a similar measure provided for young successors with allocation of 60.65 million euro. In the period 2015–2017 30.5 million euro was spent for young farmers: 804 applicants were granted, mostly in the cohort 30-40 years, male farmers prevailed, practising mostly stock-breeding, mixed vegetation-animal husbandry and winegrowing. The majority of beneficiaries were from the Eastern part of Slovenia, and had a formal secondary or tertiary level of education (mostly non-agricultural), and had to attain also agricultural certificates. According to their business plan, they will mostly invest funds into the purchase of ICT, new farm mechanization, to upgrade their production capacities, and to purchase new or second-hand specialised farm machinery (areas with higher inclination; Brodnik Lodewijk, 2018).

Land leasing/purchase

According to the available literature, the new entrants recognise the access to the land as one of the most problematic hurdle of their entry model. Slovenian market oriented farmers are facing the issues of lacking the available arable land since available agricultural lands and forest are limited resource (Potočnik Slavič et al., 2016a). The lease process includes either individual farmers and also a state owned *Farmland and Forest Found of the Republic of Slovenia* (established in 1993 according to the National Farm Land and Forest Fund Act; Official Gazette of Republic of Slovenia No. 10/93 and its subsequent amendments).

The later manages and disposes with the state owned farmland, farms and forests, assures their rational use and cultivation. This includes entering into lease contracts based on public tenders for farmland leases and active land trade policy implementation. Its Department of Agriculture also ensures maintenance of agricultural infrastructure, land redevelopment and amelioration. Following the adopted development policy and directions of Republic of Slovenia, it provides interested farmers and farm enterprises additional land for farming activities, enables their enhanced production and consequently higher income and development. It is not financed by the state budget; it is funded by its resources. It managed 58,814 ha of agricultural land in 2014 (8.7% of agricultural land in Slovenia; Poročilo o delu…, 2015): 50,600 ha are UAA, 3541 ha are under forest overgrowing, etc. They lease 54,803 ha (either with or without fee) of land, under 16,644 lease contracts (on average one person leases 3.3 ha). Legal persons made 476 contracts and leased 23,393 ha; individual persons made 16,033 contracts for 28,783 ha (average 1.8 ha). In July 2016, the Department of Forest within the above-mentioned Farmland on Forest Found of the Republic of Slovenia disintegrated with the former structure, and a new company for management with state-owned forests SiDG was established (Slovenian National Forests, 2016). Farmers often complain over the non-active role of this institution.

Inheritance of land by coincidence

The case study in Slovenia show that more than half of the farms do not have a selected successor (Pirc, 2018). Since the data on selected successor are not recorded at the national level, we can only make some conclusion from this research. Many farmers prolong handover of the farm till death. Then, if they do not have a close relative, they leave a farm to nephew, cousin, brother-in-law, etc. We named this pattern "inheritance of land by coincidence". It is one of the recognised, but not recorded, entry ways of newcomers in Slovenia, who are usually without family background in agriculture, are very innovative and brings into agriculture new knowledge. The official statistic about them are not recorded. Hence, they are not recognised in policies.

Farms without successors and farms with successors who are over 40 years old would especially deserve special treatment, since these are the farms that have the biggest chance of downfall in the future or the chance of a non-family takeover or partnership.

Business models

Due to their specific agrarian structure, most Slovenian farms cannot survive on income from agriculture alone: less than a fifth of them earn income solely from agriculture, and the rest generate income from other sources *on- or off- the farm* (Agricultural Census 1991, 2000, 2010). Here we will not focus on off-farm employment.

Using various combinations of the natural, financial and human resources farms carry out their primary activity, whilst where there is availability or otherwise incomplete utilisation of certain combinations of resources, farms may also choose to implement *supplementary activities on farm***.** In this way, the farm improves its utilisation of the available resources and generates an additional source of income. In addition, on the other side, several newcomers have used this business model after they lost their job or when they were looking for different life-styles as well. The law defines supplementary on-farm activities as one of the forms of on-farm income diversification. The dynamics of the development of supplementary activities were monitored over a ten-year period from 2004 to 2014 (Potočnik Slavič et al., 2016b). The number of farms registered as having supplementary activities over the decade increased 3.3 times (from 1,406 in 2004 to 4,642 farms in 2014). During this time, the number of registered supplementary activities multiplied six-fold: registry data for 2004 recorded 2,215; and in 2014 there were 13,444 supplementary activities. In absolute terms, services using agricultural and forestry machinery, equipment, tools and animals were the most frequently registered supplementary activity in 2014 (4,268 registrations or 31.7%). This reflects the specific nature of such types of activities, i.e. principally providing services to meet the needs of local communities (largely consisting of snow ploughing), seasonal demands (registration numbers increase in the cold half of the year), or else it reflects conforming to existing regulations that, in a formal sense, make it relatively easy to obtain an alternative source of income through registering such activities. Based on registered supplementary activities, processing of farm products, honey and bee products, herbs, forest fruits, mushrooms and forest assortments (26.8% or 3,603 registrations) and farm tourism (1,904 or 14.2% of all registrations) follow. In 2015 (Official Journal of RS, no. 57/15; Potočnik Slavič et al., 2016b) the new Regulation of Supplementary On-Farm Activities was adopted, and we are monitoring (Udovč et al., 2018) its impacts: this business model, although it is perceived as very demanding from the administrative and financial point of view, is attracting various new entrants into farming. Surveys (280) and in-depth interviews (21) with those engaged in supplementary on-farm activities reveal

(Potočnik Slavič et al., 2016b) that farmers see them as activities with good prospects. The answers we collected reveal the three “R” rule: during the last decade the decision to register a supplementary activity has proven to be “rational” (mainly due to rational utilisation of all on-farm resources), “remunerative” (mostly as a consequence of »lax« financial stipulations) and also “risky” (either due to the high risk of investments, changes in market conditions, unfavourable demographic situation within the rural household, etc.). These arguments are also confirmed by data showing the respondents' envisaged prospects of existing supplementary activities. As most of the farms with a registered supplementary activity that were surveyed made their investments during the last 5-10 years, it is not surprising that one third wish to continue with the same activities in the future. It is encouraging though, that 54% of respondents are planning to either boost the existing activities or else expand their scope. A significant proportion of respondents (over 15%) do not see a real future for supplementary activities (they either consider the future of such activities uncertain, whilst a small group are even planning to discontinue implementing them altogether). At the same time, it should be stressed that certain farms have outgrown the financial and organisational frameworks of supplementary activities stipulated by regulations. With these farms, the entrepreneurial aspect is more prominent and it is therefore reasonable to have them registered as carrying out a different form of activity. Though it is important to note that, during the survey of farms, we observed a continuous process of »transitioning« (from a registered supplementary activity to a registered sole proprietor, and vice versa), which points to the influence of the previously mentioned business risks and market fluctuations, as well as to inconsistencies in certain administrative procedures.

Innovative rural economy practices have been supported by the *LEADER/CLLD programme* (as part of RDP in 2007–2013, 2014–2020): since the programme is supporting area-based development, bottom-up approach, innovation and networking, it is opening opportunities for the new entrants into farming as well – especially in the field of short supply chains, rural tourism, niche products development, etc. Beneficiaries report on administrative burden, local action groups and managing authorities complain on multi-funding trap and lack of innovativeness (TELI2 Report, 2017).

2.2.7 Bulgaria

Introduction

There is improvement of the trend for young farmers up to 35 years old in Bulgaria as in 2016 they are 7.4% of all farmers comparing to 2013 when 6.4% of farmers are up to 35 years old and 36.7% of holders are more than 64 years. The majority of Bulgarian agricultural holdings 167,470 (**82.6%**) cultivate **less than 5 ha** of UAA in 2016. The BG agriculture is predominately focused on crops, the crop out in 2018 is 70.2% of which cereals (wheat and spelt and grain maize) are 35.3% and industrial crops (oil seeds, protein crops, raw tobacco) are 23%. The vegetables and fruit form output slightly above 4% of the total agricultural output. The animal output is 22.8 % formed by cattle, pigs, sheep and goats and poultry. There is a fragmentation of land ownership yet which a serious hurdle for competitive agriculture is. Practically all the farmers were new entrants in **private independent farming** after the radical land reform in 1991 (completed in 2000) through and post-socialist privatization of farmland and other agricultural resources. The most relevant entry models of new entrants are by succession and new comers. The young successors become farmers through farming by neccesity (after land and other resources restitution or no other employment opportunity), new holdings/enterprises (mostly

motivated by RDP funding for start-up of young farmers) or succession of family holdings with strong connection with land and family and motivation to enlarge, modernize and innovate the farm. The relevant business models are conventional farming (large family farms, new cooperatives, small farms) and alternative farming such as organic farming and few models yet as social farming a community supported farms.

Methodology

The desktop research was carried out by reviewing the relevant academic and grey literature in Bulgaria. It was extremely difficult to find Bulgarian business models of new entrants as the topic is very new and there are no specific publications, articles, studies, surveys, statistics and analysis. As the publications in academic literatures available for desk research are very limited to fulfill the tasks the BG team relied on deep desk research on analysis, reports, national surveys, PhD thesis reports, case studies report, presentations and technical documentation.

Academic literature: On –line accessible literature of Academic or scientific institutions and universities such as Agrarian academy, Agrarian Institute for Economics, Sofia University, University of World and National Economy, Agrarian University Plovdiv and some EU institutions were reviewed

Grey literature: Reviewed reports and analysis: Ministry of Agriculture Food and Forests MAFF, Agricultural Academy reports, technical reports, statistical reports, state-of-the art reports, published surveys done by the National Agency of Agricultural Services, analysis published, conference proceedings and presentations, bibliographies, and technical and commercial documentation. It was both in English and Bulgarian, following the guidelines and suggested approaches. In addition to instructions the key words used are competitiveness of BG farms, alternative BG agriculture, new models and approaches.

Bulgarian Farming Structures

The Bulgarian agriculture is predominately focused on crops, the crop out in 2018 is 70.2% of which cereals (wheat and spelt and grain maize) are 35.3% and industrial crops (oil seeds, protein crops, raw tobacco) are 23%. The vegetables and fruit form output slightly above 4% of the total agricultural output. The animal output is 22.8 % formed by cattle, pigs, sheep and goats and poultry (Eurostat; s. also Figure 27).

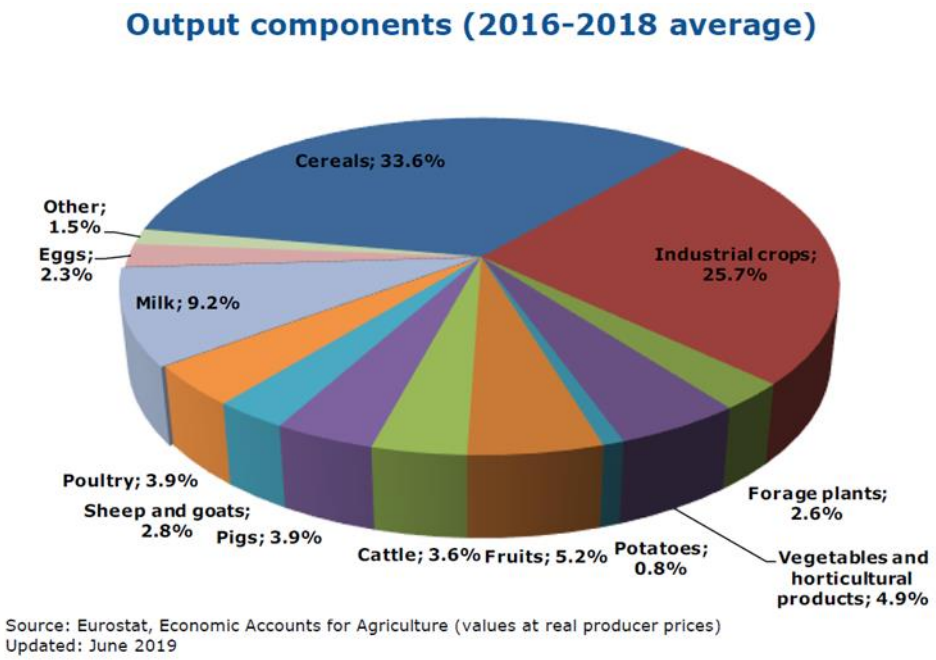


Figure 27: Output components in Bulgarian Agriculture (2016-2018 average)

The total number of Bulgarian agricultural holdings is 202 720 in 2016 representing 1.9 % of the total number in EU-28 (s. Tables 6, 7). The economic size of 75.3% of holdings is less than 4 000 € output. (Statistical Factsheet, BG May 2018). 11.1% of the holdings are between 2000 and 8 000 €, while the holdings =/> 500 000 € are 0.7%. The majority of Bulgarian agricultural holding 167 470 (82.6%) are with less than 5 ha of UAA in 2016 (in 2010 they are 91.4%). The holdings over 100 ha increases they are 6 060 or 3.0% (1.5% in 2010). Employment in agriculture is 6.8% of total employment in Bulgaria while they are 3.9% in EU-28 in 2016.

Table 6: Farm structure table

Farm structure				
Holdings				
Total (No), of which:	2016	202 720	1.9%	of EU-28
UAA < 5 ha (%)	2016	82.6%	65.6%	in EU-28
Economic size < 4 000 €	2016	75.3%	55.7%	in EU-28
Holder < 35 years (%)	2016	7.4%	5.1%	in EU-28
Holder > 64 years (%)	2016	36.4%	32.8%	in EU-28
UAA per holding (ha)	2016	22.0	16.6	in EU-28
Labour force				
AWU (No)	2016	249 570	2.8%	of EU-28
Female farm holders (%)	2016	25.0%	30.8%	in EU-28
Male farm holders (%)	2016	75.0%	69.2%	in EU-28
Agriculture in % of total employment	2017	6.8%	3.9%	in EU-28

Sources: European Commission, Eurostat and Directorate General for Agriculture and Rural Development.

Updated: June 2019

Table 7: Bulgarian key data table (Source: Eurostat factsheet 2018)

Macroeconomics				
Population (new European Commission methodology)				
Total population (number of persons), of which:	2018	**7 050 034**	1.4%	of EU-28

in predominantly rural and intermediate regions	2018	81.2%	56.1%	In EU-28
in predominantly urban regions	2018	18.8%	44.9%	In EU-28
GDP				
total (million EUR)	2018	54 894	0.3%	of EU-28
GDP per capita (EUR/person)	2018	7 789	30 946	in EU-28
GDP per capita (PPS/person)	2018	15 934	30 946	in EU-28
Economic accounts of agriculture				
Agricultural output				
Agricultural goods output (million EUR), of which:	2018	3 837.4	0.9%	of EU-28
Crop output, of which:	**2018**	**70.2%**	**1.2%**	**of EU-28**
Cereals (including seeds)		35.3%	2.8%	of EU-28
Industrial crops		23.0%	4.7%	of EU-28
Vegetables and horticultural products		4.1%	0.3%	of EU-28
Fruit		4.2%	0.6%	of EU-28
Animal output, of which:	**2018**	**22.8%**	**0.5%**	**of EU-28**
Cattle		1.9%	0.2%	of EU-28
Pigs		3.3%	0.3%	of EU-28
Sheep and goats		1.9%	1.3%	of EU-28
Poultry		3.3%	0.6%	of EU-28
Milk		9.4%	0.6%	of EU-28
Eggs		2.3%	0.9%	of EU-28

Bulgarian specifications

There was a radical land reform in 1991 (completed in 2000) through restitution which resulted in an inevitable **severe fragmentation of land ownership**. The fragmentation became even worse some years later caused by the division of land between the heirs of deceased land owners. Post-socialist privatization of farmland and other agricultural resources have contributed to a rapid development of private farming in Bulgaria. Practically all the farmers were new entrants in private independent farming. According to National Statistical Institute and Ministry of Agriculture and Food in 1995 there are mostly physical persons over 1.7 million (99.7%), share in land 43% and average size 1.3 ha; 2623 co-operatives and 2200 private agro-companies. (Bachev, 2012). In 2016 physical/natural persons are 175 209 (95%) share in land 30.8%; cooperatives 767(4.2%), companies 6 322 (3.4%), share in land 40.48% out of total 184 448 holdings and 3 795 534.35 ha (NSI 2018). The need of land consolidation arises as fragmentation makes the land cultivation difficult, increases the production costs and restrains a successful farm management. (Aleksiev and Penov, 2006). In 2013 the total number of farms/holdings is 244 594, the utilised agricultural area is 4 621 500 ha and the average utilised agricultural area (UAA) per holding is 18.3 ha (Eurostat 2013) of which 86.9 % have less than 5 ha of

UAA, and only 2.4% of farms cultivated more than 100 ha and 84% of UAA. In Bulgaria the land farmed under tenancy arrangements is more than 65%, (Eurostat, 2013). In 2010 -2016, the organic area increased significantly in Bulgaria (+35.8% Land cover and land use) however the BG UAA under organic control is less than 3%.

https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/land-cover-use.pdf)

The distribution of the direct aid to the producers is extremely uneven: 68% of the beneficiaries received less than 5000 € aid (9.6% of the total aid paid) in financial 2017 while beneficiaries who received more than 20 000€ are 9.48% but their total amount is 71.6% of the total direct aid.

Entry models

Farmers by necessity

25-30 years ago the Bulgarian Agricultural reform and restitution of state owned farmland, livestock, equipment etc. made people private farmers. Running up an own farm has been usually the only feasible mode for productive use of available resources (free labour, land, technological know-how), providing full and part-time employment or favourable occupation for family members, and securing income and effective (cheap, safe, sustainable) food supply for individual households. Usually the majority of them cultivate small land and few livestock and not much competitive (Bachev, 2010; Bachev, 2012). Nowaday, in rural areas, in particular mountain, the farming is the only option for employmency (National report NAAS). Small holdings which are the vast majority (75.3% of holdings is less than 4 000 € output and 11.1% of the holdings are between 2000 and 8,000 €) are very important in terms of employment and economic activity in rural areas, predominantly in non-favoured and mountain areas (Diagnosis of the Agrofood Value Chain Studies in Blagoevgrad region, Sofia University 2018).

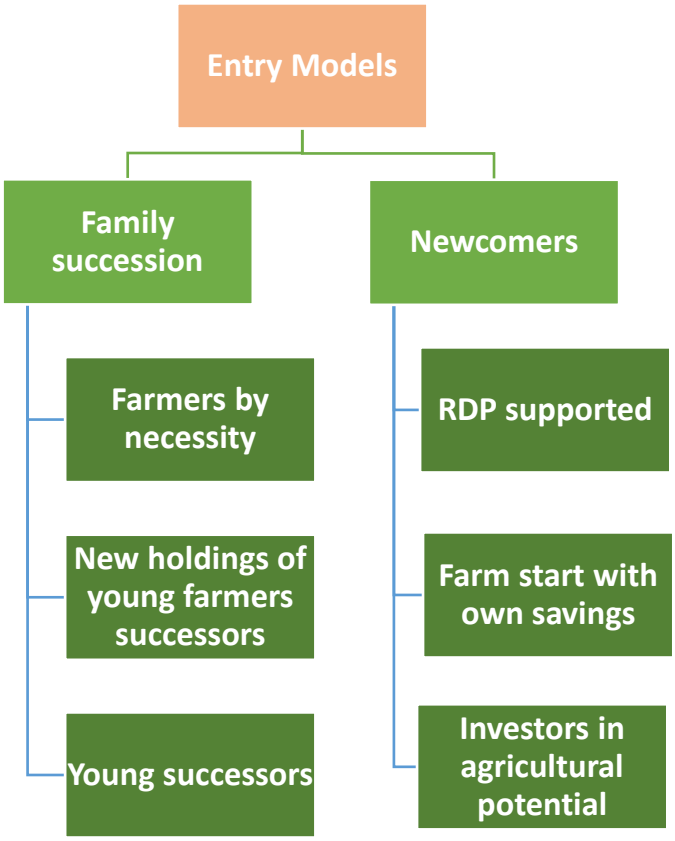


Figure 28: Entry models in Bulgarian agriculture

New holdings of young farmers' successors

Young farmers who have applied and funded by NRD program usually establish a new holding. The successors become owners of the land/farm as parents transfer the land and farm to their family successors (children) by donation or heirloom, sometimes by land purchase. Majority of young people either successors and newcomers is motivated to enter the farming by the RDP support for young entrepreneurs

In order to receive EU funding by National Rural Development Program for young farmers the successors must be in charge of the farm/holding**, must enlarge the farm** (area, **production or incomes**) and has started not earlier than 14 months before the submission of the application. That is why usually they established a new agricultural holding.

Usually young people start up a **small–scale farm** - less than 20 ha. Usually only one works full-time (69% of responding farmers) and up to 3 employees for 20%). (National survey done by NAAS about state of the art of young farming -1020 young farmers interviewed) and as the amount of funding is up to 25,000 euro the focus is on crop production and appr. 9% are for livestock (MAF). However, there are new enterprises of young successors of large and profitable family farms either processing enterprise or a new livestock modern farm complex funded by RDP and family investment. (BG Innovative young farmer 2018 award, media publications). There is a model of partnership new company of a son and father) to start an organic sheep farm (clear rights on ownership, income-sharing, risk-taking decision) with clear vision and a long-term strategy for developing based on previous experience, excellent natural conditions, opportunity to invest in "own brand" of business and products; modernized management and labour organization, strong market and profit orientation

(Bachev 2010b). There are some sustainable models of young successors who inherited only land owned by their grandparents and established modern market-oriented and customer –oriented holdings, applying modern technologies and well organized distribution of their products after retail packaging or processing of products. (case studies)

Young successors

According to NAAS the motivation of young people born in rural areas is to continue the family business of their parents or grandparents. (Anual NAAS report 2018). They feel strong connection with the land and their roots. Usually they try to enlarge the holding by renting additional land, diversify the production and they look for additional services such as rural tourism and production processing.

Young successors of large family farms usually are well educated mostly in agriculture and apply innovation and new technology in farming. The farms are competitive and profitable and they can afford innovation such as precision agriculture in crop production (BG case studies, NEWBIE in North East Bulgaria) or modern livestock farms and procession enterprise (media publication)

Newcomers

The new comers could be divided into 3 main categories for their entry models: *RDP supported* - young people with RDP funding to establish new farms typically small-scale vegetable or orchard production, less than 40 years old, on a full-time basis, primarily on rented land. The average size of the farms in the region is about 6.8 ha (Case study of 17 BG participants)

Farm start with own savings

In the literature reviewed there is no difference described between family and non-family new entrant's entry models. There is no statistics about it either. According to National survey done by NAAS about state of the art of young farming (1020 young farmers interviewed): Young well educated people but usually without any agricultural experience start up organic farming. Market oriented, focused on diversification and use knowledge by other sectors. Usually new **non-family entrants rent** land for a period of 10 years. It is not easy task because of strong agricultural land fragmentation and a lot of heirs to negotiate with. There is an option to rent public owned land (municipal or state) or to use combination of small own land + rent + public land for larger farms

Both successors and newcomers

16% of responding farmers (1,020 farmers in total) use innovation (modernisation, plant protection, and marketing) and 39% plan to implement innovation. In their business plans they rely on new products, Organic farming and sustainable tourism and try to be market orientated. The main factors which will increase the economic effectiveness of their farm are: farm modernization (21%), better marketing (16%), better education (16%) and more land (16%).

Investors in agricultural potential

There is no literature or statistics available however there are case studies for people with successful businesses (such as building and constructers, tourism) invest in agriculture driven by profit potential in new product agriculture or subsidies.

Business models

The most relevant identified business models in Bulgaria are conventional farming and alternative farming (s. also Figure 29).

Conventional Farming business models

Corporate farms

Usually registered as Sole Proprietor (Trader) or Ltd, they are large specialized enterprises. Such kind of farms usually operates in crop production although there are some new farms in modern livestock. Most of them set up as family and partnership entity during the transition by younger generation entrepreneurs, individuals with high business spirit and know-how. Some of them are joint ventures with non-agrarian and foreign capital. Thanks to their large size they explore consolidation of land, economies of scale and scope on machineries, cheap and standardized production and achieve a high productivity, permanently extend their share in managed resources taking over smaller farms, incorporate new activities, and new organizational schemes. The farms are market and profit-oriented, adapted to market demand and institutional restrictions, some of them invest in human resources, tangible and intangible resources, increase capital. The internal transaction costs for coordination, decision making, and motivation are not high. Large farms have strong incentives and potential for innovation (resources to test, adapt, buy, and introduce new methods, technologies, possibility to hire leading national and international experts and arrange direct supply from consulting companies or research institutes. They can invest a considerable relation-specific capital (information, expertise, reputation, lobbying, bribing) for dealing with funding institutions, agrarian bureaucracy, and market agents at national or even at international scale. These farms have enormous political power to lobby for Government support in their best interests. All these features give considerable comparative advantages of business type of farming organization (Bachev, 2012). Strategies they apply: on Farm diversification mostly crops, sometimes combination of livestock breeding and crops; off farm diversification farm, guest house, new products.

Table 8: Legal status of farm holdings

legal status of the total holdings	holdings (number)			Area (ha)		
	2010 r.	2013 r.	2016 r.	2010 r.	2013 r.	2016 r.
BULGARIA	**357 074**	**244 594**	**184 448**	**3 616 964.73**	**3 794 910.54**	**3 795 534.35**
Natural persons	350 041	237 317	175 209	1 201 279.87	1 223 283.97	1 169 657.09
Sole traders	2 134	1 871	1 892	544 387.64	542 947.27	541 447.83
Co-operatives	941	811	767	643 554.74	565 372.87	510 697.63
Companies	3 639	4 323	6 322	1 151 450.76	1 396 944.55	1 536 372.73
Civil associations and others	319	272	258	76 291.72	66 361.88	37 359.07

The table above (s. Table 8) shows the increased numbers of agricultural companies. In 2016 the agri-companies are 31.6% more than those in 2010. The corporate companies are 3.43% out of total holdings but cultivate 40.47% of the land. The majority of young farmers approved for RDP funding are physical/natural persons, although there are companies and cooperatives as well.

Table 9: Young farmers approved for funding by National RDP (SWOT analysis of National RDP 2019)

legal status	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Natural persons	454	2381	2082	1258	4136	1227	775	266	1558	886	220
Sole traders	23	99	35	4	40	29	33	43	39	30	13
Co-operatives	28	130	13	5	13	13	12	13	1	1	0
Companies	38	98	26	12	32	55	63	149	220	191	30
Civil associations and others	2	11	1	0	2	1	4	8	0	2	3
Total	**545**	**2719**	**2157**	**1279**	**4223**	**1325**	**887**	**479**	**1818**	**1109**	**266**

Small farms

The small farms are a vast majority of the BG agricultural holdings (86.4% < 8000 euro). Most of them use centralized or informal contract farming where usually companies / entrepreneurs conclude contracts for buying production of large number of small farms/holdings in Bulgaria usually for tobacco growing as well as milk cow, poultry and pig breeding. In this model it is possible to have quality grading, sorting and packaging as well and the creation of conditions for the storage of production (Stoianova). Some small farms growing vegetables and fruit rely on direct sales to customers, short supply chain and farmers market or diversify their services by production processing or tourist services (case studies).

New generation co-operatives

Cooperative farms operate under the Law of agricultural cooperatives and are kind of partnership organizations. They cultivate around 13% of the land (NSI for 2016), mainly crops (wheat, barley, corn) and oleaginous (sunflower and after 2007 rape). A limited numbers of cooperatives (approx. 10%) are specialized in breeding dairy cows. (Sure Farm report). The members of cooperatives keep the ownership of the land (small land owners had an easy and low costs entry and exit from the co-operation). The cooperatives apply "business like" governance with market orientation and making profit main objective, close and small-membership policy, complex joint-ventures with other organisations, etc. They are managed by younger entrepreneurs, taking advantage from new market opportunities and public funds, and turned co-operatives into important regional players. Some of them benefited significantly from the public support (product or area based subsidies), and the comparative advantages to initiate, coordinate and carry out certain (environmental, rural development etc.) projects requiring large collective actions.

Alternative business models

Organic agriculture

In the literature there are only theoretical models of develop sustainable farming by managing the components of the farming system through sustainable farming models and relation among conventional, integrated, and organic farming and puts an emphasis on existing opportunities for developing organic and integrated farming in Bulgaria (Nakova, 2015).

The organic model is considered sustainable a model which supplies high quality and healthy products demanded more and more in the market and contributes to development of rural areas. The registered agricultural organic producers are 6 214 in 2018 while in 2015 they are around 6000. The areas under the organic control system accounted for 3.2% of the total UAA in the country, and 2.7% in 2017. Areas

with organic cereals increase by 26.6% compared to 2017, mainly growing wheat, maize, barley and oats. Areas occupied by industrial crops (incl. oil rose, aromatic crops, medicinal plants and spices) increased with 36% and perennial is growing by 25.3% compared to 2017. The area of organic fresh vegetables, melons, strawberries and cultivated mushrooms is almost doubled, reaching 5 526.8 ha. Despite the positive trend over the last 5 years the organic livestock is much behind. Organic are mainly cattle, sheep, goats and bee families. In 2018 organic cattle sector increased by 9.2%, representing 2.2% of the total cattle production in BG and the organic goats represent 3.4% of the total number of goats. (Annual report of Ministry of Agriculture and Food MAF). According to Eurostat and NSI the area under organic farming has grown sharply and reached 118,600 ha in 2015, or more than double when compared to 2014 and accounted for 2.4% of total utilized agricultural land in BG. The reasons for this are subsidies for farms in conversion and organic agriculture and the larger number of start-up organic farms over the last years. Organic farms are small with an average size of 12 ha (source: Organic Production in Bulgaria, InteliAgro). The organic producers use direct sales/short supply chain - 54% of interviewed organic producers in Veliko Tarnovo district, intermediate company or organization - 39%, in the third place are specialized stores or stands with 25%, retail chains - 14%, farmers' markets - 11% and in e-commerce - 4% (Krasteva, PhD thesis, Svishtov University). The organic agriculture model is much preferred by the young farmers applied for financing by RDP supporting new holding of young farmers – more than 70% out of 880 approved projects in 2018 (MAFF report).

Social farming

Social farming is in an early stage of development and is almost unknown in Bulgaria. Only few farms deal with it. The main activities are interaction with animals mainly horses for children, teenagers and adults with different health problems, and participation in agricultural activities for adults with problems with social behavior and adaptation (prisoners and representatives of minorities). There are centers for rural / agri- tourism with activity for all age groups, mainly entertaining (Slavyanska and Dimitrova).

Community Supported Agriculture (CSA)

It provides seasonal healthy and locally grown food to consumers and farmers receive financial and/or in-kind support in advance. Additional benefit is sharing a lifestyle and production methods and sustainable development. There is an initiative in the village of Zhelen (46 km from Sofia) with main activities promotion of environment-friendly lifestyle, preservation and restoration of natural heritage and traditions, revival and development of crafts and folklore music, and changing the supply chain of local food through encouraging tourist visits and participation in labour-intensive and low-input agriculture, together with enjoying the countryside and experiencing rural living and its people (Peneva and Kazakova, 2012).

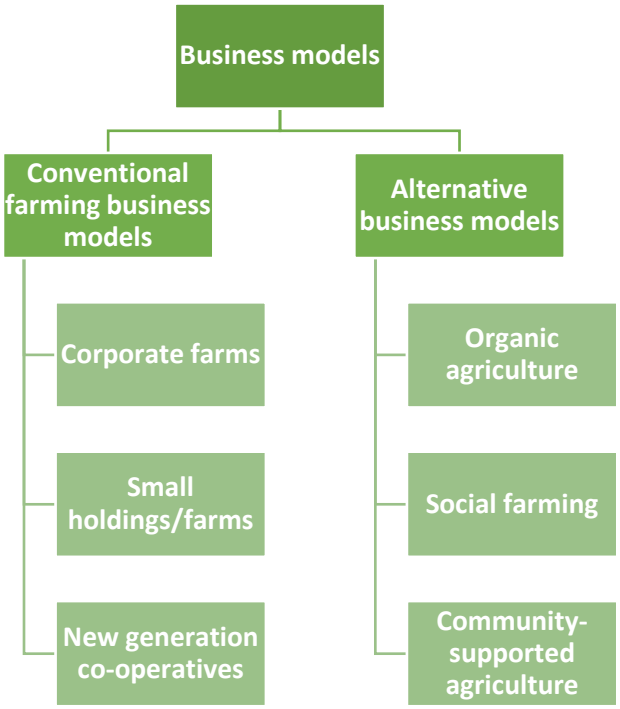


Figure 29: Business models in Bulgarian agriculture

Hurdles

The SWOT analysis of Bulgarian National RDP in 2019 put the focus on 2 main obstacles for young farmers: access to land and access to finance. The constant increasing of the price of rent or purchase of land makes it difficult for young farmers to enter the sector. The land concentration in few large farms also is a serious hurdle to access to land as well as bank reluctance to provide affordable loans to young farmers.

There are obstacles that prevent young people from engaging in farming, such as access to land, working capital for funding and knowledge. Young farmers and other new entrants encounter significant barriers to the start of farming activity, incl. economic hurdles, such as high land prices, but also social hurdles such as perceiving farming as an unattractive or old-fashioned occupation, sometimes characterised by inadequate social protection. Launching agricultural activity is associated with high risk due to large capital requirements and uncertain earnings.

Fragmentation of the land and almost impossible to purchase agricultural land because of the division of the property in cases where there are more owners or the owners cannot reach an agreement, lot of documentations and registrations.

Leasing of agricultural land - the tenant farmers confront the requirement for legalization of the rental contract by a notary, it is very time-consuming and extremely difficult to find and make all land owners sign (Kopeva).

According to a survey done by NAAS March – April 2018 with 1,020 farmers responding, 65% of whom at age between 25 and 40 years, 60 % of them in business for 3 or less years the main hurdles are difficult modernization of farms (lack of capital), access to subsidies, access to land, access to labour force, fair competition and reduction of administrative restrictions, access to innovation.

2.2.8 Portugal

Introduction

There are significant regional variations in the structure of agricultural holdings in Portugal. In Alentejo, a region that covers a third of mainland Portugal and the focus of our study, there is a traditional dichotomy in farm structure, with two main types of farms; very large estates ranging from 200 to 2,000 hectares managed extensively in silvo-pastoral systems and small farms (< 5 ha) in Mediterranean mosaic landscapes around towns and villages. More recently, a new farm model has emerged and specialised, strictly market oriented farms. These are generally medium sized farm linked to irrigated land and new production opportunities.

Landownership within a family is a strong factor supporting new entrants into farming. While they may come from outside a rural life and have no direct relation with agriculture, they benefit from access to family land. Even when such new entrants have entrepreneurial aspirations, they encounter significant barriers that hinder long-term business success ranging from the lack of investment capital, technical support and institutional capacity (producers' organisations).

The predominant entry models in the farming sector in Portugal are illustrated in figure 31 and the common business models used by new entrants are illustrated in figure 32.

Methodology

This desktop research was carried out by reviewing the relevant academic and grey literature in Portuguese context. The Newbie guidelines were followed in accordance with work package 2.1 of the deliverables of the project.

Portuguese Farming structures

Family farms are by far the most common type of farm in the European Union, where Portugal is an example. These encompass a wide diversity of agriculture holding ranging from small, semi-subsistence farms with only family labour; to farms that rely on diversification through other income generating activities, through too much larger and productive farms under family management (Eurostat, 2016). The Alentejo is the major livestock production region of the country, concentrating more than 50% of sheep, 49.8% of pigs and 44% of cattle production (INE, 2017).

Farm managers in Portugal are the oldest in the EU 28. More than half are aged 65 years and above, which is significantly higher than the proportion found in the EU 28 (31.1%). In Alentejo the average age of farm managers is 66 years old. In terms of education, the vast majority of agricultural producers only completed basic education (71.4%) and only 5.8% obtained higher education qualifications. In 2016, about half of the producers mentioned they had not received any agricultural vocational training (54.5%), but had derived knowledge from their own practical experience (INE, 2017). The lack of training is a problem compounded by the absence of national extension/rural advisory services in Portugal, severely limiting farmers' access to technical support and capacity building.

Figure 30 illustrates the diversity of enterprises in Portugal agriculture and their contribution to gross agricultural output (Eurostat, 2019).

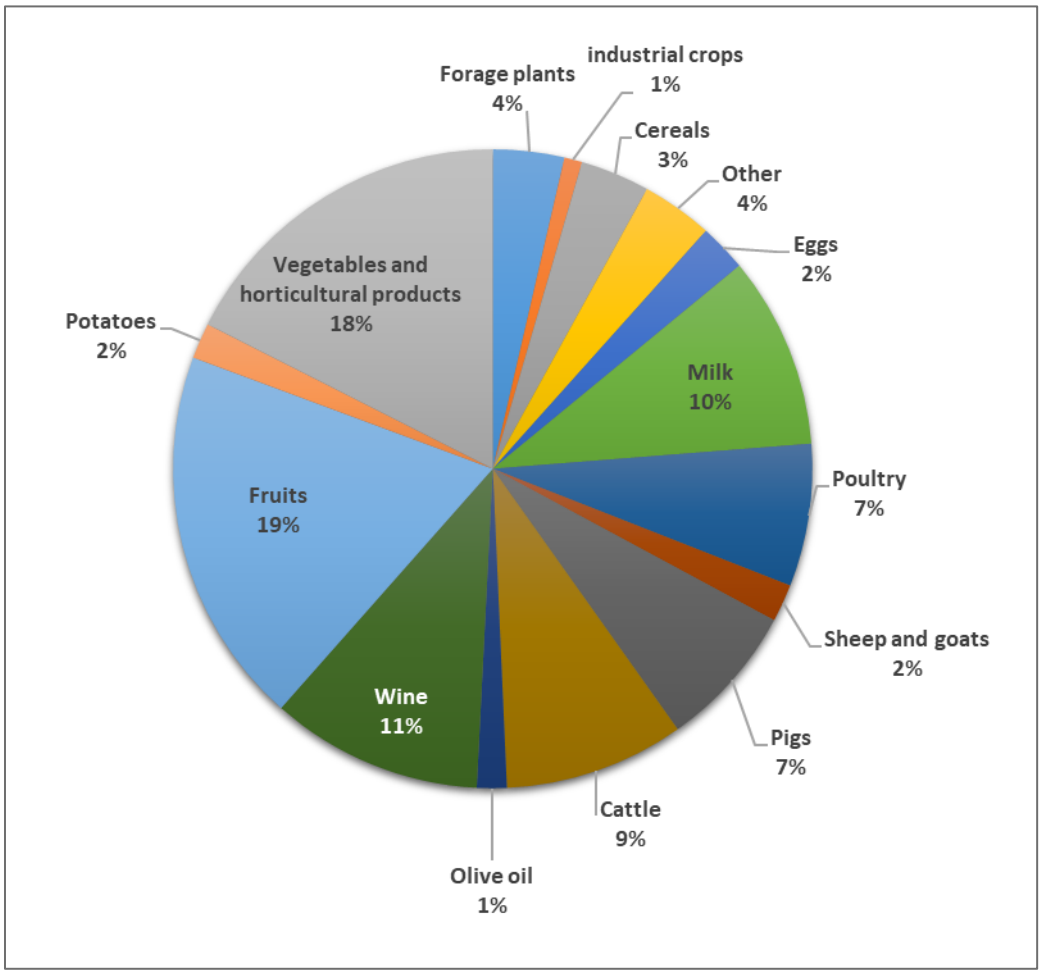


Figure 30 : Portugal output components 2016-2018 average (Eurostat, 2019)

Entry models

In Alentejo, the most significant difficulties that young farmers face in setting up their farm enterprise is access to land, high investment costs and insufficient access to credit. Existing policy support measures targeting young farmers are widely perceived as inefficient to trigger generational renewal within the farming sector (Eistrup *et al.*, 2018).

There are different ways to initiate new farming activities (s. Figure 31) but one of the most enabling factor is access to land.

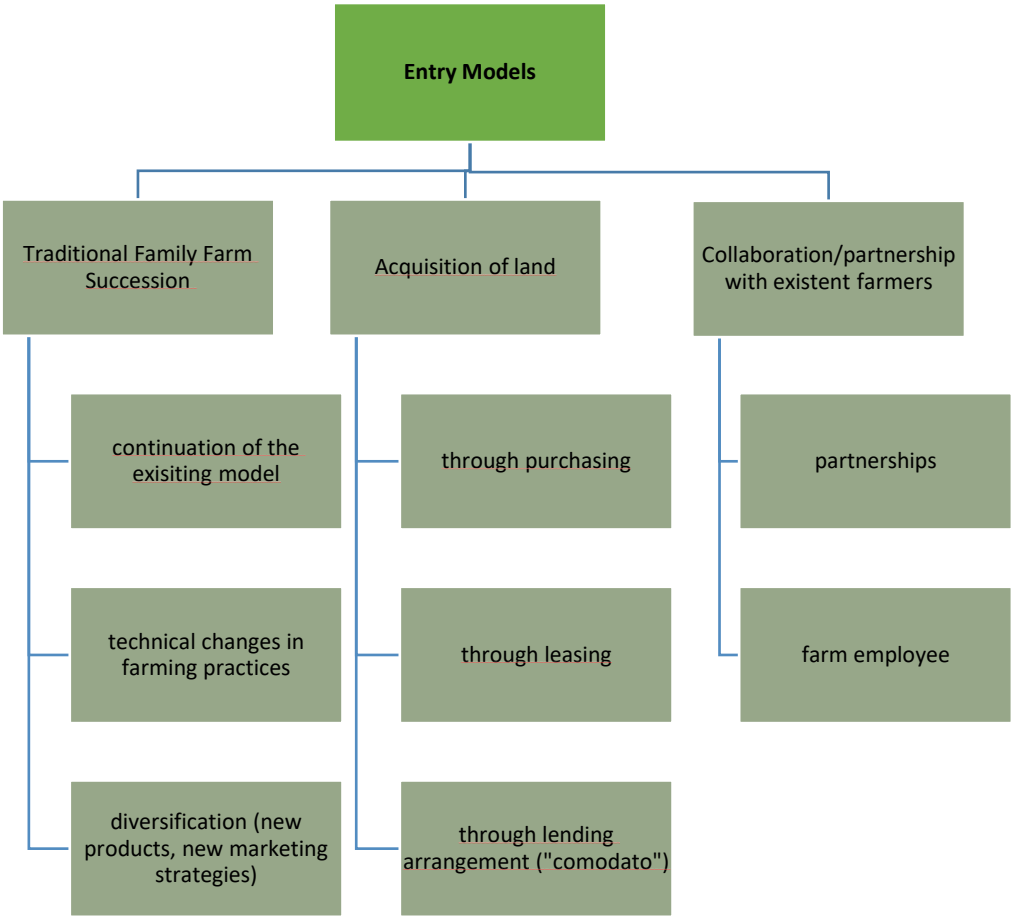


Figure 31: Different models of Portuguese farmers entering agriculture (Source: adapted from EPI AGRI 2016).

Traditional family farm succession

For people raised within an agricultural family, farming is part of daily life, and they may work 100% of their time with the family on the holding, or participate in tasks in a distributed way, while maintaining off-farm occupation. On family farms, the younger farmer usually has to wait until the older generation are willing to hand over the control of farm management to the next and this process has become longer and more complicated as a result of the increase in life expectancy (Oliveira and Carvalho, 2017). In terms of taxation, the inheritance stamp duty is fixed at 10%. However, basic Portuguese law protects immediate relatives (such as children, parents or spouse) who are exempted from inheritance tax though they incur other succession fees that depend on various factors (value of different types of goods (e.g. land and buildings).

The main constraints faced by succession farmers relate to the delay in accessing farm management control by the younger generations as the elders continue to exert control beyond retirement age, the organisation of succession when there are multiple successors, and the lack of opportunity to change the already existing business model.

When the younger generation takes over the farm, they might initially continue using the existent model, but they will usually tend to look for new ways to reduce costs and increase farm income by introducing innovation. This can be through changes in farming practices (increasingly shifting to more sustainable farming practices) and/or innovations in terms of new products, new image or a new

marketing strategy. An increasing number of farmers are considering tourism as a new diversification pathway adding value through guided farm visits, food tasting experiences.

Acquisition of land

For people who are not originally from a farming family background, access to land is the first major barrier they face. Land prices in Alentejo are very high and leasing is not an easy option - because land is not easily available and rents are also high. Information on land available for leasing opportunity is scarce and poorly accessible. Furthermore, landowners with unused land areas are often reluctant to enter into leasing contracts as they fear losing either their rights over their land and/or access to direct payments. In the case of new entrants with no family properties, the main hurdles are access to land and to financial resources.

An alternative way of obtaining farmland in Portugal and in Alentejo in particular, is through informal or formal lending arrangements (*Comodato*). Informal lending (from one or more landowners) is concluded with a verbal agreement and no payment associated. For example, if the farmer uses the land as pastures for sheep, they can give one or two lambs to the landowner, but is an offer and a personal decision, not an obligation. In return, the farmer can use and maintain the land (e.g. firebreaks) or when infrastructures such as fences are needed and approved by the owner, these will be covered by the farmer. The formal way is through a contract, which can be short or long term. In some cases, this is done on large properties were the owner also farms himself. In one of our case studies, the landowner is benefiting from increasing the diversity of products on his organic farm supporting his overall marketing strategy (weekly baskets, shops) while the new entrant has free access to land, access to existing farm machinery and already established market channels. However, if an actual rent cost is not paid to the owner, the largest drawback for the new entrant is that all the long-term investments in the land, like permanent crops and trees (orchards, vineyards, etc), fences, storage places, or irrigation will stay on the farm after the end of the lending contract.

These options are more accessible to local people originating from the region since they have the required social capital (contacts and trust relationships). For newcomers this is a very difficult way of acquiring land especially if they are new to an area as they need time to build trust within the community.

Collaboration/partnership with existent farmers:

Given the difficulty of accessing land, new entrants have been recently looking for alternative ways of accessing land. In the Alentejo region, due to historical reasons related to problems with former agricultural cooperatives, collaboration between farmers is uncommon and difficult to foster.

However, the new generation of new entrants, who do not share the same experiences, have different perceptions of collaboration or partnership. The greatest difficulty lies in finding already established farmers who are open to this way of working.

Another way to start farming is as an employee in an existing farm enterprise. This is a path usually travelled by recent graduates without direct access to land.

Business models

In Portugal, cultural traditions still consider farms and farmland as family heritage, alongside being a production factor. This strongly influences land tenure because farmland, even of no or very limited use, tends to remain in the hands of the same family. This tradition facilitates access to land within families. However, in more intensive and specialised farming, particularly those revolving around irrigation facilities, the value of the land as production factor is clearly dominant. The land property structure in the Alentejo region is dominated by large family estates (100 to 1.000 ha), that often have been in the hands of the same family since the 18th century. Land is still largely covered with Montado, the traditional extensive agro-forestry system (Pinto-Correia *et al.*, 2011). Other key land cover types are olive groves and vineyards, in smaller farms (Cancela d'Abreu et al., 2004). Over the past two decades, olive groves have expanded through a process of intensification, largely supported by the large irrigation network associated with the Alqueva water reservoir (Carvalho-Ribeiro et al., 2013). Irrigated farmland is rapidly being converted to intensive olive and almond groves and horticulture. The opportunities for change linked to the Alqueva reservoir are the material expression of the dominant discourse of agricultural modernisation and financing (Pinto-Correia and Azeda, 2017; Silveira et al., 2018). This has attracted new individual farmers and external investors to the region. In contrast, around towns, small farms still dominate a mosaic land cover of traditional and extensive crops. While the larger estates keep their function as production units, these small farms act as residential alternative for urban populations, or for tourism development. Consequently, prices of these small farms have increased, hampering agricultural activities (Pinto-Correia et al., 2017).

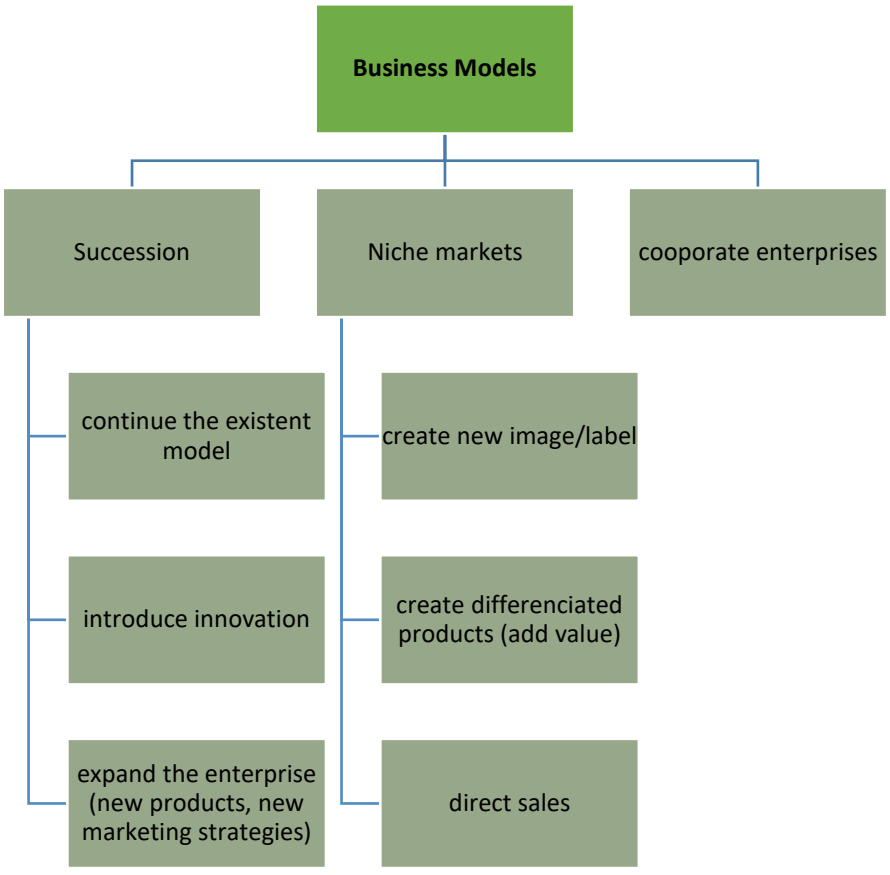


Figure 32: New entrants' business models in Portugal

If the new entrants are already in the farm (living and helping), when succession occurs, usually the new entrants continue to use the existing model in place. However, over time they will generally introduce innovation to improve efficiency and in many cases they expand the enterprise, looking for new products and new marketing strategies.

On the contrary, those that enter in agriculture from families outside farming tend to start with new products, different from those already existent in the market, looking for niche markets or exportation, with high value addition to the products. They usually resort to innovative market strategies, investment in product image and are often more dynamic in using different networks and searching for information. Some of these new entrants are also engaged in more sustainable modes of production with environmental concerns, relating to consumers' increasing awareness. There is also a growing trend in looking for direct sales or with minimum actors in the chain and are engaged in the production and consumption of proximity (short supply chains).

In one of our case studies, the new entrant had a small area of traditional olive grove, which was not profitable under conventional management. He looked for alternative ways to increase the value of his heritage and decided to invest in the image of the final product and integrated the farm history aspect with tourism activities. His profitability increased representing three times the average value of the market price for the region.

There is a growing interest amongst new entrants in using of short value chains to penetrate the market. Farmers that were already part of established farms already have their market chains and is difficult for who starts get into it. Short chains, such as direct on-farm sales, through direct home deliveries, local markets and, more recently in the Alentejo region, trough Km0 Alentejo brand, are easier ways for new entrants to start and create their own market and to get closer to the consumers and gain their trust and fidelity.

Another reality exists in the irrigated land in the South of Alentejo, linked to the very large Alqueva dam. Many new entrants get in to farming in large cooperate enterprises with globalized business, detached from the rural context they are inserted in and with strict market driven approaches. In some cases, there might be environmental concerns to satisfy a specific consumer demand, but most often neither environmental nor social concerns are central in the strategy.

2.2.9 Germany

Introduction

The age distribution among German farmers is in comparison to many other European countries rather young. However, in line with the overall European tendency, the number of farms is decreasing, the average size of farms tends to grow continuously, and at the same time farming is becoming older. The average age of a farmer is above 50 years and for many farmers, succession is unsure. About 30% of the farms older 45 years name a secured succession, while most farmers, especially part-time farming and small-scale farming, do not have a successor (DBV, 2017). The larger the farm, the higher is the secured succession rate. Traditional farm succession is still being the most common way to entering farming. In many cases it is being family succession, while an increasing trend of non-family succession becomes obvious. For the younger generation growing up on a farm, succession is just one option of

several. Simultaneously, a small, but growing number of people are trying to entering farming as complete newcomers. These complete newcomers are bringing social innovation (Alternative Food Networks, CSA, ...) and technological innovations (microgreens, insects, Aquaponics, ...) into the agricultural sector. Many farm successors continue farming, but also develop their farms further by taking advantage of the business models differentiation (short value chains, organic farming, niche products, ...) or diversification (product diversification, on-farm non-agricultural diversification).

Methodology

This desktop research on new entrants' entry models and business models in German agriculture is carried out by reviewing the relevant academic and grey literature. The Newbie guidelines were followed in accordance with work package 2.1 of the deliverables of the project.

German Farming Structure

German agriculture is due to its diversity of natural framework conditions (topography, soil, water, climate) and historical anthropogenic developments regionally heterogeneous (BMEL, 2017). Within the last two decades the number of farms halved, while the average farm size increased from less than 40ha to more than 60ha. The farms are split into nearly half full-time and half part-time farms. Today, about two thirds of the farms keep livestock and the share of organic farms exceeds 10%.

Figure 33 summarizes the diversity of German agriculture and the contribution of each product group to gross agricultural output (EUROSTAT, 2019). The output components belong ca. 50% to crop production and 50% to livestock. Most important product groups are milk, pigs, cereals, and vegetables and horticultural products. These four groups comprise nearly 60% of the total agricultural output. Germany is being the largest milk producer and exporter in Europe. About 20% of the European milk is produced here; the most cows are kept in South (Bavaria) and Northwestern Germany (Lower Saxony). About the same proportion of European pigs are raised in Germany (20%), while the agricultural goods output accounts for 12.6% of the European (EU-28) sum. Most pigs are kept in Northwestern Germany.

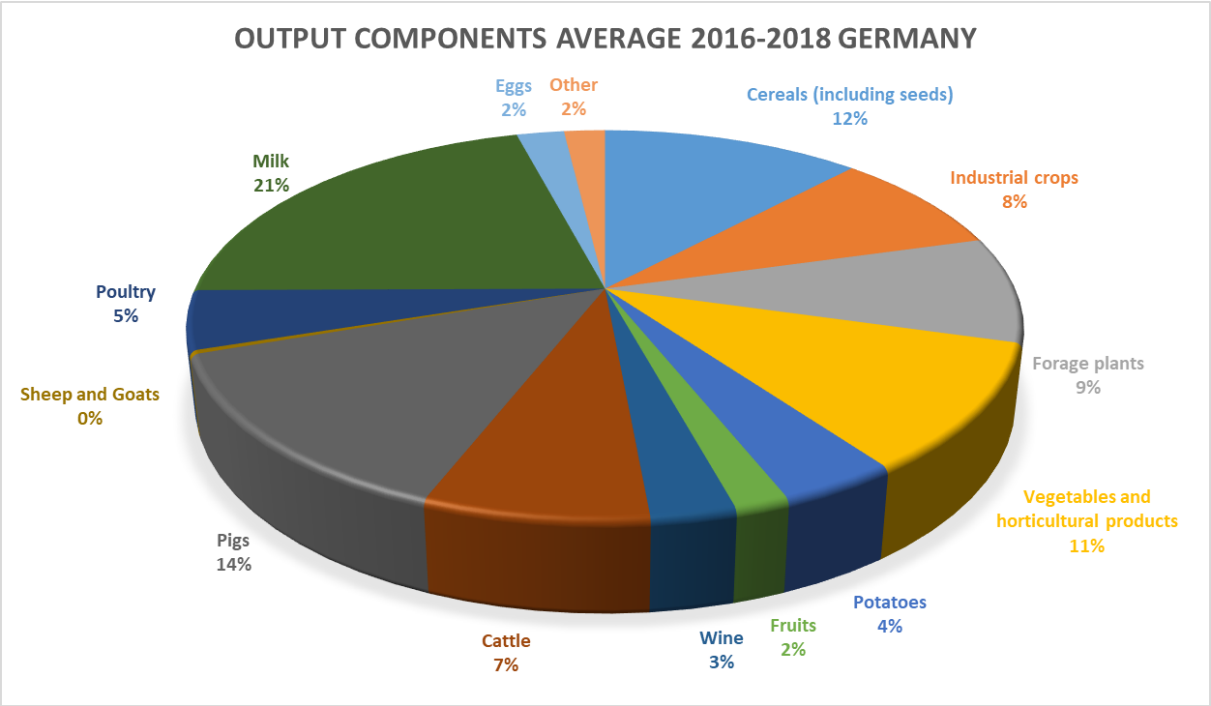


Figure 33 : Output components 2016-2018 average (Eurostat, 2019).

Entry models

In the context of this review, entry models represent the mode of entry that new entrants (successors and newcomers) use to begin their career in farming.

The age distribution among German farmers is in comparison to many other European countries rather young. However, in line with the overall European tendency, the number of farms is decreasing, the average size of farms tends to grow continuously, and at the same time farming is becoming older. The average age of a farmer is above 50 years and for many farmers, succession is unsure. About 30% of the farms older 45 years name a secured succession, while most farmers, especially part-time farming and small-scale farming, do not have a successor (DBV, 2017). The larger the farm, the higher is the secured succession rate. Regionally, the proportion of secured succession differs (s. Figure 34). There is a trend of higher secured succession rates in Southeastern Germany (parts of Bavaria) as well as on a lower level in Northwestern Germany (Lower Saxony, North Rhine-Westphalia). Furthermore, some regions around medium-sized cities (Erfurt, Halle) show higher rates, while in Southwestern Germany the proportion of secured succession is lower. This has to be seen in light of different inheritance laws in the federal states. Furthermore, Southwestern Germany is characterised by a high share of part-time farming, unfavourable natural conditions (topography, soil, climate/water). Livestock farming plays a larger role in the regions with higher proportions of secured succession compared to other regions.

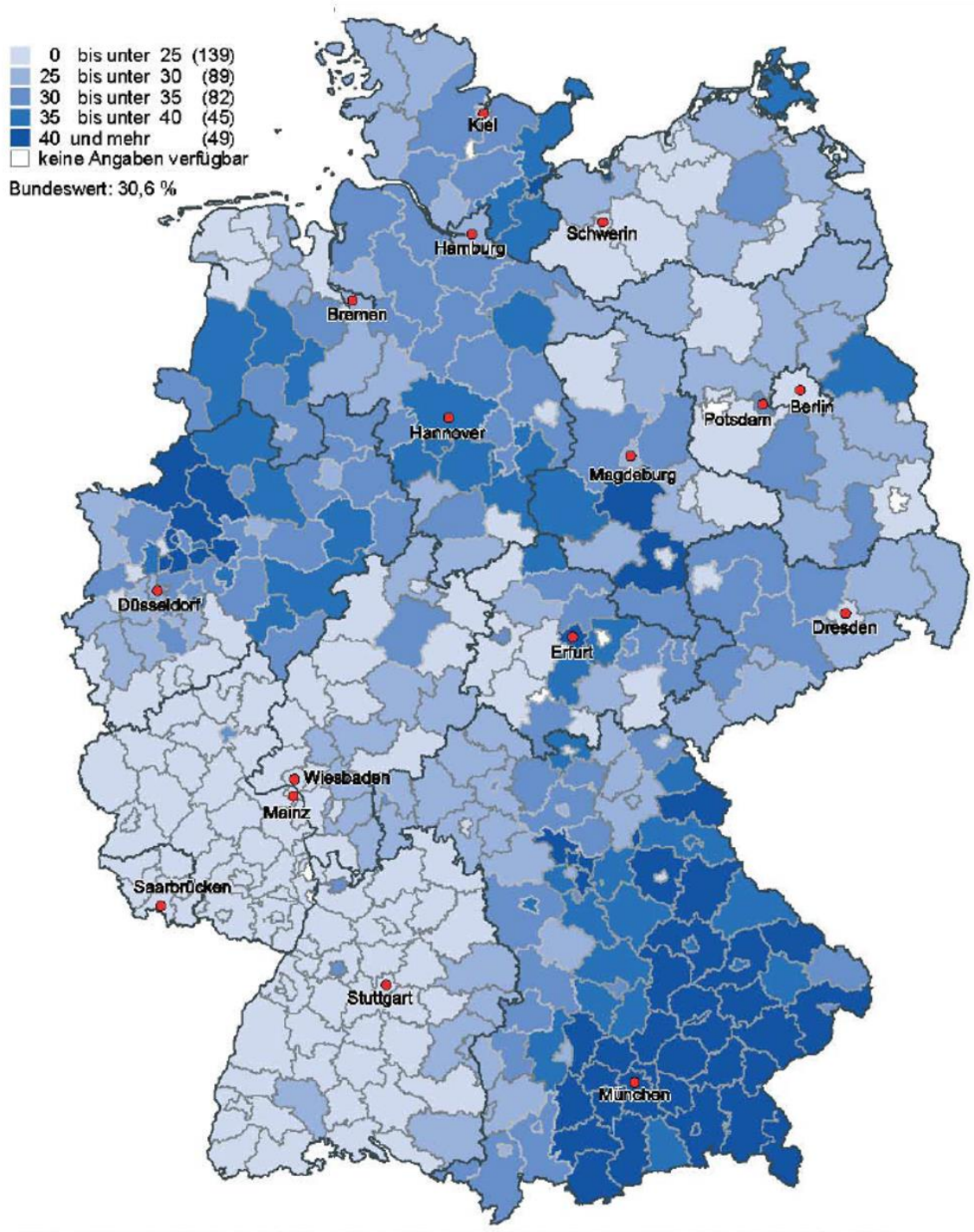


Figure 34: Regional pattern of secured succession in Germany (STATISTISCHE ÄMTER DES BUNDES UND DER LÄNDER, 2011)

Figure 35 shows the key methods of entry to farming for new entrants. Traditional farm succession is still being the by far most common way to entering farming. In many cases it is being family succession, while an increasing trend of non-family succession becomes obvious – however, still a small number

compared to family succession. For the younger generation growing up on a farm, succession is just one option of several. Simultaneously, a small, but growing number of people are trying to entering farming as complete newcomers or in cooperation with already established farmers (partnerships, share farming).

For new entrants, family succession is still being the most common way to entering farming. Successful handover from one generation to the other is linked to several hurdles, which can occur at different stages of the succession and inheritance. Besides the directly business related aspects, it is in many cases also linked to social, inter-family dynamics and ties. The average age of farmers in Germany is above 50 years, while only a few per cent of the farmers are younger than 35 years (DBV, 2017). This means that in the coming years a large amount of farmers will be retired and look for successors taking over their farm lifetime achievement. Most family farm successors continue the work of their predecessors and change only minor farm strategies in the first years, while there are also examples of family successors, who build on the status quo, but newly develop the farm in terms of production, processing, marketing, and diversification.

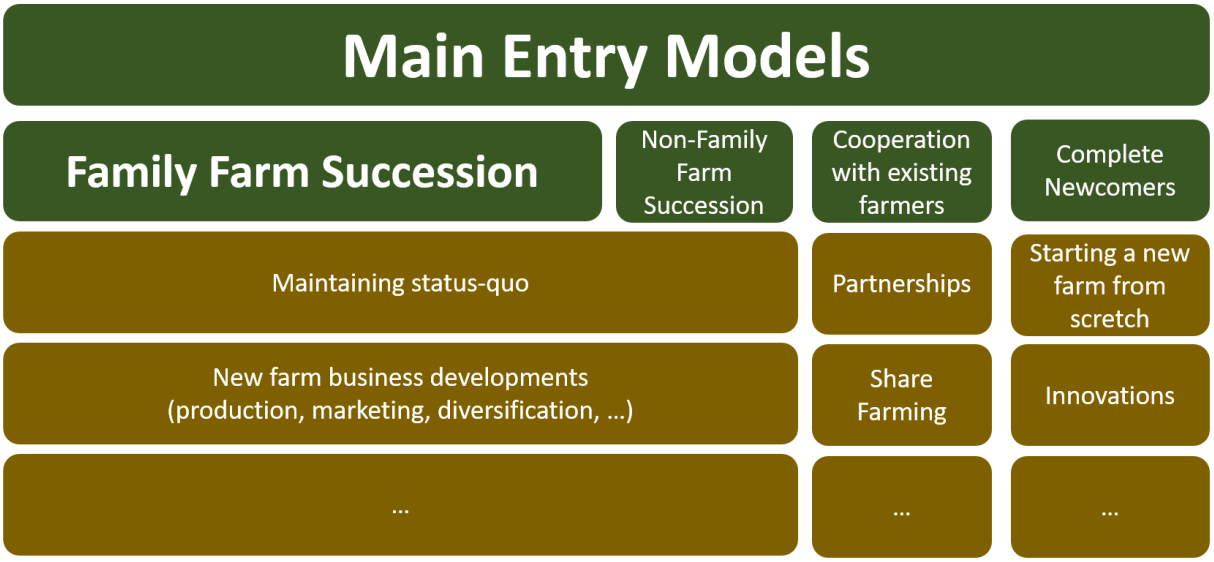


Figure 35: Entry models into German agriculture.

In 2013, five per cent of farm transfers were non-family. It is estimated that this number will grow in the coming years. However, new approaches for the handover of farms have to be found, because at the moment there is hardly any advice or support for either side, the seeking and the handing over. Especially the searching side faces considerable hurdles due to the increasing shortage of land and the associated increase in land prices. In view of very capital-intensive jobs and a low return on investment, entrepreneurs in agriculture are increasingly rejected from banks. Nevertheless, according to the statements of vocational school teachers, the number of students who start agricultural training without having a parental business in the background is increasing. The same trend can be witnessed at agricultural universities. Non-family succession is becoming mainstream step by step; for example, the website www.hofgründer.de is consulted for matching young people interested in entering agricultural and existing farmers willing to hand over more than 2,000 times annually (Vieth and Thomas, 2013). In Germany, there are various websites that mediate between the two main groups of (future) farmers. For example, the website www.hofsuchtbauer.de aims to support new agricultural

entrepreneurs targeting topics, like succession possibilities, phases of farm succession, economic aspects, legal issues, etc. A similar offer can be found at www.hof-gesucht–gefunden.de.

Crucial for new entrants is access to land – this concerns especially complete newcomers, but also successors. Land is scarce and is becoming increasingly competitive. The market value of land is higher than its productive value, which means that the costs cannot be covered by agricultural practices. Agricultural land has a limited yield, but a low risk of price erosion. This, together with low interest rates, makes them interesting for non-agriculture speculators. The prices for buying or leasing agricultural land are increasing over time; intensively used agricultural land costs today more than 10 €/m² and renting land reaches above 1,000 €/ha for a year of land lease.

New entrants, who are not able or willing to take over an established farm, have to build up their own farm business; either completely sole or in close cooperation with an existing farm. The high land prices for purchase and lease progressively require new ways, including cooperation wiht existing farmers and their land to avoid high costs for the new entrants. These partnership concepts do not only reduce the hurdle of access to land, but do also allow the joined usage of additional resources. Collaborative farming options avoid the need to buy or lease expensive land and in certain circumstances reduce or eliminate capital investment as the facilities and infrastructure may already be in place (Curran, 2017).

Complete newcomers into the agricultural sector are in many cases starting from scretch. Depending on their products and business models they do not need as much land as needed for traditional types of farming. Existing example of complete newcomers into farming comprise social innovations (Alternative Food Networks, CSA, ...) and technological innovations (Microgreens, Aquaponics, ...). Further details on their business models follow in the next chapter “Business models”.

Traditional farm succession is still being the most common way to entering farming. In many cases it is being family succession, while an increasing trend of non-family succession becomes obvious. For the younger generation growing up on a farm, succession is just one option of several. Simultaneoulsy, a small, but growing number of people are trying to entering farming as complete newcomers. Access to land is building a crucial issue for new entrants, especially the new entrants who are not taking over an existing farm.

Business models

Business models are key to the ability of the farm business to provide sufficient income for the members of the farm family or collaborators with the farm owner. This is especially important in the transition phase between one generation and the next or indeed the success of the farming venture for a new entrant. Apart from the scale, technical efficiency and ability of a farmer, there is a wide variation in the profitability of the various farm based enterprises.

New entrants in Germany are mainly belonging to the business models “mainstream farming enterprise”, “differentiation”, “diversification”, and “technological/social innovations” (s. Figure 36). While there are still many family and non-family successors of existing farms who are continuing farmers in the way their predecessors carried out farming, an increasing number of successors establishes new business strategies on farm. Societal demands and new (enterpreneurial) thinking of the new entrants leads to a growing number of differentation and diversification business models. However, mainstream farms (economies of scale/cost reduction, mass products for long value chains, ...) are being most common. Differentation and diversification are two business models which delimit

from mainstream farms by bringing producers and consumers/citizens together. When new entrants look for Unique Selling Propositions, step into niche markets like short chains (direct sale, etc.) or produce food or other agricultural products above standard quality the differentiate their farm business. Diversification is two-fold – either the farms diversify their product portfolio to reduce dependency from one or very few products or farmers add on-farm non-agricultural services on farm, like social, educational or landscape measures. To the large majority farm successors belong to one of these three business models (mainstream farms, differentiation, diversification). Some complete newcomers do also step into differentiation and diversification, but even more importantly they bring technological and/or social innovations as well as new entrepreneurial thinking together with open-minded/holistic views into agriculture. Social innovations in the agricultural sector comprise Alternative Food Networks (AFNs), e. g. Community Supported Agriculture, Producer-Consumer-Groups, Food Cooperatives, etc. Newcomers' technological innovations include for example microgreens, algae, and aquaponics, but can also include indoor plant factories or other building-bound production systems (rooftop, vertical, ...).

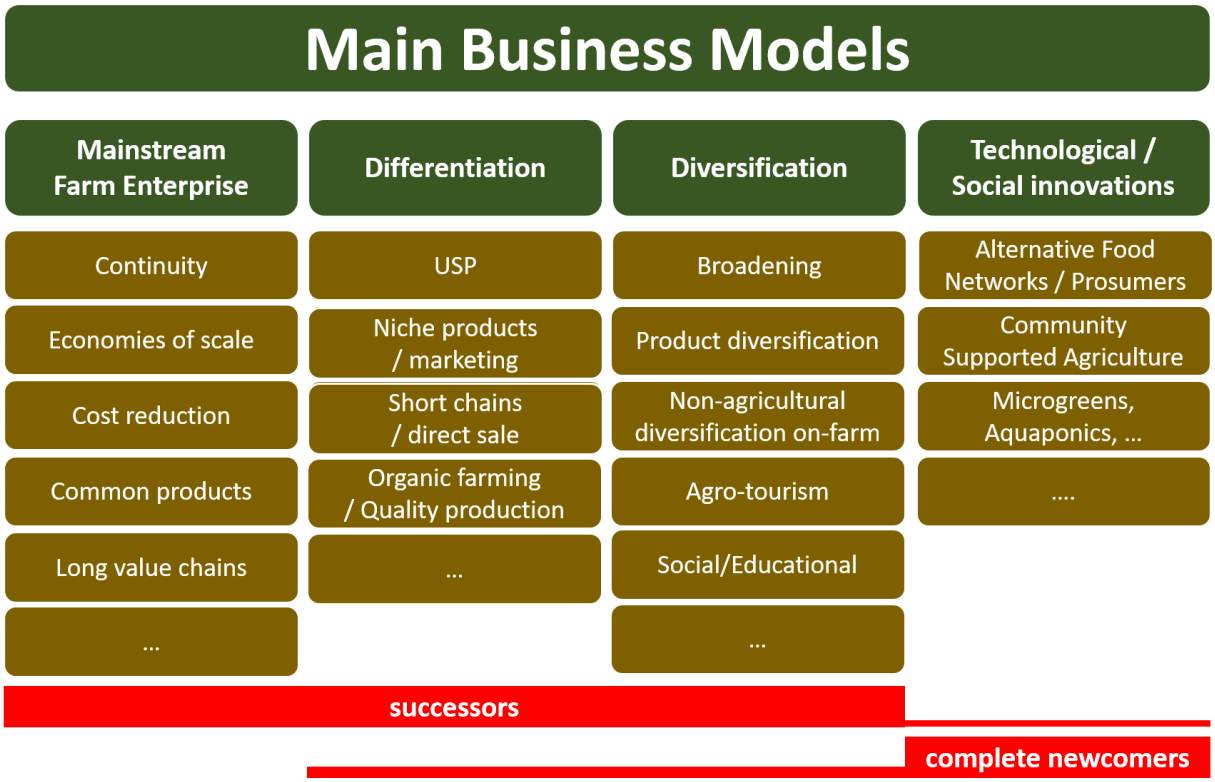


Figure 36: Business models in German agriculture.

Complete newcomers are bringing social innovation (Alternative Food Networks, CSA, ...) and technological innovations (microgreens, insects, Aquaponics, ...) into the agricultural sector. Many farm successors continue farming, but also develop their farms further by taking advantage of the business models differentiation (short value chains, organic farming, niche products, ...) or diversification (product diversification, on-farm non-agricultural diversification).

3 Educational resources

3.1 European overview

Project partners from all nine Newbie countries (The Netherlands, Belgium, France, United Kingdom, Ireland, Slovenia, Bulgaria, Portugal, and Germany) followed the given guidelines to analyse the national educational resources for new entrants into farming (s. 3.2). The educational systems differ from country to country resulting in a heterogeneous European pattern. The following two sub-chapters summarize the national education systems (1) and existing educational resources for new entrants into farming (2). The individual national reports are following afterwards (s. 3.2). Due to the huge number of universities and colleges in agriculture / green education, not all higher education institutes per country were able to be analysed. Analyses incorporate web search, but also personal interviews and contacts (email, phone, f2f). Within some Newbie countries regional foci have to be considered: Scotland within the UK review, Flanders (Belgium), and Alentejo (Portugal).

While up to the 1980s, most farmers entered the business with only practical experiences, since than an increasing number of farmers enter the farm business with higher education levels. Nowadays, higher education is often a must for economic, fiscal, legal, technical, and administrative topics, tasks, and obligations. When reviewing the national reports, it becomes obvious that online searches on agriculture succession and new entrants into farming is comparable limited to few hits on existing curricula. Except a few, agricultural colleges and universities do not highlight farm succession, agricultural start-ups, and new entrepreneurship in farming.

(1) Overview on national education systems

In the United Kingdom there are different educational policies in the four countries England, Northern Ireland, Scotland and Wales, which also result in different agricultural educational pathways, with Northern Ireland being rather weaker than the other countries. Agriculture can be studied at most universities and colleges in the UK, but sometimes more as a subsidiary subject to other courses. Overall there is a wide range of educational pathways, from 1-year diploma to university degree or doctorate. For the shorter education pathways, such as pure apprenticeship, there is a network of rural vocational schools. In the UK you do not need agricultural qualifications to work in agriculture. If you take a look at the curricula of the United Kingdom, you will not really find what you are looking for when you search for key words on the subject of new entry or new establishment. Only the subject management could deal with the topic.

Ireland introduced the so called “Green cert” certificate in farming in the early 1980s as the agricultural education requirement for farmers. It serves as the main qualification attained by young farmers entering the sector. It can be completed either as a full-time course in agricultural colleges or part-time in co-operation with local advisory services. Teagasc is main provider of agricultural education in Ireland – except the level of universities (bachelor, master, and PhD). In total, six agricultural training colleges are distributed throughout Ireland, whereof three are run by Teagasc and three other by religious orders, but in close interaction with Teagasc. Universities offer agricultural curricula for the level of tertiary education for bachelor, master, and PhD courses. Teagasc also collaborates with various third level training institutes in the provision of agricultural education to degree level.

In The Netherlands as well as in Germany the agricultural education is incorporated within the so-called teaching family of 'green education', which includes also other professions like grooms, forester, milk technologist, etc. Dutch green education profits from well-established co-operation between industry, government, and education. Besides a full university (Wageningen University) and four Universities of Applied Sciences, twelve vocational schools are spread throughout The Netherlands. Besides the formal degree courses, there are also programs and training for professionals. In The Netherlands no national minimum educational requirement exists to become a farmer. The German education system for farmers relies strongly on a dual system combing regular work on a farm recognised as an apprenticing farm and teaching courses at technical schools. In Germany, there are currently being 164 technical schools (Berufsschulen) for apprenticeships (farmer) and further 117 vocational schools (Fachschulen) aiming for master craftsman in agriculture (Meister) and certified agricultural economists (Agrarbetriebswirte). Furthermore, more than 200 curricula in agriculture and forestry exist at ten Universities and 13 Universities of Applied Sciences throughout Germany. Apart from the general educational system at Flemish universities, colleges, and vocational and technical schools, training centres offer additional courses in agriculture, e. g. Landwijzer and Syntra.

French farmers and new entrants have to acquire the 'Capacite Professionelle Agricole' to benefit from subsidies and support measures; similar to the Irish "Green cert" certificate in farming. The formal French agricultural education is run by public as well as private institutions with a focus on eight subjects: production, transformation, commercialization, land use planning and environmental protection, horse-riding activities, services, agricultural equipment, and breeding and animal care.

About 15 per cent of Slovenian farm holders have some official agricultural education (2016). An increasing number of higher educated farmers – in 2000 only six per cent of the farmers had a higher education – is overlaid by a decreasing interest in agricultural studies. The number of newly enrolled students at universities as well as other higher education institutes is recently shrinking. Apart from vocational and technical education programs, Slovenian tertiary education covers short-cycle vocational higher education and higher education.

Similar to Slovenia, a decreasing number of young Bulgarians enter agricultural technical or vocational schools and universities. The numbers of Bulgarian graduates is not sufficient to rejuvenate the agricultural sector. Agricultural higher education in Bulgaria is offered at five public national universities and a number of public and private universities focusing on economic, technical and humanitarian subjects. Throughout Bulgaria a net of 76 agricultural schools (55 vocational schools) exists. Official reports highlight shrinking quality of education due to its low restructuring not corresponding today's needs.

The Portuguese national report names the vocational schools to be more efficient than universities in preparing future farmers. As an overall picture, the formal professional qualification of farmers and family members working on the farm is low. Vocational training is offered by agricultural professional and rural development schools focusing on practice-oriented learning. Universities and polytechnic agrarian and veterinarian higher education institutes offer higher education courses (master, bachelor, and PhD).

(2) Overview of already existing educational resources for new entrants into farming

There are other education resources in the United Kingdom in addition to academic institutions. These include incubator programmes, industry and national farmers' association sponsored career development services (bright crop), and other certification and advice centres.

In Ireland, formal education focuses on the key skills and knowledge base required by farmers. Succession and inheritance has a dedicated module within the education plan, but also other related topics like investment appraisal, cash flow, and financial performance of the business. Furthermore, third level institutes and universities offer start-up business courses out of formalized degree courses for students. Also Teagasc offers courses for farmers and new entrants who wish to start a new alternative or complimentary new on their farm. These courses include inter alia the two topics of succession and sources of start-up funding.

At Wageningen University no specific courses targeting new entrants could be found, while the two Universities of Applied Sciences AERES and HAS offer courses, which are described by using terms like entrepreneurship, succession, business models and farm management. In the description of the educational program of AERES Warmonderhof it becomes clear that it aims to educate future farmers (employee and self-employed). Although the curricula description at Wageningen University does not name new entrants, inheritance, succession, etc., Wageningen University & Research runs the incubator StartHub Wageningen. StartHub is offering support for students wishing to develop their entrepreneurial skills. Besides StartHub for students, there is a general incubator called StartLife, which has the mission to grow Food & Agri start-ups into leading enterprises. Informal education for new entrants is channelled at the Dutch Association for Young Farmers network (NAJK). They offer trainings linked to succession and entrepreneurial skills. One of their training is a joint one with Rabobank highlighting financial aspects of succession, the development of farm strategies, and self-reflection of future farmers. Another network called 'Toekomstboeren' (future farmers), which can be seen as a spin-off of AERES Warmonderhof students aims to connect possible successors with existing farmers who want to stop farming.

In Flanders (Belgium) the installation test and higher secondary education in agriculture are most common educational backgrounds of new entrants who request public start-up support. When applying for public support for starting a farm, some requirements have to be met: you need to either have a degree in agricultural education with a minimum level of a higher secondary education or you have to prove successful accomplishment of an installation test, which also includes a minimum of two years of professional experience. The installation course consists of two courses (basic know-how in the general and specific legal agricultural regulations, business economics, and business accountancy; targeting the agricultural sector the new entrant wants to start in), a traineeship, and an exam.

Based on a web search and some personal contacts, in the German technical and vocational schools new entrepreneurship, succession, and inheritance issues are to the large majority not part of present curricula and teaching plans. Yet, the vocational schools in the Federal state of Sachsen (Saxony) run a course called "start and run a farm business". The three agricultural universities in Bonn, Kassel (Witzenhausen), and Hohenheim offer lectures and seminars targeting new entrants by focusing on succession and the process of takeover. Furthermore, the two Universities of Applied Sciences in Weihenstephan-Triesdorf and Nürtingen explicitly teach how to start a (farm) business. The Universities of Applied Sciences in Soest, Osnabrück, and Bernburg have business incubators supporting students in their entrepreneurial start-up phase.

Besides formalized higher education, adult courses and qualifying courses are offered for new entrants in France. Furthermore, farm incubators have to be highlighted. RENETA gives newcomers into farming the opportunity to test their farm business idea under real conditions. The acquired skills of new entrants are recognised – a so-called validation of acquired experiences.

The Slovenian national report presents insights into two younger, comparable small universities, which have innovative and niche agricultural programs opening possibilities for agricultural development of new entrants (University of Nova Gorica, University of Primorska).

The Bulgarian vocational and technical schools follow national curricula, which is characterised by a low recognition of entrepreneurial aspects. However, some schools are continuously adjusting their curricula introducing more attractive and business-related subjects. Some Bulgarian universities incorporate topics relevant for new entrants, e. g. 'Innovation Management and Organisation' and 'Entrepreneurship' at the master program "Agribusiness and entrepreneurship" of the Agricultural University Plovdiv; 'Agricultural Entrepreneurship' and 'Innovation in Agricultural Business' at the bachelor program Agricultural business of the University of Economics in Varna; 'Challenges for the Development of the Entrepreneurship in Agriculture and in the Rural Areas', 'Managing Farming Risk', 'Innovations and Innovation Policy in Agriculture', etc. at the master program Agribusiness management and rural development of the New Bulgarian University in Sofia.

3.2 Newbie partner countries' reports

3.2.1 The Netherlands

General remarks on the analysis of educational resources

The study was performed as suggested in the NEWBIE project guidelines. Suggested key terms were utilised, with a light focus on succession and starting a farm, to search for connecting educational programmes on institutes' websites and via search engines. Generally, there were very few hits on curricula, because educational programmes only have overview descriptions with some specification on the themes the programme focuses on.
Beyond the digital search, personal and institutional knowledge of colleagues at WUR with knowledge of the topic were consulted. These provided additional materials and entries to specific programmes.
After the digital search some institutes were contacted via telephone for more in-depth information on the central issue of this report.

Figure 37: Locations of Green Education Institutes (Ontwikkelagenda groen onderwijs 2016-2025, 2016).

These were either study advisors from the institutes or lectures from within the personal network, working for one of the institutes.

Key results and discussion

Overview structure of educational resources of agricultural colleges and universities

In the Netherlands the agricultural education is incorporated within the so-called 'Green Education'. The educational institutes connected with this Green Education are educating students to start a career in the green sector, which is of big importance in The Netherlands, both economically and socially. Within The Netherlands there is co-operation between industry, government and education in the 'Golden Triangle'. This concept is used to educate the future professionals in a way that fits the needs. Green Education can be divided into three clusters:

1. Agri & Food
2. Horticulture & Plant Propagation Materials
3. Nature & Living Environment

Table 10: Number of Green Education Institutes (Ontwikkelagenda groen onderwijs 2016-2025, 2016).

Educational level	Number of institutes	Locations
Preparatory vocational secondary education (vmbo) & senior secondary vocational education and training (mbo)	12	110
Universities of Applied Sciences	4	9
Research universities (Wageningen University & Research)	1	1

Green Education has institutes at the different levels of the Dutch education system. Green Education is only a minor part of all the education that is provided. Some of the institutes have a broad range of educational themes they offer. Others focus solely on Green Education. There are also differences within institutes focussing more or less on agricultural education. The Dutch education system is described in figure 38. In addition to the description in figure 38, which is focussing on full-time programmes and young people, there are also educational programmes and training for professionals within the Green Education. The programmes and training offered has much variation, from short practical training on crop protection to 2-year part time programmes for Associate degree in entrepreneurship focussing on (self-) employed farmers.
There is no national minimum on educational requirements for becoming a farmer in The Netherlands.

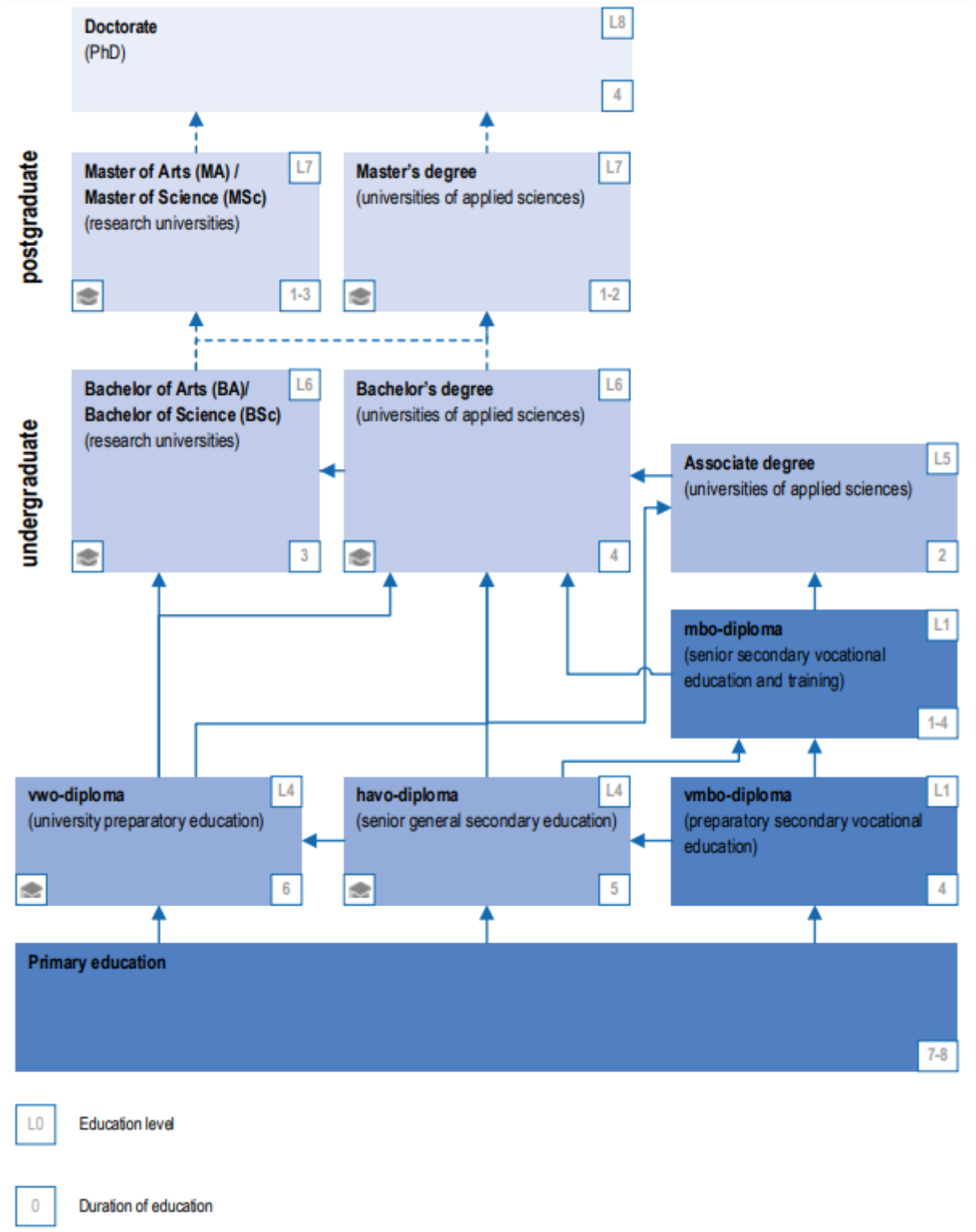


Figure 38: Education System in The Netherlands (NVAO, 2015).

Analysis of agricultural colleges' and universities' curricula on succession and starting a business

The analysis on curricula focusses on different levels of education and different types of educational institutes. Within the group of institutes there is one research university (Wageningen University), two universities of applied sciences (AERES University of Applied Sciences Dronten and HAS University of

Applied Sciences), one institute with senior secondary vocational education and training focussing on bio-dynamic farming and gardening (AERES Warmonderhof), and one with both senior secondary vocational education and training and preparatory vocational secondary education (Nordwin College). In the table below a summary of relevant results are listed when searching on institutes' websites with connecting searches (s. Table 11).

Table 11: List of selected Green Education Institutes including relevant results

Institute	Relevant results
Wageningen University	- www.wur.nl - No specific results on searches apart from the Wageningen University and Research incubator for students (will be described later in this report).
AERES University of Applied Sciences	- https://www.aereshogeschool.nl/faculteiten/dronten-nl - When searching for farm succession 12 different educational tracks are in the search results. They are focussing on different agricultural sectors (f.e. Livestock, Agribusiness, Arable, Horticulture) with different type of programmes (fulltime, par time, for students, for professionals). Within the description of a specific course words like entrepreneurship, succession, business models and farm management are used. There is no specific information to be found on curricula within the course descriptions. - A publication of this institute from a project together with the farmers organisation, the young farmers organisation and another university of applied sciences with a focus on family businesses on the challenges of succession of a farm within family. - https://www.windesheim.nl/~/media/files/windesheim/research-publications/praktijkpublicatieondernemerschap_nov2017.pdf
HAS University of Applied Sciences	- https://www.hasuniversity.nl/ - The results were very similar to the results the AERES university of applied sciences. Search terms where connected to educational programmes that are provided.
AERES Warmonderhof	- https://warmonderhof.nl/english - In the description of the educational programme it becomes clear that this is a programme to educate future farmers (employee of self-employed). The institute has connections with several farms in the vicinity, with different types of agriculture, where the theory is used in practise by the students. No specific information can be found on curricula. Some information can be found on the specific lectures they are teaching: f.e. economy, urban agriculture, nature, animal husbandry but also on art and anthroposophy.
Nordwin College	- https://www.nordwincollege.nl/over-nordwin/nordwin-college-en - No specific hits when searching on the institutes website. When reading the description and end-term of some educational programmes it becomes clear that students are educated towards employee functions in the green sector and at the highest levels, this institute is offering courses for self-employed farmers.

Business incubators and start-up centres

Wageningen University and Research (WUR) has an incubator StartHub Wageningen (http://www.starthubwageningen.nl) for current and recently qualified Wageningen (PhD) students. StartHub is offering support for students who want to develop their entrepreneurial skills, via low key trainings which include developing a business idea and realizing this in a company. Next to the student incubator there is also a general incubator, StartLife, which has the mission to grow Food & Agri start-ups into leading enterprises.

On AERES Warmonderhof there is attention for vacancies on farms. It offers both employee functions on farms and farms that are looking for a successor.

Informal education

Network 'Toekomstboeren' (farmers of the future) can be seen as a spin-out from students of AERES Warmonderhof. It is a network with the goal to connect farmers who want to stop farming with possible successors. Next to the matchmaking there is also focus on informal knowledge exchange within the network. The network is facilitating workshops with farmers and future farmers to exchange on relevant topics.

The Dutch Association for Young Farmers (www.najk.nl) is probably the network with most impact in informal education of farm succession in The Netherlands. They offer several trainings related to succession. The trainings cover a wide range of relevant subjects like entrepreneurial skills, financial aspects of succession, practical issues on succession and implication for succession if you are the future farmers' partner. One of the trainings is organized together with the Rabobank, which is the bank with the biggest investments in agriculture in The Netherlands. It's focussing on financial aspects of succession, the development strategies of the farm and encourages self-reflection as a future farmer. The training consists of an individual reflection interview, a financial scan and a 5-day group training with peers. The main goal is to strengthen the personal and professional skills to create a vision on the farm, the surroundings and the best development strategy. Like the network 'Toekomstboeren' the NAJK has also a matchmaking programme for current farmers who are looking for a successor and future farmers without a farm within the family.

Tools used in educational programmes

AERES University of Applied Sciences developed a tool which is focussing on the communication among the people involved during a farm succession. On average a succession within a family farm takes 10 years. Communication is seen as one of the items to enlarge the success of a succession. Values and interests play an important role in the choices made in the family business. Wiggele Oosterhoff (link) of Aeres Hogeschool Dronten developed the WaardeNspel (Values game). This is a serious board game that helps to have a heart to heart conversation with the people involved in the succession.

Another tool used within several informal networks and within the Nordwin College is the 'worksheet of the future'. This worksheet is developed by Wageningen University and Research in co-operation with diversified farmers to work on the future development of their farm. Within the worksheet, which can be worked on for a full day, there a several steps to take from looking back to the roots, reflecting at yourself to designing the dream situation. From this future dream situation, the participant is going through a number of steps to make an action plan to start realizing the dream. This video is giving a short introduction on the tool (note: unclose captions).

After a phone consultation some more relevant information on curricula is found (s. Table 12):

Table 12: List of selected Green Education Institutes including relevant results after phone consultation

Institute	Relevant results

Wageningen University	• www.wur.nl
	• Where the incubator StartHub offer extracurricular education there are some educational tracks on Entrepreneurship with curricular courses.
	• BSc Thematic minor Innovation and Entrepreneurship – https://www.wur.nl/en/Education-Programmes/BSc-Minors/List-of-BSc-minors/BSc-minor-Innovation-and-Entrepreneurship-WUINE.htm
	• An overview of the curricular courses can be found through the list of courses of two major lectures on entrepreneurship; Kim Poldner/Thomas Lans:
	  ○ https://www.wur.nl/en/Persons/Kim-dr.-KA-Kim-Poldner.htm?subpage=education
	  ○ https://www.wur.nl/nl/Personen/dr.ir.-T-Thomas-Lans.htm?subpage=education
	• For PhD education on entrepreneurial skills there the Graduate Schools of Wageningen University and Research developed a specific course - https://wgs.crs.wur.nl/courses/details/96
	• In general it can be said that most of the students of this institute foresee a succession or start-up of a farm.

AERES University of Applied Sciences	• https://www.aereshogeschool.nl/faculteiten/dronten-nl • Within our institution most students are farm successors, mostly from dairy farms. We also have students with backgrounds in horticulture, arable farming, other livestock (pigs, chickens) farming. • Within an educational track students can choose for a special entrepreneurship track. Almost all students who want to become a farmer, successors or new entrant, are choosing this track. Within this track the educational programme is adjusted with more focus on the financial and legal aspects of farm succession. More general livestock courses are skyped in this track. • At the end of the third year students have to develop a farm succession plan. Often this is situated on the family farm. • Every year there are some students from outside agriculture with the ambition to become a farmer. Hard to say if numbers are rising, however nowadays there is a constant presence of potential new entrants among the students. • Within Warmonderhof (both in the AERES group) you see many students from outside agriculture in the student population. • We have the vision to educate on ambitions. A challenge here is how intense you can coach students on the development of their

	competences. Educational innovation on coaching students with better quality and with less teachers time is a future challenge. • For this coaching we are also cooperating with MOVEARES, (www.movaeres.nl) which is a spin out of our institute. We offer students personality tests, strategy tests and organise a day about succession for students with their parents. We are still developing this cooperation. • Another challenging point is the financial part of the succession. F.e. you see more and more farms where the family capital stays in the farm and the successor needs to cooperate with family shareholders in their business strategy.
Nordwin College	• https://www.nordwincollege.nl/over-nordwin/nordwin-college-en • This institute is mainly, when looking at the higher levels of senior vocational education and training within the dairy programme, educating future successors. Most of the students are coming from a dairy farm and have the ambition to succeed the family farm. • In many courses and in internships there is attention for farm development both on practical issues as on financial issues. • Most potential successors are continuing in a successive study on the university of applied sciences (Van Hall Larenstein is located in the same location) if this is within their capabilities.

Table 13: List of consultations

Institute	Name	Function
Wageningen University and Research	Gitte Schober	Coordinator Centre of Entrepreneurship
Aeres University of Applied Sciences	Ron Methorst	Researcher and lecturer
Aeres Warmonderhof	....	....
Nordwin College	Mr. v. Broekhuizen	Internship coordinator dairy

3.2.2 Belgium

Introduction

Anno 2018, an increasing number of young people starting in farming enter the sector with a strong educational background. While up to the 1980s, most farmers entered the business with only practical experience, the majority of new entrants now enter the business with a diploma in agriculture. Generally, larger farms are run by farmers with a higher educational degree. The higher educational degree is often a must in terms of the economic, fiscal, legal, technical, administrative requirements that come along with running a farm. Furthermore, continuous follow-up of developments in the sector - through study days, vocational training programs, etc. – is a common practice for farmers.

We distinguish in this report between 4 types of education: (1) general educational system in Flanders, (2) training centres, (3) installation test and (4) specific training programs. Statistics on VLIF-support (support for start-ups and investments) are provided in figure 39 and demonstrate that both the installation test and the higher secondary education in agriculture are the most common educational backgrounds of farmers requesting start-up support from the government.

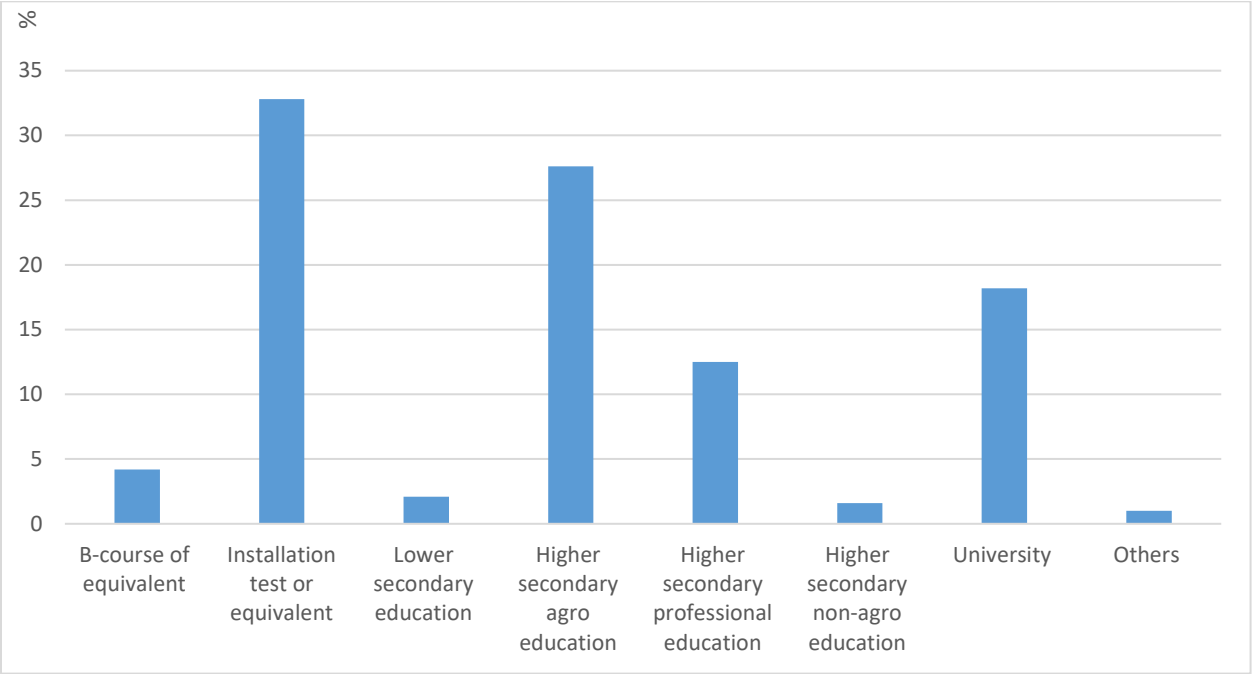


Figure 39: Education of start-up farmers in agriculture demanding for VLIF support in 2009 (Source: Departement Landbouw en Visserij, Afdeling Structuur en Investeringen)

General overview of education in agriculture

Table 14 provides a general overview of the conventional educational degrees that can be obtained in Flanders. Taking into account the statistics of figure 35, almost 30% of the new entrants asking for support in 2009 followed either the green or the blue boxes.

Table 15 provides an overview of universities and university colleges with agricultural education. Again, in combination with the statistics on new entrants asking for support in 2009, 18% of the new entrants have had education in one of these institutes.

Table 14: Overview of agricultural education in Flanders (Landbouw en Onderwijs, 2018-2019).

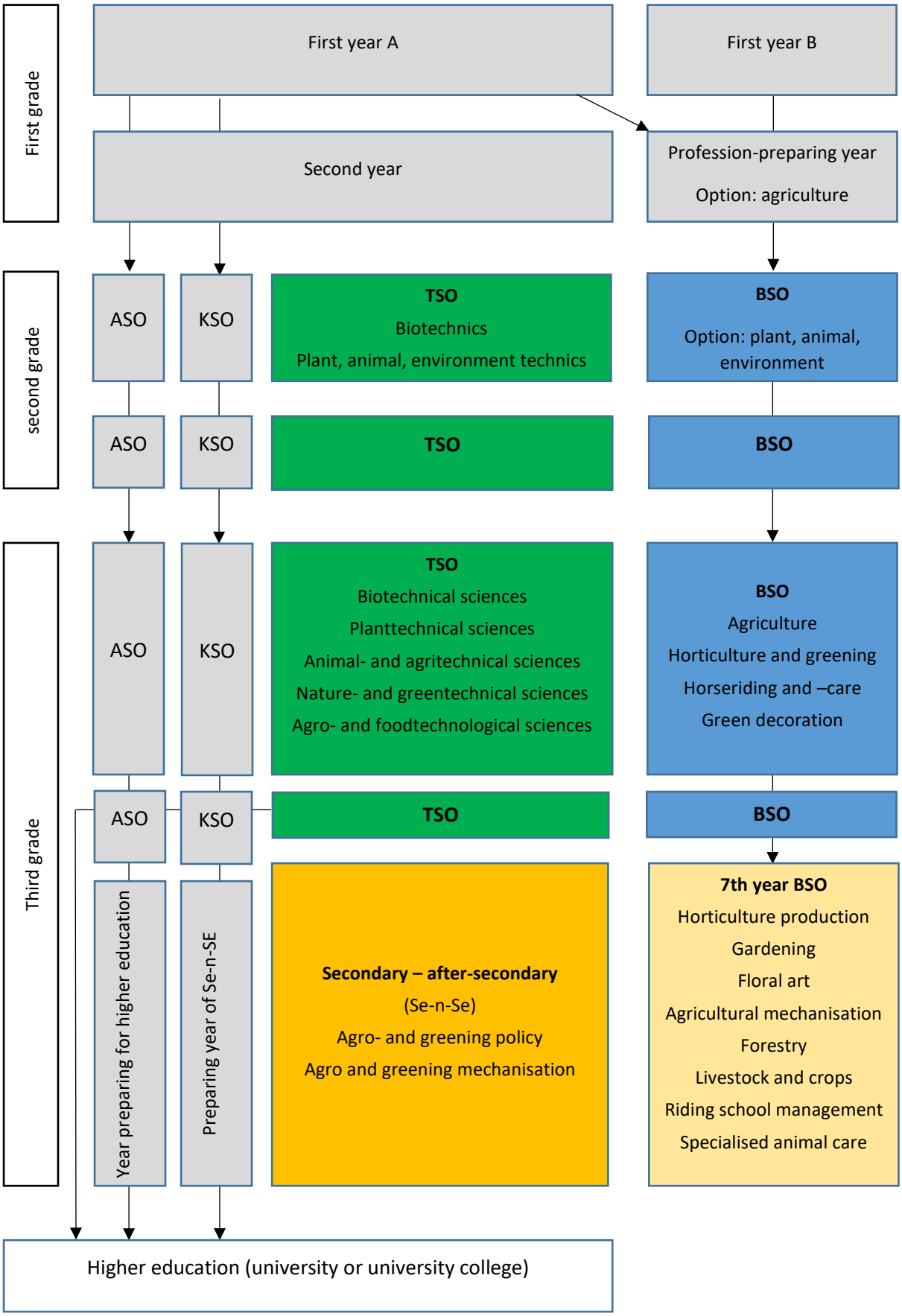


Table 15: Universities and university colleges with education in agriculture

Name (English)	Organisation	Faculty / Department	full name organisation	Website	Location / City
Academic bachelor/ master in bio-engineering	KU Leuven	Faculteit bio-ingenieurswetenschappen	University of Leuven	www.biw.kuleuven.be	Leuven
Academic bachelor/ master in bio-engineering	UGent	Faculteit bio-ingenieurswetenschappen	Univeristy of Ghent	www.ugent.be/bw	Ghent
Academic bachelor/ master in Applied Biological Sciences	VUB	Faculteit Wetenschappen, vakgroep Toegepaste Biologische Wetenschappen	University of Brussels	www.dbit.vub.ac.be	Brussels
Academic bachelor/ master in bio-engineering	UA	Faculteit Wetenschappen, departement Bio-ingenieurswetenschappen	Antwerp University	www.ua.ac.be/tbc	Antwerp
Academic bachelor/master Biosciences (industrial engineer)	KU Leuven	Faculteit Industriële Ingenieurswetenschappen	University of Leuven	http://iiw.kuleuven.be/geel	Geel
Academic bachelor/master industrial engineer in Biosciences	UGent	Faculteit bio-ingenieurswetenschappen	University of Ghent	www.ugent.be/bw	Ghent and Kortrijk
Professional bachelor in agro and biotechnology	VIVES	studiegebied Biotechniek	Katholieke Hogeschool Vives	www.vives.be/opleidingen/biotechniek	Roeselare
Professional bachelor in agro and biotechnology	HoGent		Hogeschool Gent	www.hogent.be	Ghent
Professional bachelor in agro and biotechnology	Odisee	studiegebied Biotechniek	Odisee Hogeschool	www.odisee.be	Sint-Niklaas
Professional bachelor in agro and biotechnology	Thomas More	Opleiding agro- en biotechnologie	Thomas More	www.thomasmore.be	Geel
Professional bachelor in agro and biotechnology	PXL	Departement PXL-TECH	PXL	www.pxl.be	Diepenbeek

Vocational training in agriculture

Apart from the general educational system, there are training centres that offer formation in agriculture.

Landwijzer was established in 1997. At that time organic agriculture in Flanders was very much behind as compared to organic agriculture in the neighbouring countries. The key motivation behind the establishment of Landwijzer was the fact that a decent education for professional organic famers was lacking. In over 20 years' time, Landwijzer counts over 100 people that graduated. There is no age specification to become member or student at Landwijzer.

Another centre for vocational training in Flanders is Syntra. They offer for example a course on winery, where you learn about the process from the work in the wine yard to wine making, including the start-up of your own farm.

Installation test

If you want to apply for VLIF support when starting a new farm, you need to have either (1) a degree in agriculture education with a minimum level of a higher secondary education, or, (2) provide a proof of successful accomplishment of the installation test (which also requires minimum 2 years of professional experience).

The installation course consists of 2 courses, a traineeship and a written and oral exam.

- Starting course type A: a general course of minimum 100 hours, especially for people that are preparing for starting up in agriculture. This course provides basic know-how in the general and specific legal agricultural regulation, business economics, and business accountancy.
- Starting course type B: a course of minimum 60 hours which is complementary to starting course A, though focusing specifically on the agricultural sector you want to start up in.
- Traineeship: 20 days of 8 hours on a farm to gain experience and observe the policy of the farm.
- The installation test includes two exams: Written exam: open book exam with multiple choice
- Oral exam: socio-economic presentation of the farm to demonstrate the business economic insights. Candidates need to apply the concepts that have been introduced in the courses.

3.2.3 France

Agricultural education: a specific education system

In France, the agricultural education relied on agricultural ministry and is built around the national education system (common designation and recognition of the diplomas, teaching staff status), enabling bridges during the academic curriculum or adult education.

The agricultural education covers eight fields of agricultural and para-agricultural activities: production, transformation, commercialization, land use planning and environment protection, horse riding activities, services, agricultural equipment, and breeding and animal care.

It is provided in specialised institutions, whether they are public (Etablissements Publics Locaux d'Enseignement et Formation Professionnelle Agricoles) or private (Maison Familiale Rurale, Réseau d'Etablissements d'Enseignement Agricole Privés, Ecoles d'ingénieurs privés…).

Private institutions: zoom on les Maisons Familiales Rurales:

- https://www.mfr.asso.fr/pages/mieux-connaitre-le-mouvement-des-mfr.

A path between theory and practical application

At all stages, the training path covers both theoretical education (general subjects, technical, and business skills) and practical application. The practical experience is acquired through:

- As a production unit intended educational goals, they fulfil 4 important missions: to educate, to produce and commercialized in an environmentally acceptable way, to test and experiment in order to communicate about professional practices in the national and regional guidelines
- Farming internship: from few weeks to several months depending on educations and levels
- Apprenticeship contracts: as part of sandwich courses

The agricultural professional capacity: Installation aid issue

The acquisition of a Capacité Professionnelle Agricole (CPA) is part of the conditions to fulfil to benefit of the national and European aid for agricultural installation. It means owning a level IV diploma recognised and following a qualifying education path related to the installation project.

The access to aid is more or less essential depending on the economic project; it encourages many project leaders without recognised initial training to follow a recognised by the competent authority adult course (Brevet Professionnel Responsable d'Exploitation Agricole (BPREA), Technicien Agricole).

Adult course and qualifying course: Professional retraining and adjustment way

Besides aid issue, project leaders and particularly new entrants, complete a course recognised by the competent authority with a short-term skills training. They have to develop specific skills (e.g. direct marketing, use of draught power for vegetable production…) which can explain this choice as well as the lack of appropriate training offer to innovative projects (e.g. agricultural course tackled only a little about organic farming until recently).

For compensating the lack of adequacy between training offer and demand initiatives apply theory and practical components.

Zoom on 'Eco-paysans' training path, from the collaboration of training institutions and agricultural development organisations:

- https://sites.google.com/a/ecopaysans.fr/ecopaysans/

New apprenticeship and recognition of skills forms

Farm incubators give the opportunity to project leaders to concretize their project in real situation in a safe environment and of limited duration. The progressive development of the project open the way to a recognition of their skills acquired thanks to this experience which is called a 'Validation des Acquis

par l'Expérience' (VAE; validation of acquired experience). The VAE allows to get a diploma by justifying a significant experience in the appropriate field of work. Wage-earning is another way to the VAE.

Bridges between entrepreneurship and agricultural field

Agricultural institutions and particularly College of agricultural science ('écoles supérieures agronomiques'), launch out in the incubators movement, offering dispositive which associates course, research and development to their entrepreneurs.

Zoom on food shaker by ISARA, an incubator for the food sector:

- http://isara.fr/Entreprises/L-incubateur-Agrapole

Evolution of agricultural education

Launched in 2014, the action plan 'Enseigner à produire autrement' ('teach how to produce alternatively') aims at a significant evolution of agricultural education modalities to take account of three key issues: economic, ecological and social. The diploma revamping is realised progressively.

Zoom on the renovated BPREA:

- http://www.chlorofil.fr/diplomes-et-referentiels/formations-et-diplomes/bp/responsable-dentreprise-agricole.html

3.2.4 United Kingdom

Remarks on the analysis of educational resources

This study was conducted to follow the NEWBIE project guidelines. The results were obtained primarily through digital search engines and desktop research of agriculture educational resources in the UK. The College or University websites, their mission statements, the available curriculum, and career trajectories were analysed for relevance to new entrants and farm business management. Institutional knowledge at HUTTON was used to support the digital search.

Key results and discussion

Overview structure of educational resources of agricultural colleges and universities

Agricultural educational pathways in the UK differentiate across the four countries of England, Northern Ireland, Scotland and Wales due to varying education governance. These differing pathways are complimented by rather homogenous vocational and land-based training opportunities in agriculture, across the UK. However, agricultural apprenticeships and certification schemes as pathways into agriculture appear less supported in Northern Ireland.

Most universities and colleges in the UK offer a degree in Agriculture, often as a sub-discipline of a broader study of the life sciences, or the environment. These degrees are offered as 3- and 4-year length courses for a Higher National Diploma or certificate (HND/HNC) through to a full degree such as BSc in Agriculture. The universities will also offer advanced courses such as MSc, post graduate

diplomas (equivalent to a MSc, but without the thesis requirement) and PhD. Many colleges and universities, especially the land-based or rural colleges offered a broader array of certificates, from 1-year diplomas, to university sponsored apprenticeships. Diplomas offer a shorter course commitment from students, and focus on vocational pathways, but can be applied to higher degrees if desired.

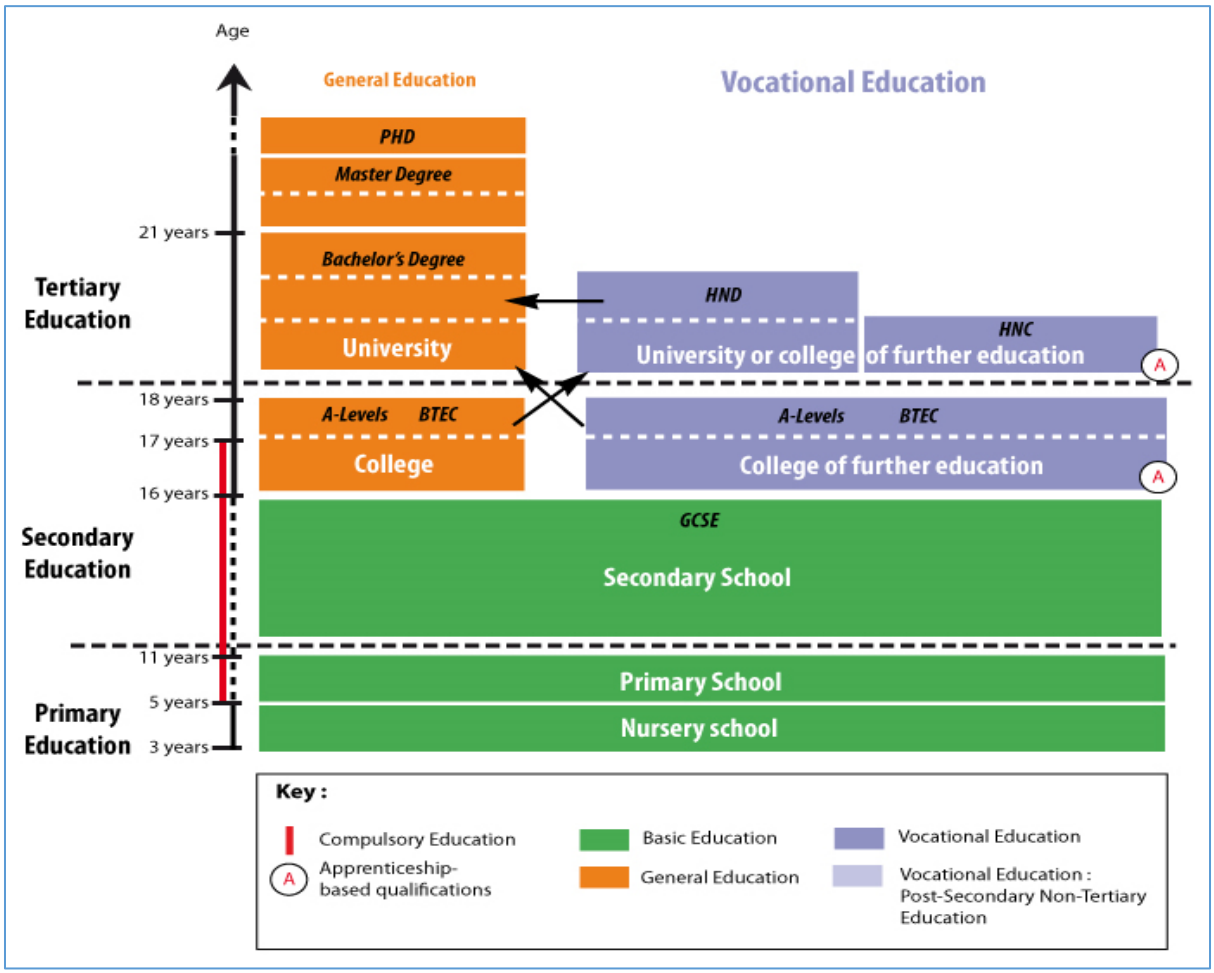


Figure 40: The UK higher education system. The General Certificate of Secondary Education (GCSE) is taken in England, Wales and Northern Ireland. In Scotland the equivalent of this would be the Scottish Standard Grade. Image copyright Onisep.

National Land based Training and Colleges

Land based training, through a network of rural colleges and a suite of short course training certifications, provide an important parallel to agricultural education in a traditional university setting. The National Land Based Colleges (NLBC) is a membership consortium of 30 specialist land based colleges and universities on 67 different campuses across England, Wales, and Scotland. The NLBC also partners with UK City and Guilds, to provide a number of government supported certifications in vocational training. The NLBC partners with Land Based Colleges Aspiring to Excellence (Landex) a national consortium of educational partners, providing extensive curriculum resources to the NLBC and other accrediting bodies like the UK City Guilds.

At this point, there is no agricultural qualification to be able to farm within the UK or to enable access farming subsidies. This is different from some European countries where agricultural education is compulsory to farm and have access to payments. There is ongoing debate about establishing a 'chartered agriculturalist' qualification for the UK, but so far this has not been achieved, and is rebutted as a 'license to farm'.

Analysis of agricultural colleges' and universities' curricula on succession and starting a business

Analysis of the available curriculum of agriculture education resources in the UK reveals two main career trajectories. Of the 4 - 5-year full time agricultural degrees, resulting in a BSc or MSc, most focus on high level agricultural concepts, such as crop biotechnology, agribusiness consulting, critical food studies, global food issues, biosecurity, and agricultural economics. Farm management is sometimes supported, via a vocational track, in which the final year of study is based on agri-industry placement or rural work practicum. Conversely, the rural colleges, offering more short term and vocational diplomas, purported to support career trajectories in farming and small business management. Some programs span both trajectories. A common feature of the rural colleges is access to working farms for research or production experience either in situ or accessible via a partner institution. Searches for key relevant terms within curriculum, returned few results, except for farm business and farm business management. However, some programs viewed farm business skills as a pathway to large scale agri-business management rather than new entrant farming. This limited analysis suggests that the rural and land based colleges, that offer hands on experience in applied horticulture, veterinary sciences, eco-tourism, farm business management, sporting, livestock management, and equine management provide more direct relevance for new entrants. A sample of vocational and experiential University programs is represented in the table below, chosen to reflect relevance to new entrants and geographical breadth (s. Table 16). Relevant findings from University of Edinburgh are shown to represent findings from 4 or 5-year agricultural degree pathways.

Table 16: Select UK academic institutions with agricultural vocational pathways. Relevant new entrant curriculum findings are represented.

Country	**University/ College**	**Relevant findings**	**Link**
SCT	University of Edinburgh	- Recently formed department of Global Academy of Agriculture and Food Security, in teaching partnership with SRUC. - 4 year degrees (BSc) in Agricultural Economics and Agricultural science, post graduate opportunities (MSc, PhD). - Goal to create "highly skilled leaders in agriculture, who can influence government policies". - Farming or farm management not mentioned as proposed post degree career opportunities.	https://www.ed.ac.uk/global-agriculture-food-security
SCT	Scotland's Rural College (SRUC)	- Only MSc in Organic Farming in Scotland. - Part time and distance learning options. - 1 year Agriculture HNC aimed at production agriculture careers. - Rural Business Management Degree with in-situ learning.	https://www.sruc.ac.uk/
WAL	Aberystwyth University	- Range of terminal or vocational Agriculture degrees offered within the Institute of Biological, Environmental, and Rural Studies. - 1000ha commercial farm on site and 500 herd livestock operation. - 3-year Agriculture with Business Management BSc.	http://www.aber.ac.uk/en/ibers/

		- 2-year foundational degree in Agriculture. - Option to include "year in industry" components to degrees.	
NIR	College of Agriculture, Food & Rural Enterprise	- On site horticultural and livestock facilities. - Offers BSc in Agriculture with Business Management (with and integrated year in industry). - Curriculum focus on agri-business marketing and farm finances management. - Supports in-situ experience for the 4-year BSc in Agricultural Technology at Queen's University, Belfast. - Provides support for City and Guilds vocational Agriculture certificates.	https://www.cafre.ac.uk/
ENG	Harper Adams University	- 635ha University farm with livestock and poultry operations, dairy infrastructure. - Facilitates work placement on either a large integrated farm, or a farm business consultancy. - Agroecology Degree (PgD, PgC, MSc) focusing on multifunctional landscapes and sustainable agriculture. Scholarship available from the Organic Farmers and Growers CIC.	www.harper-adams.ac.uk
ENG	Newton Rigg College	- BSc in Applied agriculture offered as a "top-up" program. A variety of vocational tracks in farm business management. - Landex partner.	www.newtonrigg.ac.uk

Apprenticeships

Apprenticeships are a growing area for on the job/vocational training in agriculture. The primary age for these tends to be between 16 and 25 and there a variety of levels of progression known as NVQ (National Vocational Qualifications). These start at level 1 through to level 5 (equivalent to a Higher Education Diploma). Apprenticeships are becoming more popular in England and Wales where further education fees are highest, but less so in Scotland (different fee structure) and hardly used at all currently in Northern Ireland. A search on the government sponsored apprenticeship clearinghouse (s. Table 16) with the terms "farming" for all of England revealed 258 results, ranging from farm labour positions to farm management on larger scale operations. A search with "organic farming" returned two results. A search with "agriculture" returned 19 results, suggesting apprenticeships with farm management possibilities may be less than general farming work experience.

List of Additional Educational Resources

As a result of this research on educational resources pertaining to new entrants, relevant resources external to academic institutions were observed. The table below is a list of new entrant resources across the UK, including curriculum providers, apprenticeship clearinghouses, certifying bodies, and a notable incubator program.

Table 17: Additional relevant new entrant educational resources

Resource	**Description**	**Link**
NLBC	National Land Based Colleges	https://nlbc.uk/
Landex	Land Based curriculum provider	http://www.landex.org.uk/
SRUC Consulting SAC	New entrant consulting and technical assistance,	https://www.sruc.ac.uk/info/120389/new_entrants

	attached to the network of rural colleges	
City and Guilds Post 16 Initiative	Rural skills certification initiative	https://nlbc.uk/wp-content/uploads/2016/12/LargeInfographic_v6.pdf
Kindling Trust	Pioneering farm incubator program in Manchester, UK, modeled after FarmStart	https://kindling.org.uk/farmstart
UK Apprenticeship Clearing House	Searchable by Agriculture Jobs	www.gov.uk/apprenticeships-guide
UK Rural Skills	Accrediting body for rural certificates. Searchable course clearinghouse	https://ukruralskills.co.uk/
Bright Crop	Industry and National Farmer's Union sponsored career support service for recruiting youth into agricultural careers	http://www.brightcrop.org.uk/

3.2.5 Ireland

Introduction

Formal agricultural education courses in Ireland date back to the 18th century. By the middle of the 19th century there were 42 models agricultural schools in operation (Curran, 1998). In 1981 the Certificate in Farming known by the industry as the "Green cert" was introduced and became the recognised agricultural education requirement for farmers. The course was delivered by Teagasc and three private agricultural colleges under the auspices of Teagasc. The Certificate in farming was adopted into agricultural taxation policy and subsequently in the Common Agricultural Policy schemes. This certificate in farming is still the main qualification attained by young farmer's entering farming. It can be completed either on a full-time basis in and agricultural college or part-time basis in local advisory offices. At this time, universities also offered a Bachelor of agricultural science qualification which was and still is targeted at people wishing to work in the wider agricultural industry.

Teagasc, the research, education and training organisation was formed in 1988 and remains the main provider of agricultural education up to Level 6 and Level 7. There are currently six agricultural training colleges distributed throughout Ireland. Teagasc owns and runs three of these colleges. The remaining three colleges are owned by religious orders but teaching the Teagasc curriculum and supported with staff seconded from Teagasc. In recent years, Teagasc has formed allegiances with a number of third level institutes of technology who offer agricultural science courses up to Level 7 and 8 degrees. This has helped to promote agricultural education amongst career guidance teachers at second level but also among parents.

Figure 41 is a summary of the current agricultural education levels in Ireland. Level 8 degrees are offered through the universities and institutes of technology. The majority of young people entering farming achieve level 6 or level 7 qualifications. For many years, a farm manager apprenticeship training course existed but this was dis-continued due to a change in emphasis. However, with a recent government announcement on new apprenticeships, they are now being reintroduced as the feedback

from farmers is that young farmers need more practice based learning rather than theory to become efficient farm managers.

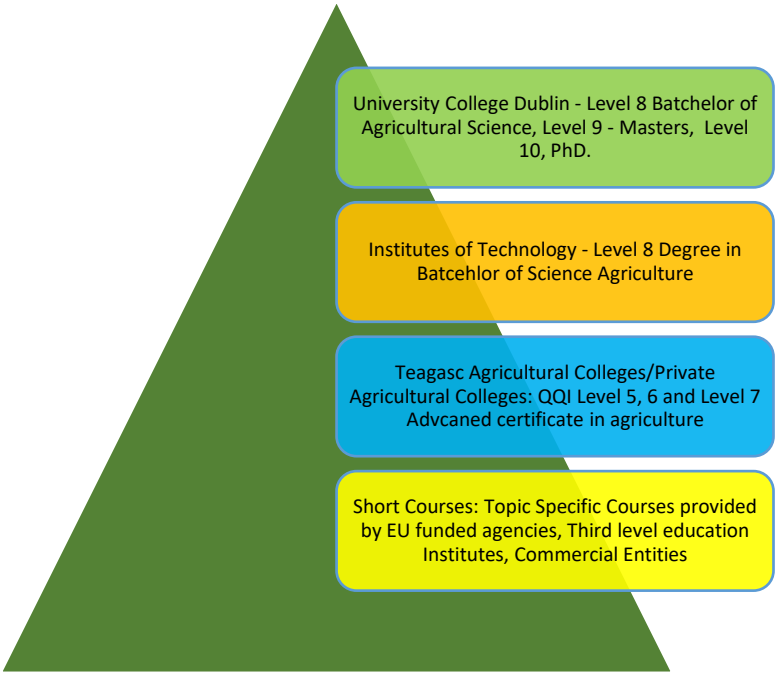


Figure 41: Agricultural education levels in Ireland

Current Agricultural education system

All training in formal agricultural education is certified under the European (EQF) and national (NFQ) agricultural qualification framework. Figure 42 shows the overlap between qualifications in Ireland and how these equate to the position across Europe. This frame work applies to all courses inside and outside of agriculture. The awarding body that oversees the minimum standards is the Quality and Qualifications Ireland (QQI) body. The predominant qualification attained by young farmers is the QQI Level 6 award. Historical agricultural courses have been continually improved and updated over the years and are now included under this framework for all young people wishing to begin a career in farming.

Formal education focuses on the key skills and knowledge base required by farmers. They also include several applied learning periods of on-farm work experience. Farm business planning and monitoring in terms of financial management is covered extensively in terms of investment appraisal, cash flow and benchmarking financial performance of the business. Succession and inheritance has a dedicated module. Alternative enterprises such as agri-tourism or alternative or complimentary enterprises that could help to increase farm household incomes are not covered in anyway in these courses.

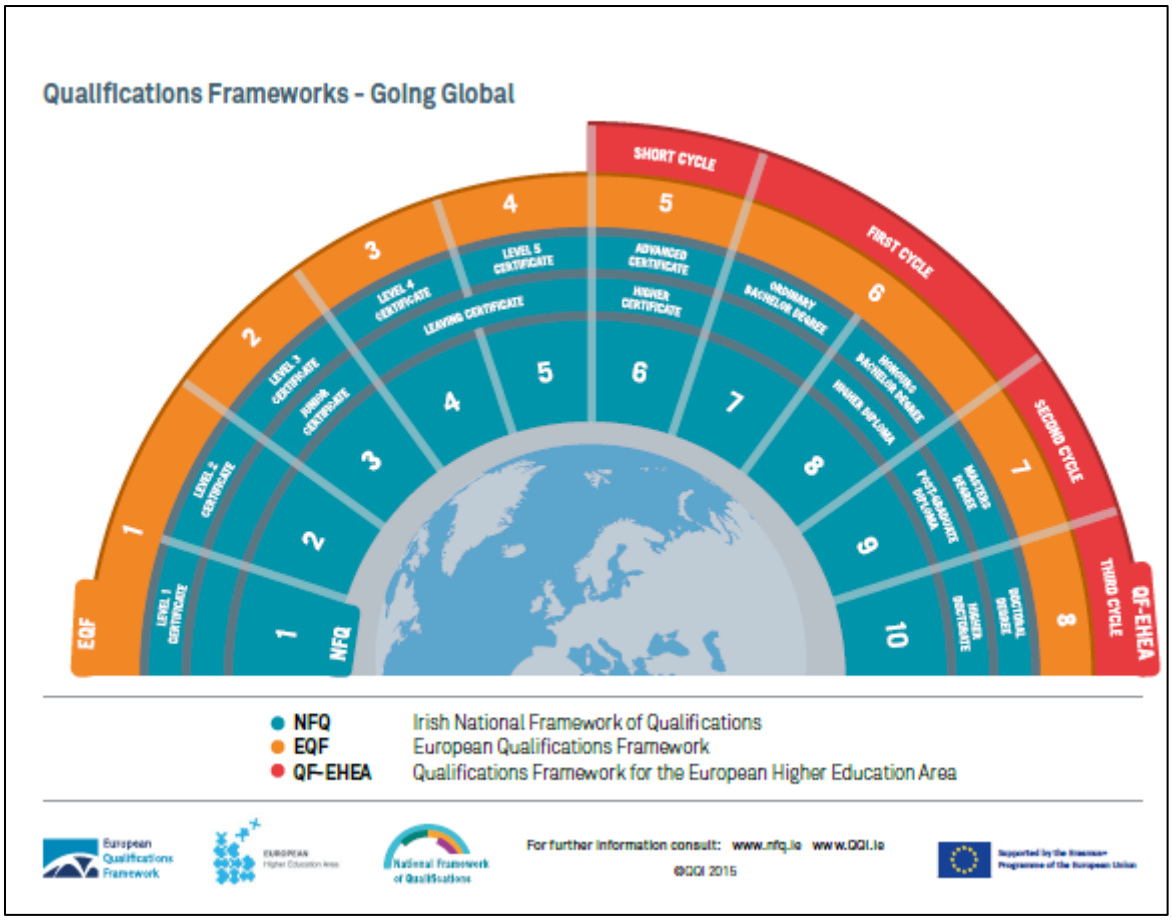


Figure 42: Qualification Framework in Ireland and Europe

Topic Specific Training

Start-up business courses and on-farm food production courses are available from third level institutes and universities. These courses are generally targeted at adults. Teagasc delivers twelve regional "options" courses annually for farmers and new entrants who wish to start a new alternative or complimentary new on their farm. Topics covered include Succession, Organic Farming, on-farm food processing and the development of products, sources of start-up funding and rural tourism. These annual courses are targeted at existing farmers and landowners who want to start a new business venture to increase farm income. New entrants are encouraged to attend.

List of relevant educational resources

Teagasc: https://www.teagasc.ie/education/
University College Dublin: http://www.ucd.ie/agfood/
Waterford Institute of Technology:
https://www.wit.ie/courses/school/science/departmentofchemicallifesciences/BSc_in_Agriculture
Cork Institute of Technology: http://www.cit.ie/course/CR010

Tralee Institute of Technology: http://www.ittralee.ie/en/InformationAbout/Courses/SchoolofScienceTechnologyEngineeringandMathematics/BiologicalPharmaceuticalSciences/TL748-BScAgriculturalScience/
Dundalk Institute of Technology: https://www.dkit.ie/courses/school-of-health-and-science/applied-sciences/bsc-(hons)-in-agriculture.html
Galway-Mayo institute of Technology: https://www.gmit.ie/agri-science/bachelor-science-agriculture-and-environmental-management
Limerick Institute of Technology: http://www.lit.ie/Courses/LC284/default.aspx

3.2.6 Slovenia

Introduction to educational resources of agricultural colleges and universities

For the short and very general analysis of educational resources the information available on the websites of educational institutions and other relevant information available (Ministry of Education, science and sport, EURO-EDUCATION NET, key information obtained from relevant representatives of educational institutions) was used.

Agricultural education system in Slovenia

The Slovenian national education system structure

There are three types of **secondary schools** with:

- vocational education programmes (lasting for two-and-a-half or three years, the latter offering the possibility to continue in a two-year upgrade programme or lead directly to the labour market);
- technical education programmes (four-years programmes in different areas); and
- general education programmes (classical gymnasium, technical gymnasium, etc.).

The tertiary education system comprises:

- short-cycle vocational higher education and
- higher education.

The short-cycle vocational higher education delivers two-year vocational programmes by the higher vocational colleges. The practice-oriented vocational programmes provide students with competences for employment in specific professions.
The higher education is offered by the universities (composed of faculties and higher professional colleges) and by independent higher education institutions.
Higher education is regulated by the Higher Education Act. The most important features introduced by the new legislation are: the new role of the university (change from an association of independent faculties to an integrated university) and the creation of single higher education institutions, the separation of some large faculties into several smaller ones, changes in the structure of the higher education system, and the gradual implementation of a three-cycle higher education system according to the Bologna Declaration (by 2016). Public higher education is free of charge for native full-time

students and for students from EU countries (Part-time students and post-graduate students pay tuition fees). Today, higher education has certain features of a binary structure.

Degree study programmes are classified into three cycles:

a) first cycle (academic study programmes (bachelor) and professionally-oriented study programmes),
b) second cycle (master), and
c) third cycle (doctor of science).

First cycle study programmes are at the undergraduate level, second and third cycle study programmes are at graduate level. Higher education institutions comprise universities, faculties, art academies or professional colleges. In Slovenia, there are several types of higher education institutions, namely universities, faculties, art academies and independent higher education institutions. We have four universities (University of Ljubljana, University of Maribor, University of Primorska and University of Nova Gorica), one International Association of universities (EMUNI-EURO Mediterranean University) and 44 private higher education institutions.

Short overview of Slovenian agricultural education system

According to the Slovenian educational system, the provision of programs in the field of agriculture, horticulture, forestry and nature protection is classified into the following categories (considering to the level of education):

University level studies:

- **University level first cycle study** programmes: the first cycle has a binary structure and offers two types of study programmes: university (academically-oriented) and professional programmes (University of Ljubljana (Biotechnical faculty, Dep. of Agronomy) and University of Maribor (Faculty of Agriculture and Life Sciences) offer both). Duration of the first cycle programmes is determined by years of study (three years).
- Professionally-oriented programmes are somewhat shorter than academic ones. Programmes include practical training and lead to the diploma examination. Students can enter to the labour market or continue their studies at the post-graduate level and obtain a specialist degree or in certain cases a Master.
- **University level second cycle study** programmes offer one type of study programmes and general requirement for admission is a completed first-cycle programme.
  The entrance requirement for programmes leading to the Master's degree is an academic first degree or a professionally- oriented first degree. The Master's degree leads either to employment or to doctoral studies.
- **University level third cycle study** (new stage according to the Bologna process) offers one type of study programmes, i.e. doctoral programmes. A general admission requirement is the completion of a second-cycle study programme. The programmes take three years to complete.

Table 18: Agrarian Education - Tertiary Education Institutions, Universities

No.	Slovene name of the university, school	English name of the university, school	Website	History	Description
1	Univerza v Ljubljani, Biotehniška fakulteta, Oddelek za Agronomijo	University of Ljubljana, Biotechnical Faculty, Department of Agronomy	http://www.bf.uni-lj.si/en/deans-office/study-programmes/	traditions in agricultural education, Faculty since 1960	Professional and academic (bachelor) study programmes
2	Univerza v Mariboru, Fakulteta za kmetijstvo in biositemske vede	University of Maribor, Faculty of Agriculture and Life Sciences	http://www.fkbv.um.si/index.php/en/	traditions in agricultural education, Faculty since 1995	Professional and academic (bachelor) study programmes
3	Univerza v Novi Gorici, Visoka šola za vinogradništvo in vinarstvo	University of Nova Gorica, School for Viticulture and Enology	http://www.ung.si/en/study/school-for-viticulture-and-enology/	since 1995	Bachelor study programmes
4	Univerza na Primorskem, Fakulteta za matematiko, naravoslovje in informacijske tehnologije, Program Sredozemsko kmetijstvo	University of Primorska, The Faculty of Mathematics, Natural Sciences and Information Technologies, Department of Natural Sciences, Programme Mediterranean Agriculture	https://www.famnit.upr.si/en/education/undergraduate/sk-first/	since 2006	Academic (bachelor) study programme, 1st Bologna cycle, limited no. of students)

Over the past 20 years several **vocational collage programmes** were developed and therefore "**educational options offer" also in the field of agriculture was enriched**. These programmes are very diverse, not all directly connected with agricultural topics and education. Some schools (and programmes) are well recognised and the number of students is stable, while others are faced with a reduction in student enrolment.

Non-university level (technical/vocational type)

The **higher vocational colleges** (višje strokovne šole) **are of great importance for agricultural education** in Slovenia (Higher education school Naklo, Landscape governance College GRM etc.). Programmes last for 2 years and end with a diploma thesis. These programmes are designed as a particular form of tertiary education but **are markedly practical in content and are distinct from those in higher education**. This so called "tertiary short cycle education" or **short cycle level is recognised as a vital part of education system in the field of agricultural education**.

Table 19: Agrarian Education - Tertiary Education Institutions, higher professional and vocational colleges

No.	Slovene name of the school	English name of the school	Website	Comments
1	Višja strokovna šola Naklo	Higher education school Naklo	http://www.bc-naklo.si/visja-sola/?L=1	Three short cycle education programs; Rural and landscape management, nature conservation and horticulture.
2	Visoka šola za upravljanje podeželja GRM	Landscape governance College GRM	http://vsgrm.unm.si/studij	Tertiary short cycle education programs, one higher educational programme
3	Višja strokovna šola Šentjur	Higher education school Šentjur	https://www.sc-s.si/joomla/index.php/visja	Tertiary short cycle education

Vocational technical education or higher professional education offers programmes like Rural and landscape management, Horticulture, Forestry, Nature conversation etc.

Educational programmes on secondary education level (lower vocational education, lower vocational education, secondary vocational and secondary professional education) offer basic knowledge in agriculture in the programmes e.g. Gardener, Florist, Agricultural entrepreneurial technician, Forestry technician, and Nature protection technician.

Analysis of agricultural colleges and universities curricula

For identification and selection of relevant agricultural colleges and universities, where the majority of successors/possible new entrants get educated, next criteria are relevant:

- the relevance of programmes, courses regarding the topic,

- the relevance of collage, university regarding the number of students.

The criterion for selecting the relevant curriculum relates primarily to relevant programs that are related to NEWBIE content. We present more detailed curriculum for two younger Slovenian universities, which by number of students included in education, are among the smaller ones, but the content of agricultural programs is innovative, niche and (at least theoretically) opens up new possibilities for development of agriculture. We also included a curriculum from the central Slovene University of Maribor, Faculty of Agriculture and Life Sciences, which, in recent years, has been trying to update the studies with new study programs.

A higher vocational college (Landscape governance College GRM) which has a notable regional developmental impulse (not only for the narrow field of agriculture, but also in the wider context) is also shortly presented.

University of Nova Gorica, School for Viticulture and Enology
Programme in Viticulture and Enology, since 1995
http://www.ung.si/en/study/school-for-viticulture-and-enology/
The Viticulture and Enology programme is a first-level undergraduate study programme. The programme is uniform throughout the first two years and offers good fundamental knowledge of natural sciences and the economy as well as more professional knowledge in Viticulture, Enology and wine marketing. Lectures are supplemented through practical work experiences in laboratories, in school wine cellar and practical training at wine-growing estates (of school). In the third year, the students upgrade obligatory courses through various elective courses that give them the opportunity to specialize their knowledge according to their plans for the future. The objective of the study program is to educate professionals with interdisciplinary theoretical and practical knowledge and to rise up comprehensively educated graduates who are professionals that are able to understand and manage complex problems in viticulture, winemaking, wine marketing and related disciplines. Aim is to prepare students to adapt to changes in local and global markets.
Some **new and more innovative courses, e.g. Advanced Wine Marketing: communication, event management and consumer behaviour, International Wine Marketing, Modern wine sales techniques** (knowledge to understand and use modern techniques in wine sales, to understand target consumer and use the best sales approach), **Promotion of Wine, Wine Tourism and Cellar Door Sales** etc.

University of Primorska, The Faculty of Mathematics, Natural Sciences and Information Technologies, Department of Natural Sciences, Programme Mediterranean Agriculture
https://www.famnit.upr.si/en/education/undergraduate/sk-first/Name of the programme:
Bachelor's programme Mediterranean Agriculture – 1st Bologna cycle programme is structured from 28 courses and practical training. On this youngest Slovenian university (since 2006) the study programme Mediterranean Agriculture is of minor importance regarding the number of students. Although the study program is specialised and innovative, the school failed to attract more students with the new program (in the year 2017/18 only 13 students included in this programme).
The focus of the study programme is based on the specific needs of agricultural production and the special agro-ecological conditions in horticulture and animal breeding in the Mediterranean region. The focus is on typical species of Mediterranean fruits (olives, persimmons, citrus fruits, etc.), grape

vines, aromatic plants, other areas of Mediterranean horticulture, and the breeding of animals in the Mediterranean region. Some specific courses: Fruit growing, Olive Growing, Viticulture, Technology of Olive Processing, Sensory Analysis of Foodstuffs, Agricultural and Food Marketing etc.

University of Maribor, Faculty of Agriculture and Life Sciences

The Faculty of Agriculture and Life sciences offers a very wide range of different study programs, namely the basic Bachelor's program of Agriculture and environment and six vocational collage programs. Some of them are aimed at providing basic knowledge, e.g. Animal science, Agronomy-ornamental plants, vegetables and field crops, Viticulture, enology and fruit-growing, others are **more innovative like Organic farming** (specific courses offered such as Tourism and organic farming, Eco-farming, Organic seed production, Management of supplementary activities etc.) and **Agri-Business and rural development** (specific courses offered such as Agri-food chain economics, Marketing research, Management of farm tourism, Quality systems in agribusiness etc.). Despite the continuous development of new programs and the offer of specific courses, the interest in this study is not increasing.

Higher vocational collage - Landscape Governance College GRM (Visoka šola za upravljanje podeželja GRM)

GRM Novo mesto – centre of bioethics and tourism is a strong agricultural school centre in the south-eastern Slovenia. Beside secondary school the tertiary education system gradually developed vocational higher education. Three programmers - Rural management, Nature conservation and Catering and tourism were established to extend the education offer in this part of Slovenia.

The programme rural management (3 years' programme) offer specific courses like Entrepreneurship and marketing, Organisation and business, integrated development of countryside, Tourism in rural areas, the culture and way of nutrition, total quality and business excellence etc., where emphasis on greater managerial and business competence is evident.

Key results and discussion – Slovenian agricultural education system

Two characteristics of farm holders in Slovenia should be outline:

a) **The unfavourable age structure** of farm holders - the average age is 57 years in 2016 (SORS, 2016).
b) **The educational structure**, where the family farm holders are still less and inadequately educated. But we can observe the general and agriculture education has obviously changed and improved since 2000.

Among 69,671 family farms in Slovenia exactly half of all farm holders still have just practical experience, another 36% gain some additional skills and knowledge through different (usually basic) agricultural courses, mostly organized by agricultural advisory service. Therefore, only 14.3% of farm holders have some official agricultural education (in 2016). If we compare the situation with the year 2000, when only 5.8% of farmers (farm holders) had an official agricultural education, an important improvement is seen, but overall situation in the field of education in agricultural sector is "alarming". It is also **necessary to highlight changes in the general education of farmers** (farm holders), where the share of those without education decreased from almost 60% in 2000 to 28% in 2016.

Table 20: The changing agricultural education among Slovenian farm holders (2000–2016) (Source: SORS, 2016).

Agricultural education - level	2000	2010	2016
Agricultural holdings (family farms)	86.336	74.425	69.671
Only practical experience	72.440	47.970	34.969
Agricultural courses	7.045	19.896	24.720
Short-term vocational, vocational upper secondary education	2.752	3.405	4.348
Technical upper secondary education	1.588	2.135	3.559
Tertiary education	642	1.019	2.074

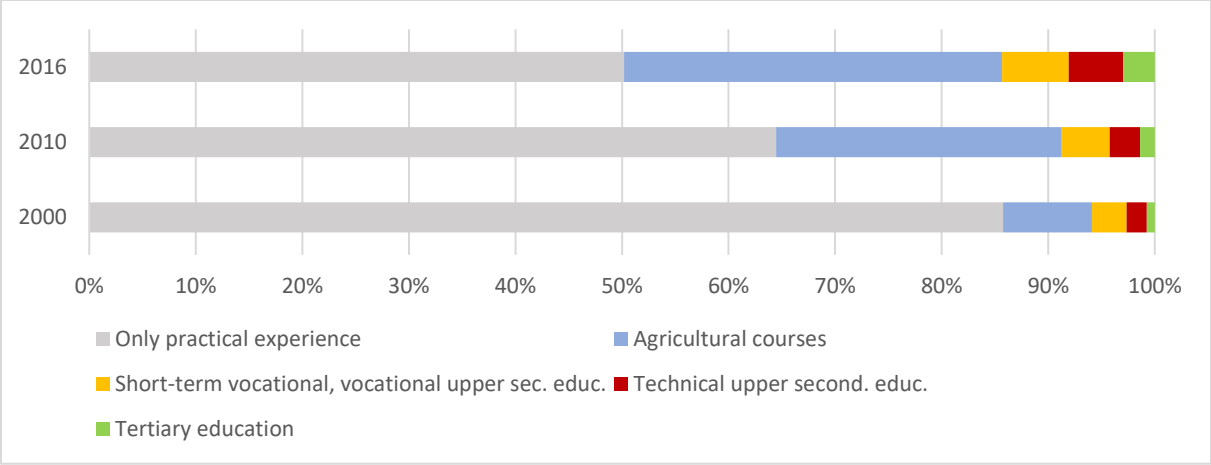


Figure 43: Agricultural education of farm holders in Slovenia on family farms – changing structure in the period of 2000 to 2016 (Source: SORS, 2016).

Regardless of the obvious positive trends in educational structure of Slovenian farm holders, **the number of newly enrolled students both in university and higher education** (in the field of agriculture) **shows a decrease in interest** - the number of students enrolled in 2018 does not reach the number of enrolment places in any programme of the agricultural study in the country.

An overview of educational programs shows their growth and diversity, as well as dynamic and constant change. Unfortunately, this does not reflect the adaptability of educational programs (in general) to the actual changed needs in the development of agriculture (and society), but rather reflects the efforts of educational institutions with new, more attractive content, to bring new students in agricultural study programs.

3.2.7 Bulgaria

General remarks on the analysis of educational resources

The analysis was performed following the guidelines, using the information available of the educational institutions on their websites, relevant information published by the Ministry of education, National Evaluation and Accreditation Agency, National Statistical Institute, information given by representatives of local vocational high school, agricultural advisory organisations and the own expertise as an educational and business-supporting organisation. It involved all type of educational

institutions: secondary/high schools and vocational training centres, colleges and universities in agriculture, presenting the current situation and the educational opportunities in agriculture. Additional information found in Development in agriculture and rural areas of Bulgaria; Velikov, and The Place of Vocational High schools in Agriculture for Development of the Agriculture in Bulgaria, Grahovski.

Key results and discussion

Analyses of educational resources of agricultural colleges and universities in Bulgaria

Bulgarian national agricultural educational system

The agricultural educational system provides access to knowledge and practice in all levels:

- **Secondary vocational education -** Agricultural high schools, state established, monitored by the Ministry of Education and Science and budgeted by the local authorities;
- **Vocational qualification -** VET centres, both private organisations or part of public high schools, colleges or universities, and this determines the forms of study – free, subsidized and paid; monitored by the Ministry of Education and Science and National Agency of Vocational Education and Training; and
- **Tertiary education -** colleges and universities, public or private, autonomous in their management, monitored by the Ministry of Education and Science, the education is paid.

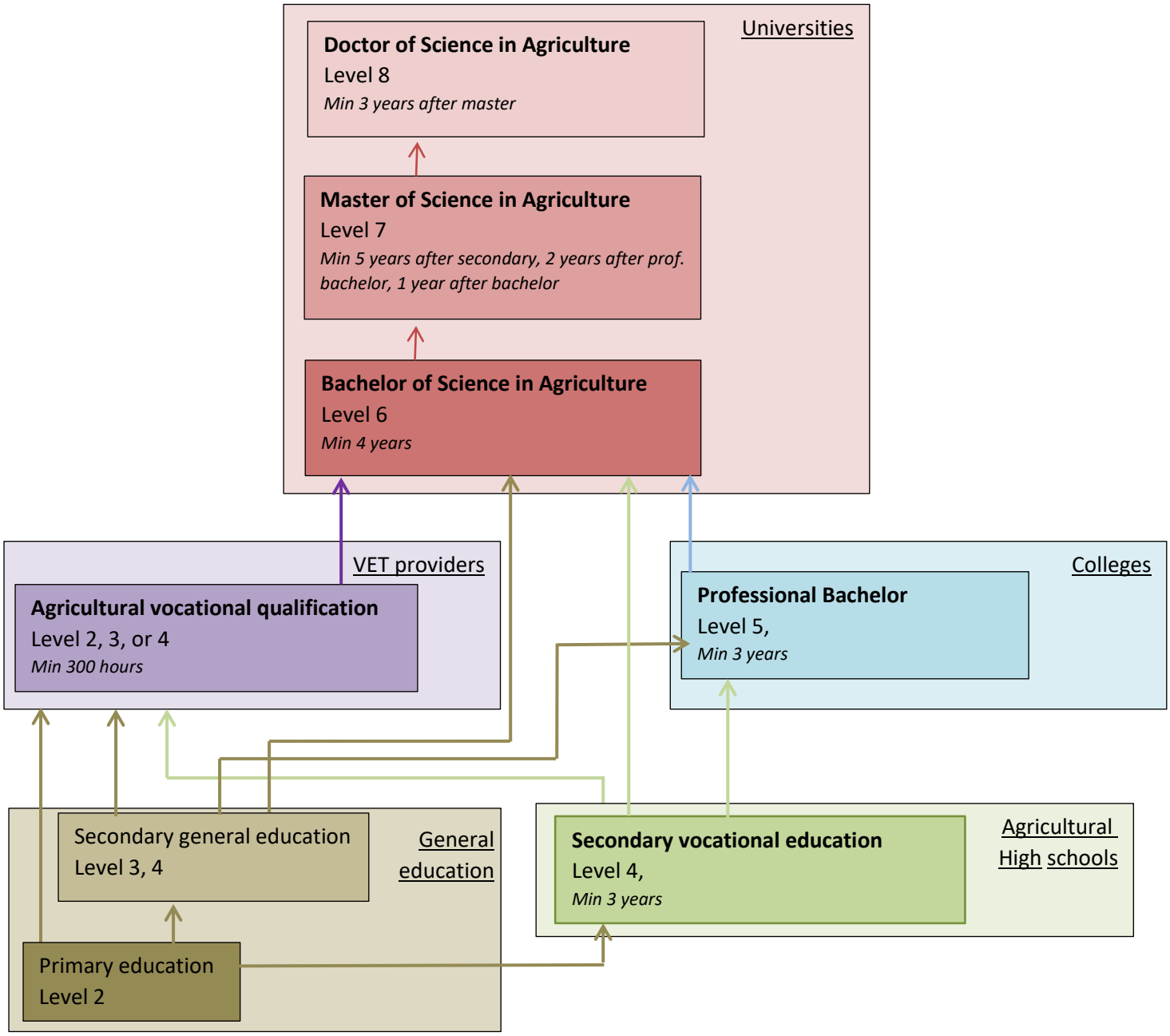


Figure 44: Graphical presentation of the structure of Bulgarian national education system in agriculture

Analysis of agricultural colleges' and universities' curricula

Agricultural education in Bulgaria

Bulgaria has traditions in the agricultural education and although in the recent years the agricultural economic sector is not very attractive for realisation of the human resources, the educational system proposes pathways for acquiring knowledge and skills in this field.

Secondary education

There is a well-established network of 76 agricultural high-schools in Bulgaria, covering the most of the rural areas, as 55 of these schools are vocational schools in agriculture. They provide training and qualification for more than 21 000 students (2016) in "Farming", "Agronomist", "Mechanization of farming", "Veterinary", "Vine-growing", "Perennial planting", "Forestry" and others. They must follow national curriculums and include basic farming knowledge; work with farming technics, basic economic knowledge, IT, etc., but not much entrepreneurship. To be more competitive on local level and adjust to market demands, attract students and municipal budgeting, some schools are permanently reviewing their admission plans, introducing more attractive and business-related professions and opportunities. For example, the agricultural high school in Gotse Delchev was recently registered as agricultural bio-farm and bio-food processor, which provides new opportunities for learning to students, and also applies to deliver training/curriculum for a new profession Agro-ecologist.

However, there is a trend for decreasing the number of the students in the agricultural secondary schools because of the demographic changes and depopulation of the rural areas and other preferences for professional development. According to Ministry of education's report (Grahovski, 2016) the quality of education in secondary vocational high schools is falling due to its low restructuring not corresponding to demographic, economic and social relations in the community. Nevertheless, a significant number of successors and future young farmers acquire their education free of charge, with added values for the students like driving license, and practical experience, brings social impact and often is the best opportunity for development in rural areas.

Higher education

Higher education in agriculture is provided by five public national universities with long traditions, history and good reputation however there are a number of other economical, technical, and humanitarian universities, both public and private, which deliver agricultural education as well. Thus much bigger geographical impact is reached. Distance education is available in some of the higher educational institutions too. The universities aim to provide a modern education, using new technologies and methodologies and good practical base, in relation with applied research institutes, examination stations and field bases, enhancing agricultural practices for sustainable development and business orientation. Some of the higher educational institutions announce opportunity for international students exchange, foreign lecturers and practitioners, training programs abroad (mainly in USA), and EU training programs and projects.

Table 21: List of the specialized universities in agriculture and farming

Name of the university	Website
Agrarian University - Plovdiv	http://www.au-plovdiv.bg/
University of Agribusiness and Rural Development–Plovdiv	http://uard.bg/
Thracian University - Stara Zagora	http://www.uni-sz.bg/
University of Forestry - Sofia	http://www.ltu.bg
University of Food Technologies – Plovdiv	http://uft-plovdiv.bg

The biggest private university in Bulgaria in the field of agribusiness and rural development is University of Agribusiness and Rural development – Plovdiv and claim to prepare managers in all areas of agribusiness; agribusiness consultants; associates in companies with participation of partners from foreign countries; managers of co-operatives; eco-operatives; farmers etc.

Table 22: List of universities also providing training in agriculture

Name	Website	Course name	Educational degree
University of National and World Economy - Sofia	http://UNWE.BG	Agribusiness and Spatial Management, Economics and Management (agribusiness, eco-economics), Agribusiness in bachelor	master and doctoral programs
University of Economics - Varna	https://www.ue-varna.bg/	Agricultural Business Agricultural Economics	Master Doctor
Technical University of Varna	http://www.tu-varna.bg	Agricultural Management Agronomy	Bachelor Master
New Bulgarian University - Sofia	http://www.nbu.bg	Management of agribusiness and rural development	Master
Sofia University St. Kliment Ohridski	http://www.uni-sofia.bg	Agrobiotechnology	Bachelor
Academy of Economics Dimitar Tsenov - Svishtov	http://www.uni-svishtov.bg	offers several programs in Agricultural Economics and Agribusiness	Bachelor, Master Doctoral
University of Rousse Angel Kanchev - Branch – Vidin	http://www.uni-ruse.bg	Agricultural Machinery and Technologies	Bachelor
Shumen University "Episkop Konstantin Preslavski"	http://www.shu.bg	Plant Protection	Bachelor Master

Vocational Training

A vocational qualification in agriculture could be acquired in nationally certified VET centres. A primary education, or 16 years is requirement for the VET learners. They could acquire 1st, 2nd, or 3rd level of vocational qualification, equal respectively to Level 2, 3 or 4 of the National Qualification Framework. The VET usually delivers at least 150 hours of agricultural training to young farmers to meet the requirement for subsidy and funding of RDP.

Along with all the other institutions offering vocational knowledge, access to specialised trainings and workshops, and information services to farmers is the National Agriculture Advisory Service (NAAS). NAAS was established in 1999 by the Academy for Agriculture Sciences Act and is often working with farmers on local level to access EU subsidies.

Curricula of the selected Agricultural education programs

Agrarian University – Plovdiv

a) Master program "Agri-business" in Agrarian University – Plovdiv:

Agri-business Masters Course aims to build on the broad-based and interdisciplinary preparation in the bachelor course to unite and expand the theoretical and practical preparation for farmers: farming, marketing, development and management of national and European business projects, communications, exchanges, and building managers of agribusiness able to quickly adapt to the market situation and make the right decisions. Among the disciplines are: Management of agrarian projects, Economic assessment and prices of agricultural land, marketing of agricultural production, Rural Development, European agrarian policy.

b) Master program "Agri-business and entrepreneurship" in Agrarian University – Plovdiv:

It is a joint initiative of the Agrarian University - Plovdiv and Institute of Agricultural Economics – Sofia and is realised with the associated assistance of the College of Agriculture, Food and Natural Sciences Resources at the University of Missouri, USA. The program combines modern agrarian education with solid comprehensive knowledge in the field of marketing, entrepreneurship and farm management.
Includes module Agri-business and Enterprise Management with deeper knowledge on: Agribusiness Management, Innovation Management and Organisation, Marketing of New Products, Agricultural Analysis and Rural Development Policy, Structure of International Agribusiness, Entrepreneurship, Analysis and Planning of Agrarian Production,

Furthermore, the Agrarian University - Plovdiv provides master course in Economy and Management of European Agriculture and Rural Areas with modules like: Sustainable Agrarian Development, Family-run Farm Economics, and Trade in agricultural products, Agrarian Economy, Agricultural Management, and Rural Development

University of Economics – Varna

a) Bachelor Programme: Agricultural Business

Graduates acquire knowledge and develop expertise in economics, technologies, organisation, management and marketing of agricultural business units, specifics of land, labour and financial resources management on micro and macro level. Specific courses: Plant Production Organisation and Technologies; Livestock Production Organisation and Technologies; Fundamentals of Agricultural Business; Finance and Investment in Agricultural Business; Land Resources Management in Agricultural Business; Human Resources in Agricultural Business; Agricultural Entrepreneurship; Agricultural Marketing; Agricultural Management; Diagnostics of Agricultural Business; Pricing in Agricultural Business; Innovation in Agricultural Business.

New Bulgarian University - Sofia

a) Master's Degree Programme "Agribusiness management and rural development"

It is an innovative product of the co-operation of New Bulgarian University (NBU) and the Institute of Agricultural Economics (IAE), focused on the balanced combination of theoretically and practically oriented courses, based on the latest achievements of science and practice – global and national alike – in the agribusiness management and the development of the rural areas. Specific courses: Entrepreneurship in Agriculture and Rural Areas, Agricultural Marketing, Agricultural Land Market, Management of the Supply Chain, Problems of the Regional Development of the Rural Areas, Rural Areas Development, Challenges for the Development of the Entrepreneurship in Agriculture and in the Rural Areas, Corporate Finance in Agriculture and in Rural Areas, Finance Management in Agriculture, Managing Farming Risk, Innovations and Innovation Policy in Agriculture, Strategies in the Business Development in Agriculture and Rural Areas

Vocational High School of Agriculture – Dolni Dabnik: an example of the secondary education in agriculture as these schools is following common national requirements

Profession: Economist, Specialty: Agricultural Economy (educational program for 5-years period of training and 3rd. Level of vocational qualification). In the curricula there are presented subjects for specific vocational training as: Economics and management of the enterprise in agriculture, Agrarian and environmental politics, Development of business project, Entrepreneurship.

Vocational Education Training Centre in Business Incubator – Gotse Delchev: an example of vocational training, which could be provided by any of the VET centres, certified by the National Agency for Vocational Education and Training

The training for acquisition vocational qualification in "Farmer" – Level 2 provides knowledge and skills in basic crops, plants, animals and machines; technological sequence to implement agricultural work; organisation and management of the farm and entrepreneurship by modules: Economic Analysis, Agro-ecology and principles of the sustainable agriculture, Agricultural Economics, Entrepreneurship, Farm Management.

The selected curricula vary from general secondary with some specific agricultural subjects and practice to in-depth knowledge in agriculture along with business training, depending on the type of the educational institution and the level of qualification provided.

Table 23: Level of education in agriculture of the holding's manager (Source: General characteristics of the structure of agricultural holdings, 2013).

Number of holding			
Only practical agricultural experience	Basic agricultural training (a course in Agriculture with a minimum of 150 hours)	High-school specialization in agricultural training	Higher university degree of agricultural education
236 036	**3 357**	**10 886**	**3 863**

It is difficult to judge whether the educational system in Bulgaria prepares only a highly qualified workforce to work as hired employees, or professionals with entrepreneurial spirit willing to take on the challenges of farm management in the complicated legal and economic environment of the Single Market. However, the number of graduates is much smaller than the required for more than 350,000 family holdings, to increase their competitiveness on the local and on the global market, including via the use of innovation (Velikov, 2013).

SWOT analysis of the agricultural education shows as weaknesses: The number of the graduates is not sufficient to cause massive rejuvenation in the sector; The practical skills of the graduates do not meet the requirements of the modern technologies; they need additional on the job training; even though all the major players are in place, there is not yet symbiosis achieved between education, vocational training, research and transfer of innovation in agriculture, food industry and forestry.

List of relevant educational resources

See above for a list of the specialised universities in agriculture and farming and a list of universities also providing training in agriculture.

Description of the educational programs in agriculture related to entrepreneurship and business:

- Master program “Agribusiness” - http://www.au-plovdiv.bg/centers.php?type=1&id=33&content=388, “Agri-business and entrepreneurship”, “Economy and Management of European Agriculture and Rural Areas” - http://www.au-plovdiv.bg/cntnr/CMD/2012/anotacia/25-1.pdf in Agrarian University – Plovdiv;
- Bachelor Program "Agricultural Economics" - https://uard.bg/files/custom_files/files/uchebna_dok/2015/2015%20Agricultural%20Economics.pdf, Master program “Economics and Management of Agribusiness” - https://uard.bg/files/custom_files/files/uchebna_dok/2015%20Master/2015%20Economics%20and%20Management%20of%20Agribusiness%201%20Year.pdf in University of Agribusiness and Rural development;
- Bachelor Programme “Agricultural Business” - http://international.ue-varna.bg/en/8//42/agricultural-business/42/agricultural-business in University of Economics – Varna;
- Master’s Degree Programme “Agribusiness management and rural development” - https://nbu.bg/download/en/prospective-students/adm-masters/master-

programs/docs/MA%20in%20Agribusiness%20Management%20and%20Rural%20Development.pdf in New Bulgarian University – Sofia; and

- Secondary education in profession: Economist, specialty: Agricultural Economy with acquisition of 3 Level of vocational qualification http://pgss-dd.com/uploads/UUP/UUP%20IKONOMIST%208%20KLAS.pdf - Vocational High School of Agriculture – Dolni Dabnik.

3.2.8 Portugal

General remarks on the analysis of educational resources

This analysis was performed following the guidelines. Most of the information was found in the web page ”support guide to agricultural holdings”. The information in this webpage, on the educational resources is well organized and there is a lot of other important information for those involved in agriculture.

Key results and discussion

Key elements that prepare students for a career in farming are the linkage of education to the reality of agricultural enterprises. Teaching alone does not prepare students for reality outside teaching situations. In this area, vocational schools are much more efficient than university institutes. Although in recent years the universities have evolved to bring research closer to agricultural producers, the teaching component still lags far behind.

The qualification / training of those who manage and of those who carry out operations on a holding is an essential element in the ability to differentiate farms in the market for products and services and their competitiveness. In the case of family farms, the occupational qualification of those who work in the farm has always been one of their main weaknesses, in Portugal, especially since, in most family farms, the formal professional qualification of the farmer and the other family members who work on the farm, is low. In this context, creating the motivation of this farming population for their school and vocational qualification, as well as creating the conditions to acquire such qualification should be a priority.

The NEWBIE project can support this linkage: in the WP3 activities (steering group and discussion circles meetings) we can discuss whether or not the current educational offer is adapted to the reality and needs of the producers and, if not, how can this be changed. On the other hand, information on the possibilities of acquiring skills, both formal and non-formal, which is not always accessible to producers, can be disseminated in WP4 (toolkits and recommendations). All these activities are replicable in all NEWBIE participant countries.

In Portugal, the formal training offered within agronomy is both Vocational Training and Agrarian High Education. Vocational Training is short and medium term training, at High School level, for future professionals in agriculture. Those can follow, at the same level as high school graduates; the university based Agrarian High Education (s. Figure 45).

The Vocational Training is offered by the Agricultural Professional and Rural Development Schools, which are specialised agricultural education establishments, focusing on the practical component of agriculture – farm technical work and management.

There are two different networks of educational establishments, with clearly different levels (see list below):

a) The network of university and polytechnic, agrarian and veterinary higher education establishments offers a set of undergraduate and master's degree courses that train technicians in the fields of agriculture, forestry, veterinary medicine, agro-food processing and rural development (level 6, 7 and 8). At the same time, it offers other forms of short term courses. In the case of Higher Education Schools, they also generally offer Level 5 Specialization Courses. Universities offer also the PhD level for those who want to progress into research – what the other type of organisations, cannot offer.
b) The network of Professional Agricultural and Rural Development Schools are specialised educational establishments in the agricultural area, preparing every year qualified professionals to work on farms at the technical level – these schools correspond to the equivalent as high schools.

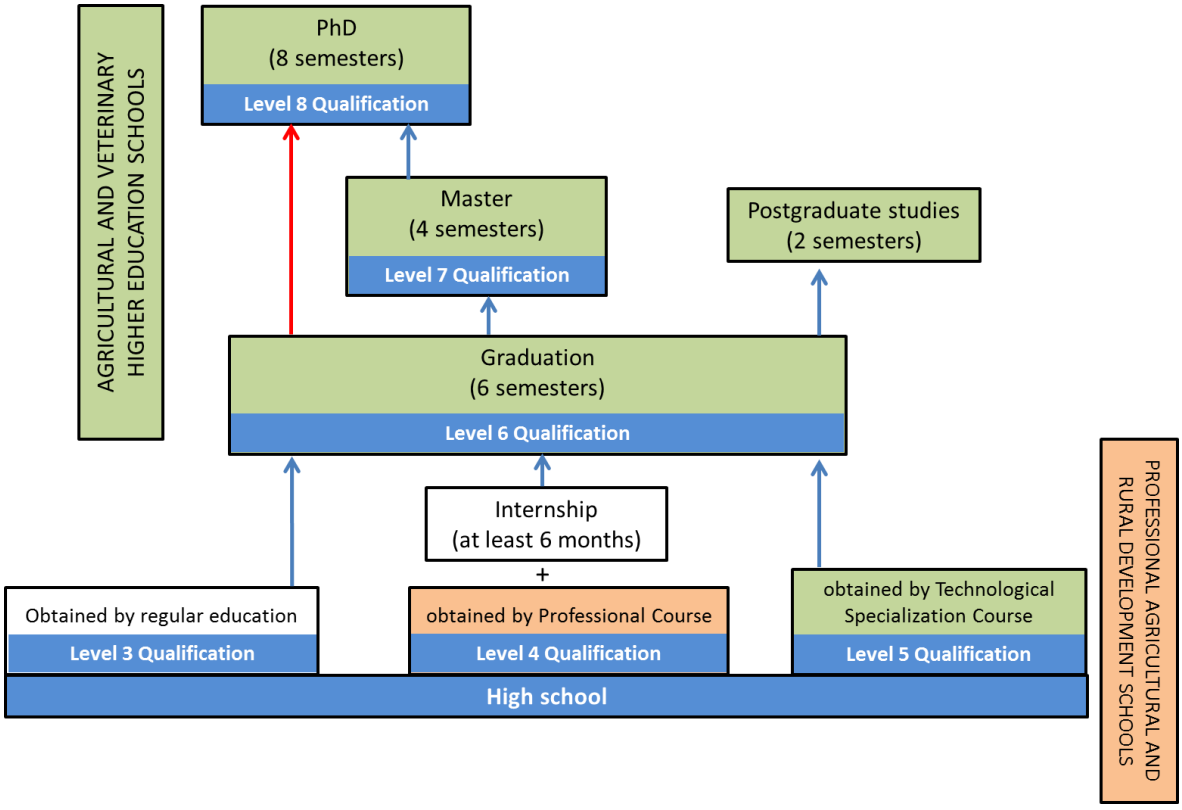


Figure 45: Educational resources in Portugal that allow to train qualified professionals to work on farms.

List of relevant educational resources

Vocational Training and Agrarian Education

Universities

Universidade Técnica de Lisboa – Instituto Superior de Agronomia
Universidade do Algarve
Universidade de Évora
Universidade de Trás-os-Montes e Alto Douro
Faculdade de Ciências da Universidade do Porto
Escola de Ciências Agrárias e Veterinárias

Polytechnic Institutes:

Escola Superior Agrária de Bragança
Escola Superior Agrária de Ponte de Lima
Escola Superior Agrária de Viseu
Escola Superior Agrária de Coimbra
Escola Superior Agrária de Castelo Branco
Escola Superior Agrária de Santarém
Escola Superior Agrária de Elvas
Escola Superior Agrária de Beja

Agricultural and Rural Development Professional Schools

Escola Profissional Agrícola Afonso Duarte
Associação Diogo de Azambuja
Escola Profissional Agrícola Conde de São Bento
Escola Profissional Agrícola da Paiã
Escola Profissional Agrícola de Fermil de Basto
Escola Profissional Agrícola do Rodo
Escola Profissional Agrícola Fernando Barros Leal
Escola Profissional Agrícola Quinta da Lageosa
Escola Profissional de Agricultura e de Desenvolvimento Rural de Ponte de Lima
Escola Profissional de Agricultura e Desenvolvimento Rural de Carvalhais / Mirandela
Escola Profissional de Agricultura e Desenvolvimento Rural de Cister / Alcobaça
Escola Profissional de Agricultura e Desenvolvimento Rural de Grândola
Escola Profissional de Agricultura e Desenvolvimento Rural de Marco de Canaveses
Escola Profissional de Agricultura e Desenvolvimento Rural de Vagos
Escola Profissional de Desenvolvimento Rural de Abrantes
Escola Profissional de Desenvolvimento Rural de Alter do Chão
Escola Profissional de Desenvolvimento Rural de Serpa
Escola Profissional do Algarve

3.2.9 Germany

In Germany, the agricultural training occupations are referred to as „green occupations". This group includes 15 different activities listed in table 24.

Table 24: Agricultural occupations in Germany; source: Ministerium für ländlichen Raum und Verbraucherschutz Baden-Württemberg, 2016b.

distiller	agricultural services specialist	fishermen	forester	gardener
housekeeper	blacksmith	farmer	milk technologist	dairy laboratory technician
qualified groom	plant technologist	hunter	animal host	winemaker

A person can attain his or her profession through a wide variety of training and further education pathways. With or without a school leaving certificate it is possible to start an agricultural apprenticeship. This training can be followed by studies or school-based training as a master craftsman or state certified agriculture economist. It is also possible to study without prior apprenticeship. Figure 46 visualizes these different paths in the German education system.

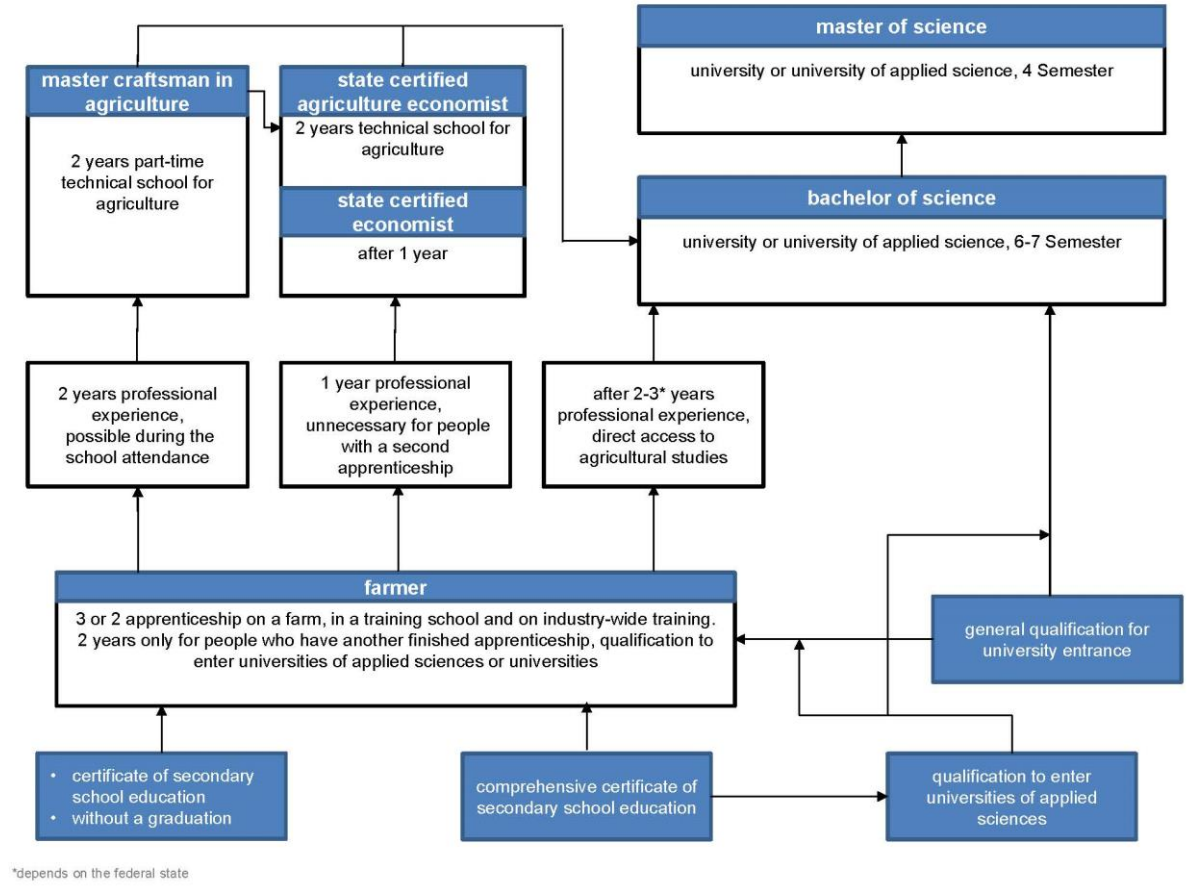


Figure 46: German education system

The first way to become an agricultural profession is an apprenticeship. In Germany, a dual system is used at this point, which is divided into two parts: work on an apprenticeship farm and school instruction at the training school. During this time there are inter-company training courses in which knowledge and skills are imparted that might not be available at the apprenticeship farm (Ministerium für Ländlichen Raum und Verbraucherschutz Baden-Württemberg, 2016a). In 2016, 32,904 apprentices were registered in the agricultural sector, most of them were gardeners (12,264) followed by farmers (9,489) (Bundesanstalt für Landwirtschaft und Ernährung, 2018a). Figure 47 shows the development of the number of apprentices. The horticulture sector has recorded declining numbers over the last 15 years; in contrast the numbers for apprentices as a farmer are quite constant to slightly increasing.

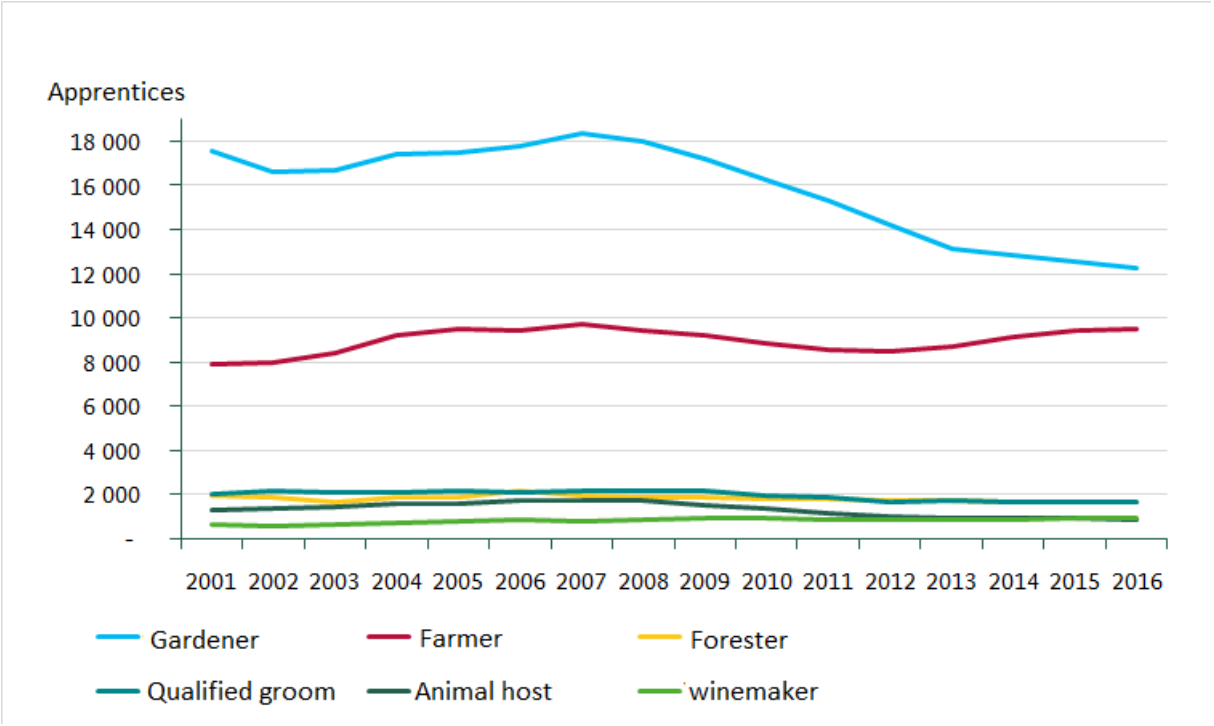


Figure 47: Development of the numbers of apprentices in Germany; source: BMEL, 2018

There are currently 164 training schools in Germany (Bundesanstalt für Landwirtschaft und Ernährung, 2018). These schools are responsible for the basic training of future farmers. If their curricula are considered, as in this example by the federal state of NRW, topics such as founding or taking over a farm are not part of the apprenticeship. During this phase of training, future farmers learn much more about the differences between the different types of companies, the main features of break-even analysis and costing calculations (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, 2008). As already mentioned in the above section, after an agricultural apprenticeship, a further school education as a master craftsman or state certified agriculture economist can be followed. These branches are taught in one of the 117 technical schools (Bundesanstalt für Landwirtschaft und Ernährung, 2018). In the curricula for agricultural technical schools in the federal state of Saxony, one education part is entitled “Founding and running a farm”, but the founding section is not filled with contend. Rather, the focus is on controlling a farm and the target setting of farms. Through the mediation of detailed knowledge in areas of business administration and accounting, the

production of a farm is to be analysed and optimised (SMUL, 2017). The curricular for technical schools in NRW is similar. All of them impart the knowledge in a certain basic scheme, which is shown in table 25. None of the curricula explicitly mention founding a farm (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, 2014).

A study can also be started with or without an agricultural apprenticeship. In the winter semester 2017/18, 204 degree courses were offered in Germany in terms of agriculture and forestry. There were 93 Bachelor and 11 Master degree programmes with a total of 63,253 students (Hochschulrektorenkonferenz, 2017), which were spread over ten universities and thirteen universities of applied sciences in Germany (VDL 2018). Their curricula show that only the Rheinische-Friedrich-Wilhelms-University Bonn, the University of Hohenheim and the University of Kassel deal with the topic of farm star-ups in their lectures. In the curricular of the remaining universities this topic is missing, there, as in technical schools, knowledge of business analysis and planning is imparted. Similar findings can be seen in the analysis of the curricular and websites of the universities of applied sciences. With the Nürtingen University of Applied Sciences and the Weihenstephan-Triesdorf University of Applied Sciences, only two of the thirteen universities of applied sciences have modules that deal with the topic of star-ups. Locations such as Anhalt University, Osnabrück University of Applied Sciences and the Südwestfalen University of Applied Sciences have business incubators, but at this point it remains unclear to what extent they deal with agriculture.

Table 25: Farm analysis at technical school

1.	Understanding the structure of a farm
2.	Delimit production factors
3.	Valuation of agricultural property
4.	Accounting and financial statements
5.	Cost calculations
6.	Business and investment planning

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Appendix I: Guidelines for conducting the national desktop research on new entrant business and entry models

Deliverable 2.1 „State-of-the-art of new entrant business and entry models“
Lead: FHS & Teagasc
Contributions: All partners
Due: August 2018

1. Introduction

After giving a short introduction of farmers' age and succession situation in Europe this document provides guidelines to conduct the desktop research on new entrant business and entry models. The guidelines include a time schedule and instructions to ensure homogeneous reviews in all nine partner countries and seven languages. The desktop research on new entrants business and entry models is one component of deliverable 2.1 "State-of-the-art of new entrant business and entry models". This deliverable's second component comprises an analysis of educational resources on all partner countries (s. Guidelines for analysing educational resources of agricultural colleges and universities).

Within WP2 every partner (except Germany with two partners) has 2.5 person months to be spending in the data collection of Deliverables 2.1-2.4. However, the WP and task leaders FHS, TEAGASC, and HUTTON have according to the obligations (preparation of guidelines, data analysis, report, etc.) higher person months' numbers. The 2.5 person months per partner country for data collection in WP 2 can be translated into 50 working days. WP 2 leaders propose to spend the following working days per deliverable:

- Deliverable 2.1 (State of the art business models): 10 working days
- Deliverable 2.2 (Inventory case studies): 25 working days
- Deliverable 2.3 (Analysis strategic business planning): 10 working days
- Deliverable 2.4 (Characteristics and needs of stakeholders): 5 working days

2. Farmers' age and succession situation in Europe

Of the 10.8 million farm managers in the EU-28 agricultural sector in 2013, there were relatively few young farm managers. Farm managers below 35 years account for only 6 % of all farm managers. More than half of the farm managers (55.8 %) are aged 55 or above and thus close to or beyond the regular retirement age. The age distribution in Europe is heterogeneous, so that obvious geographical tendencies cannot be detected (s. Figures 1-3). However, older farm managers tend to prevail in Southern and South-eastern European countries, like Portugal, Italy, Bulgaria and Romania. The highest shares of young farmers can be found in Central Europe, namely Austria and Poland. For more details please see the maps of farm managers' age distribution of farm managers < 45 years (s. Figures 1), > 45 years (s. Figure 2), and > 55 years (s. Figure 3). These data from the Eurostat database are already five years old (2013). An overview of all per centages is summarized in table 1. About 90 per cent of the farm managers in Cyprus and Portugal are above 45 years, while about one third of the Polish and Austrian farmers are below 45 years old. 73% of the Portuguese farmers are older than 55

years – followed by Cyprus, Romania and Italy. The lowest shares of farm managers above 55 years are in Austria, Poland, Germany, Finland, France, and Norway (less than 40 % of farm managers older 55 years). The majority of the farms that are designated to disappear in the coming five to ten years are comparable small and diversified farms (Roels, 2016).

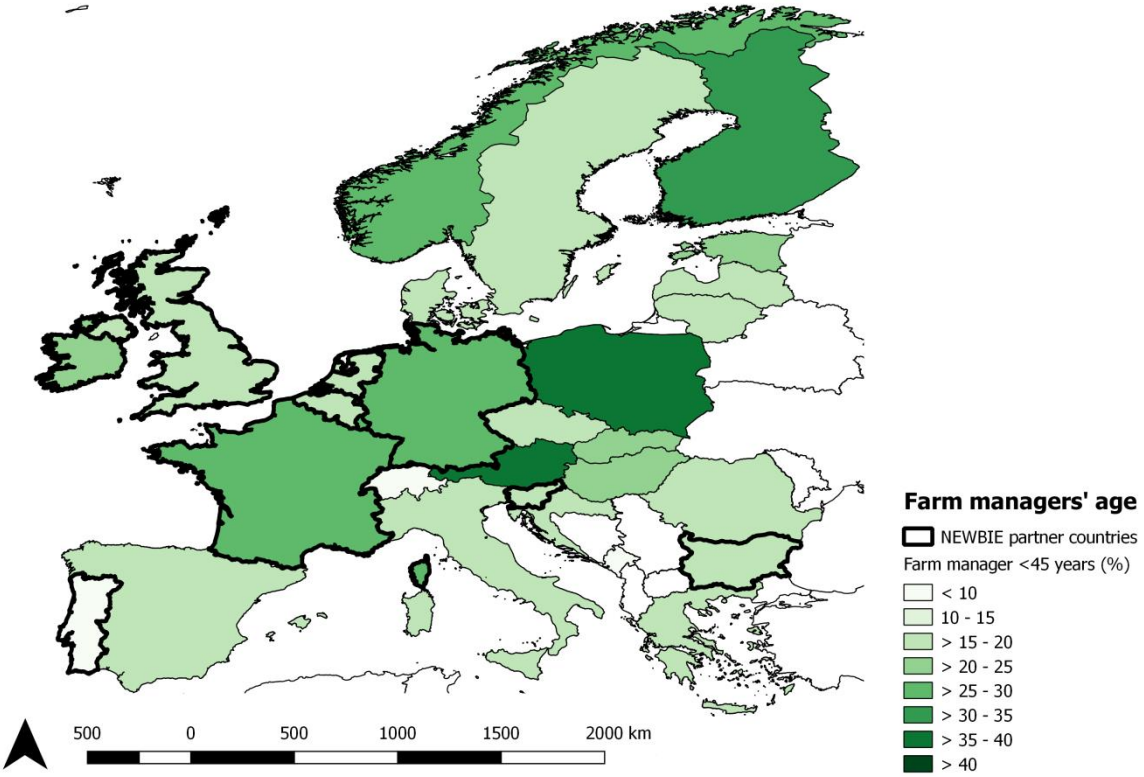

Figure 1: Share of young farm managers (< 45 years) 2013; data source: Eurostat

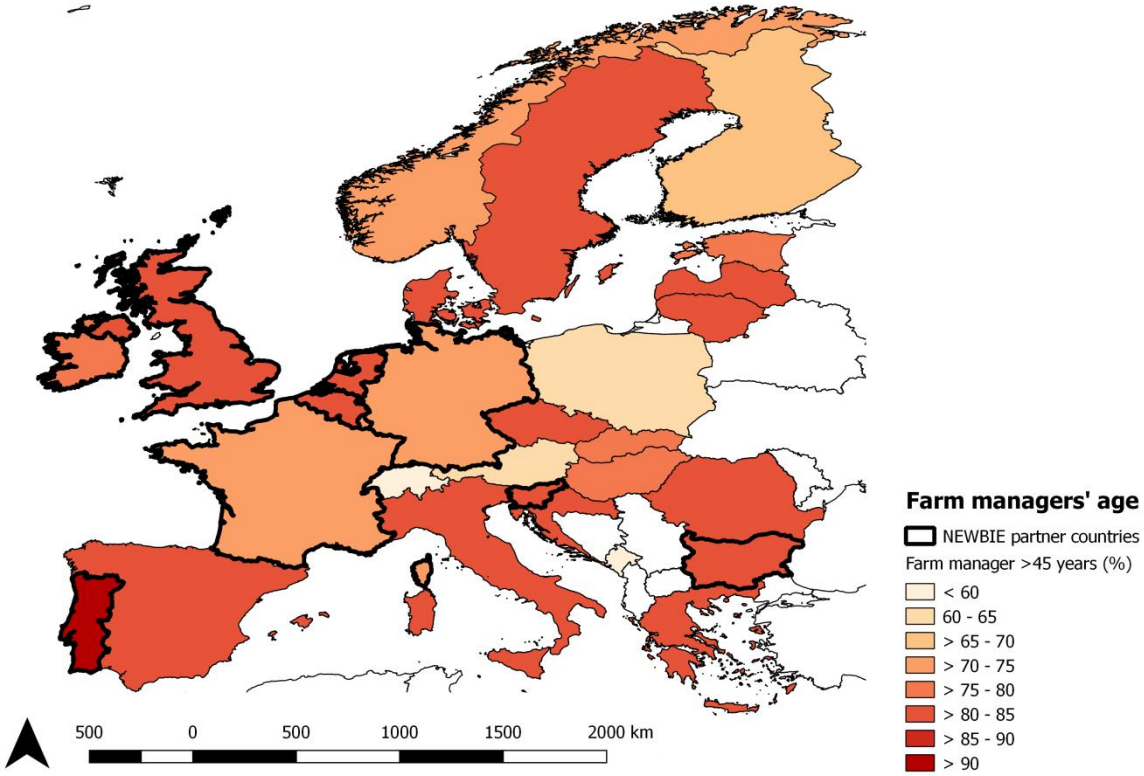

Figure 2: Share of farm managers > 45 years 2013; data source: Eurostat

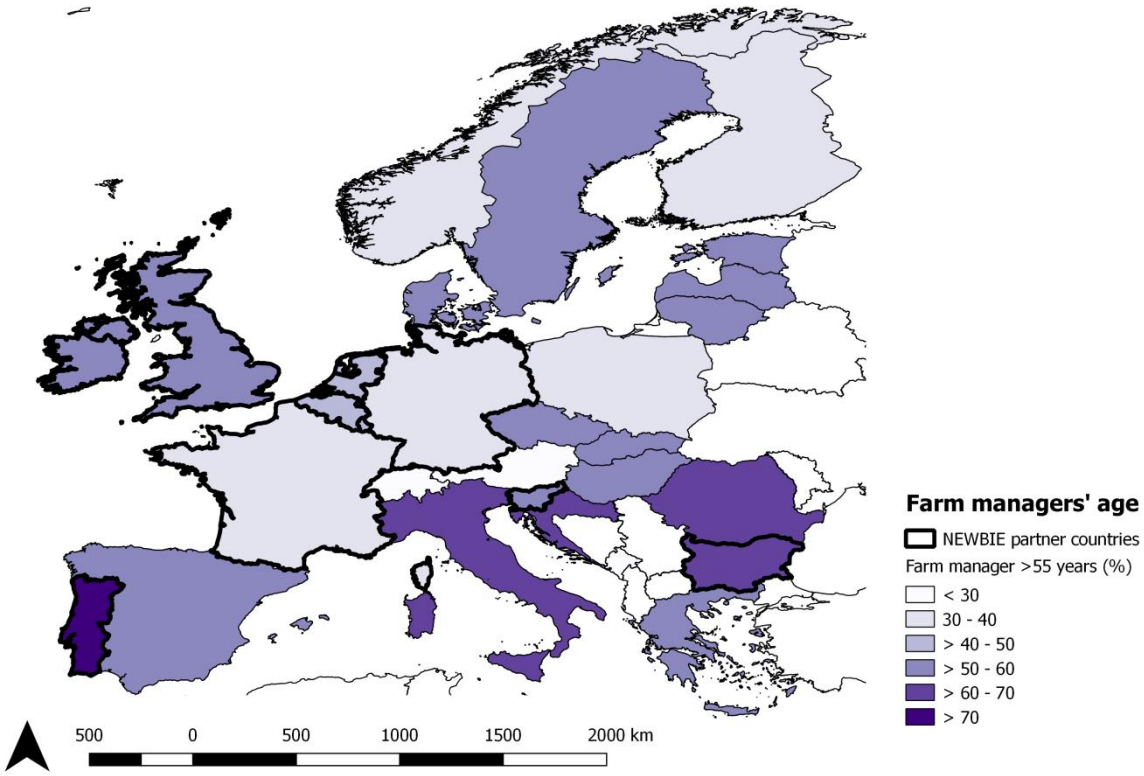

Figure 3: Share of farm managers > 55 years 2013; data source: Eurostat

Table 1: Shares of farm managers < 45 years, > 45 years, and > 55 years 2013; data source: Eurostat

Country	Share of farm managers (%)		
	< 45 years	> 45 years	> 55 years
Austria	35.38	64.62	28.16
Belgium	19.17	80.83	47.96
Bulgaria	19.65	80.35	61.88
Croatia	15.90	84.08	60.31
Cyprus	8.54	91.49	70.04
Czech Republic	19.35	80.61	56.84
Denmark	17.22	82.81	51.80
Estonia	24.34	75.66	52.21
Finland	30.55	69.47	39.32
France	27.95	72.05	39.35
Germany	26.51	73.48	36.29
Greece	19.90	80.09	56.18
Hungary	21.03	78.97	59.53
Ireland	22.94	77.06	51.92
Italy	15.37	84.63	62.99
Latvia	19.55	80.44	54.19
Lithuania	19.48	80.52	54.89
Luxembourg	25.96	74.04	41.83
Malta	16.77	83.33	58.55
Netherlands	19.40	80.60	47.87
Norway	29.17	70.83	39.50
Poland	35.88	64.12	33.90
Portugal	9.70	90.30	73.66
Romania	18.65	81.35	64.42
Slovakia	23.55	76.45	51.59
Slovenia	19.15	80.85	54.42
Spain	16.44	83.56	58.53
Sweden	17.14	82.86	58.02
United Kingdom	15.00	85.00	58.38

3. Schedule and instructions

3.1 Schedule

Schedule for the desktop research on new entrant business and entry models:

Date	Partner	Task
28/02/2018	FHS/Teagasc	Draft guidelines for desktop research
12/03/2018	All	1st feedback round on guidelines for desktop research
26/03/2018	All	2nd feedback round on guidelines for desktop research
31/03/2018	FHS/Teagasc	Final guidelines for desktop research
April-June	**All**	**Conducting the national desktop researches**
15/06/2018	All	Data transfer of national desktop researches
31/07/2018	FHS/Teagasc	Report
15/08/2018	Coordinator	Review
15/08/2018	Reviewer	Review
31/08/2018	**FHS/Teagasc**	**Final report**

3.2 Literature review

Firstly, academic and grey literature both are briefly defined for the purpose of the desktop research before, secondly, providing common guidelines for the literature review.

- **Academic literature**

  Academic or scientific literature consists of articles controlled by commercial publishers. These articles are published in peer-reviewed journals with or without impact factor, although academic literature is not limited hereon.

- **Grey literature**

  The Fourth International Conference on Grey Literature in Washington, DC, in October 1999 defined grey literature as follows: "That which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers" (Grey Literature, 1999). They may include, but are not limited to the following types of materials: reports (pre-prints, preliminary progress and advanced reports, technical reports, statistical reports, memoranda, state-of-the art reports, market research reports, etc.), theses, conference proceedings, technical specifications and standards, non-commercial translations, bibliographies, technical and commercial documentation, and official documents not published commercially (primarily government reports and documents) (Alberani et al., 1990).

Guidelines for the literature review

The national literature reviews of new entrant business and entry models have to embrace both, academic and grey literature. This literature review approach ensures a comprehensive state-of-the-art report in the nine partner countries and seven languages. It should describe the key challenges that exist in each of the nine partner countries supported by articles to highlight both challenges and solutions that have been found to overcome challenges. We also encourage you to make use of the national networks, discussion circles, and steering groups (WP 3) to find relevant national literature.

The following lead questions guide you through the literature review (business and entry models as well as components of the business models are defined and named below).

- **Which new entrants' business and entry models exist in your country?**
  - What are common (components of) business models for family successors[5] when taking over the farm (e. g. no changes / "business as usual", new products, new production systems, new marketing strategies, on-/off-farm diversification, etc.)?
  - What kinds of (components of) business models are preferably run by non-family successors[6]/newcomers?
  - How do family successors mainly enter a farm? What is the tradition of intergenerational transfer of land in your country? Are there any new developments documented? (Please list and shortly describe up to six (components of) entry models)
  - How do non-family successors/newcomers enter / start a farm? Are there any new developments documented? (Please list and shortly describe up to six (components of) entry models)
- What are key hurdles for family successors when taking over the farm in your country? (Please list and shortly describe up to six key hurdles)
- What are key hurdles for non-family successors/newcomers in farming in your country? (Please list and shortly describe up to six key hurdles)
- What are the most relevant new entrant topics in your country? (Please list and shortly describe up to six topics)
- What is the (estimated) national ratio between family succession and non-family succession/newcomers in farming? (Please indicate how you calculated or estimated this number)

The desktop research has to embrace a range of available databases, but in case your national conditions allow further or more appropriate desktop research conditions please feel free to make use of it.

Recommended search databases and terms:

The following databases and search terms can serve as a recommendation. They are not obligatory, so that it is up to every single partner to answer the lead questions suitably. The following databases can

[5] *Family successor means only children (son/daughter) of the current/previous farm manager.*
[6] *Non-family successor embraces all other successors except children of the current/previous farm manager (family successor). Thus, also nieces and nephews are also defined as non-family successors.*

be valuable in finding information on new entrants and more specifically on new entrant business and entry models:

- Public library databases (state / university libraries)
- Google scholar
- AgEconSearch (http://ageconsearch.umn.edu/)
- Google
- Science direct
- Researchgate

When visiting these search databases (you can add additional search databases), you can make use of the following search terms (you can add additional search terms):

- Farm succession + country
- Agriculture succession + country
- New entrant farming + country
- New entrant agriculture + country
- Newcomer farming + country
- Newcomer agriculture + country
- Farm succession (in your national language(s))
- New entrant farming (in your national language(s))
- New entrant agriculture (in your national language(s))
- Newcomer farming (in your national language(s))
- Newcomer agriculture (in your national language(s))

For better insights into new entrant business and entry models you can add to above mentioned search terms also the terms “business strategy”, “business model”, “entry strategy”, “entry model”, “hurdles”, “challenges”, “bottlenecks”, and “opportunities”.

When there is not a lot available on new entrants’ business models, entry models, and farm strategies you can also add components of business models in your search; e. g. the nine building blocks of Business Model Canvas (BMC) from Osterwalder and Pigneur (2009). These nine buildings blocks are: Customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure. The BMC template is attached to these guidelines (s. below).

It is up to every individual partner to decide when stopping with one search term - it might be entry number 5 or 50. When additional entries do not fit our topic or do not add any information you can stop and go on with the next search term.

Each national representative is asked to provide a maximum 5 page summary of new entrant business and entry models’ state-of-the-art. The report has to cover the business model as well as entry model perspective. The WP leaders provide a structured template for this (see Appendix 1 in this document). Besides the national summaries, the WP leaders would be happy to be informed about other relevant literature for new entrants’ business and entry models; although from non-NEWBIE

partner countries. With regard to the NEWBIE grant agreement business and entry models are defined as follows:

- **Business models** or entrepreneurial models describe "the rationale of how an organisation creates, delivers and captures value" (Osterwalder and Pigneur, 2009), represent the "design of organisational structures to enact a commercial opportunity" (George and Bock, 2011) and explain "how value is created for the customers and how value is captured for the company and its stakeholders" (Henriksen, Bjerre, Almasi and Damgaard-Grann, 2012). They consist of interlocking elements, which, combined, create values; e.g. identifying customer value propositions, profit formulas, key resources and key processes (Johnson, Christensen and Kagermann, 1996). Individual business models are often oriented on one or on a mix of business strategies like "low cost production", "differentiation" or "diversification".

- **Entry models** are here defined as approaches, methods and/or instruments, which can help to overcome resource access barriers for new entrants in farming (see above). These can be, for example, new forms of farm co-operation between landowners and new entrepreneurs like partnerships including junior-senior-partnerships, contract farming, share farming, or land access with support by an incubator institution. New entry models can specifically address the issue of access to "key resources" and the juridical aspects of a new business, and present a quite important and decisive part of a business model of a new farming operation (Lorleberg et al., 2015).

3.3 Structure of the national reports (5 pages maximum)

1. **General remarks on the desktop research**
   - How was the desktop research performed?
   - Following the guidelines?
   - Any additional sources/methods used?
   - Any additional keywords used?

2. **Short introduction on national research/discussions on new entrants**
   - What are the most relevant new entrant topics in your country?
   - What is the (estimated) national ratio between family succession and non-family succession/newcomers?

3. **Business models**
   - What are common business strategies for family successors when taking over the farm (e. g. no changes / “business as usual”, new products, new production systems, new marketing strategies, on-/off-farm diversification, etc.)?
   - What kinds of business strategies are preferably run by non-family successors/newcomers?

4. **Entry models**
   - How do family successors mainly enter a farm? What is the tradition of intergenerational transfer of land in your country? Are there any new developments documented?
   - How do non-family successors/newcomers enter / start a farm? Are there any new developments documented?

5. **Hurdles**
   - What are key hurdles for family successors when taking over the farm in your country?
   - What are key hurdles for non-family successors/newcomers in farming in your country?

6. **Desktop research in a nutshell**
   - What are the most important national take-home messages of new entrants' business and entry models in your country? Please list a maximum of six bullet points.

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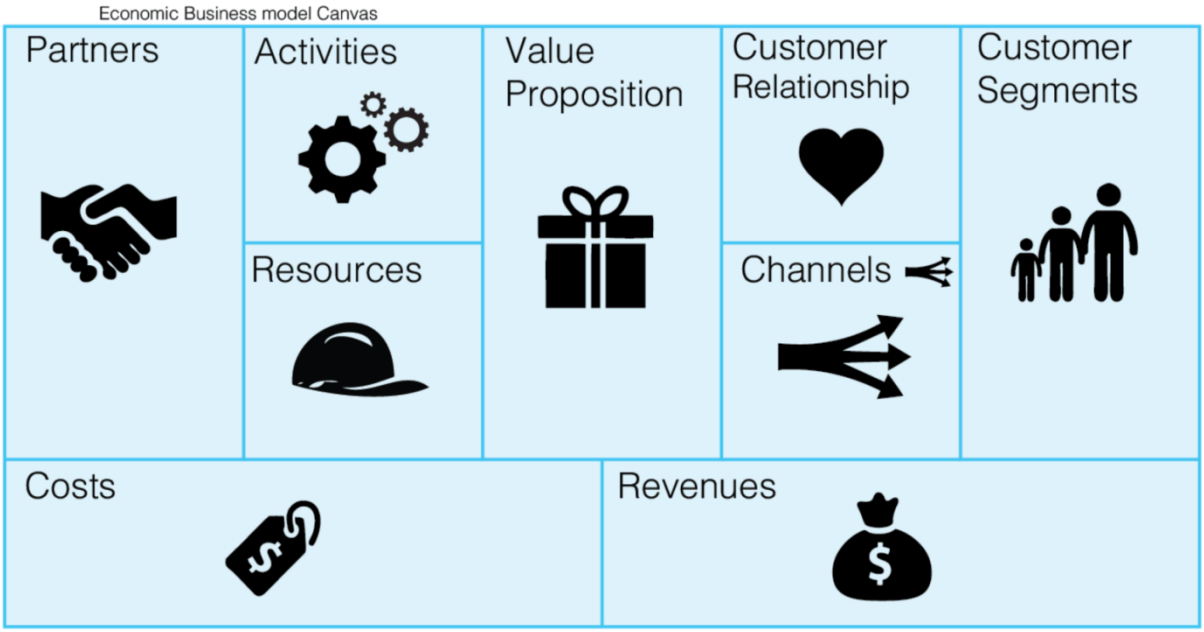


Appendix II: Guidelines for analyzing educational resources pf agricultural colleges and universities

Deliverable 2.1 „State-of-the-art of new entrant business and entry models“
Lead: FHS & Teagasc
Contributions: All partners
Due: August 2018

1. Introduction

This analysis of educational resources of agricultural colleges and universities builds one component of deliverable 2.1 “State-of-the-art of new entrant business and entry models”. The guidelines of the second component of national desktop researches on new entrant business and entry models is provided separately from these educational resources’ guidelines (s. “Guidelines for conducting the national desktop research on new entrant business and entry models”). The guidelines include a time schedule and instructions to ensure homogeneous reviews in all nine partner countries.

As written in the project proposal and grant agreement this analysis of educational resources on new entrants is focusing on agricultural colleges’ and universities’ curricula. Based on these guidelines every partner is conducting a national analysis of agricultural colleges’ and universities’ curricula. Within this analysis the heterogeneity of educational systems throughout Europe has to be admitted. Thus, before focusing on the curricula of agricultural colleges and universities, every partner is asked to provide a short summary of the national education system structure (s. Schedule and instructions).

Within WP2 every partner (except Germany with two partners) has 2.5 person months to be spending in the data collection of WP2’s Deliverables 2.1-2.4. However, the WP and task leaders FHS, TEAGASC, and HUTTON have according to their obligations (preparation of guidelines, data analysis, report, etc.) more person months. The 2.5 person months for data collection in WP 2 per partner country can be translated into 50 working days. WP 2 leaders propose to spend the following working days per deliverable:

- Deliverable 2.1 (State of the art business models): 10 working days
- Deliverable 2.2 (Inventory case studies): 25 working days
- Deliverable 2.3 (Analysis strategic business planning): 10 working days
- Deliverable 2.4 (Characteristics and needs of stakeholders): 5 working days

2. Schedule and instructions

Schedule for the analysing educational resources of agricultural colleges and universities:

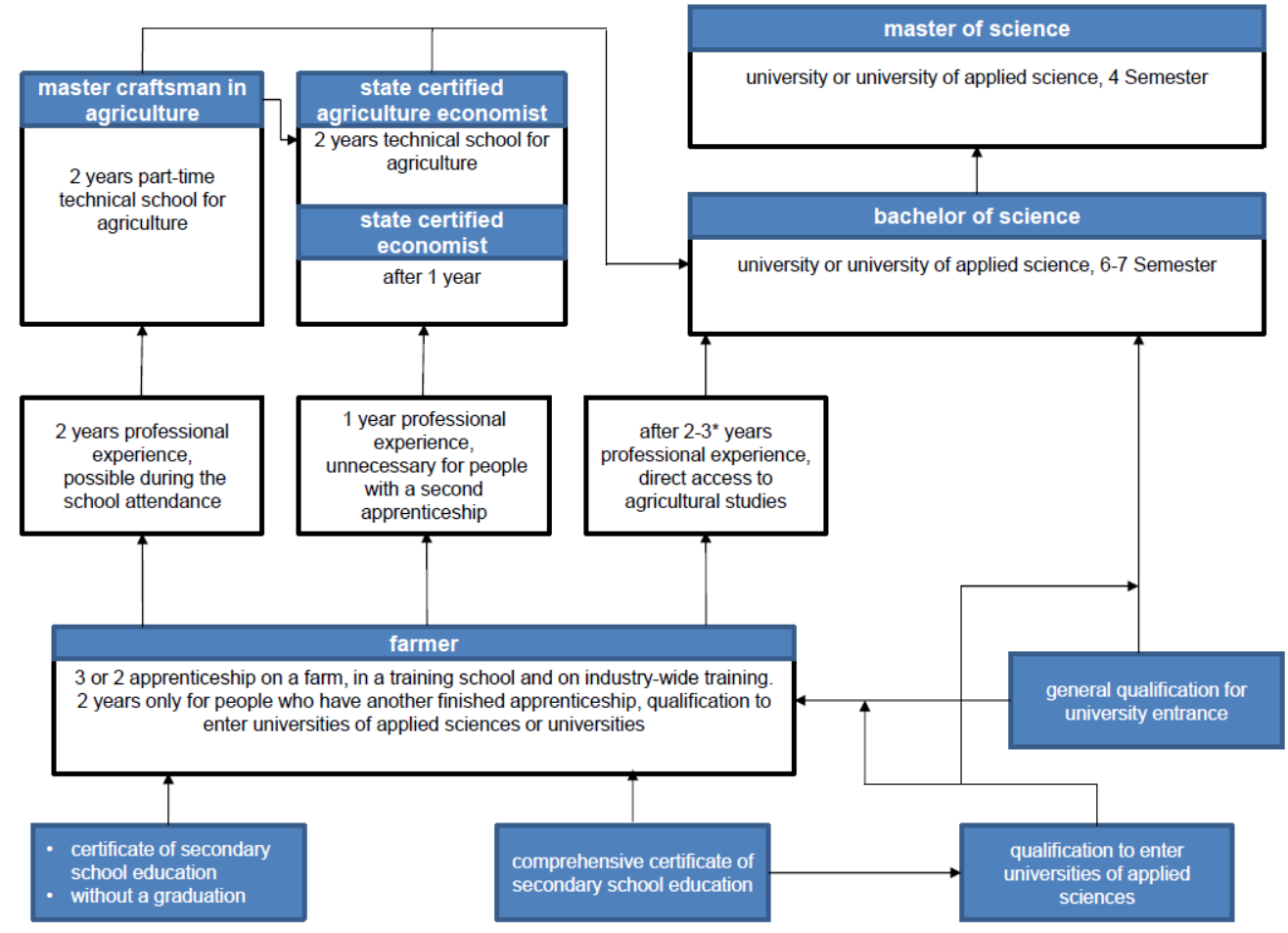
Date	Partner	Task
28/02/2018	FHS/Teagasc	Draft guidelines for analysing educational resources
12/03/2018	All	1st feedback round for analysing educational resources
26/03/2018	All	2nd feedback round for analysing educational resources
31/03/2018	FHS/Teagasc	Final guidelines for analysing educational resources

April-June	All	Analysing national educational resources
15/06/2018	All	Data transfer of national educational resources
31/07/2018	FHS/Teagasc	Report
15/08/2018	Coordinator	Review
15/08/2018	Reviewer	Review
31/08/2018	**FHS/Teagasc**	**Final report**

a) Agricultural education system

The analysis of agricultural colleges' and universities' curricula has to admit the heterogeneity of educational systems throughout Europe. Thus, before focusing on the curricula of agricultural colleges and universities (see b)), every partner is asked to provide a short graphical summary of the national education system structure. **Please provide an overview of your national agricultural education system on not more than two pages – a visualisation is very much welcome.**

Here you can see a draft visualisation for Germany:



*depends on the federal state

b) Analysis of agricultural colleges' and universities' curricula

According to your national educational system, pay attention to find the relevant subjects and teaching fields where the majority of successors and possible new entrants get educated. Please make use of your personal/institutional knowledge and expertise to select agricultural colleges and universities of interest. Within this analysis, colleges and universities are defined in a broad sense including full universities, universities of applied sciences, colleges, and technical schools.

For the analysis we propose an iterative two-stage process:
Firstly, we ask you to conduct a desktop research of agricultural colleges and universities in your country. It is your own responsibility to select a number of colleges and universities (between 5 and 10) in case there are too many to consider the total population present in your country. Please do not focus only on universities, but you have to consider also colleges, technical, and vocational schools as a considerable share of new entrants has an educational background on these levels.
When detecting interesting educational resources based on your desktop research in the first stage, you are asked to contact the responsible staff personally in the second stage. Additionally, there might be schools of interest for this analysis without online information on their curricula. In this case, please contact them personally.

When analysing the curricula the following terms might be helpful to detect relevant educational resources:

- (New) Entrepreneurship
- Start-Up
- Farm succession
- Farm transfer
- Project management
- Business / Farm planning
- Business/ Farm innovation
- Alternative Business Models
- Rural Development
- (Business) Financing

Additionally, please consider business incubators and start-up centres of colleges and universities. For examples a few years ago South-Westphalia University of Applied Sciences has launched the business incubator centre “SWICE” (South-Westphalia International Centre for Entrepreneurship).

Please provide short summary of your analysis (maximum two pages including an explanation of the methods and a results section) plus a list of relevant agricultural colleges’ and universities’ educational resources including web links, if applicable.

Outline of the summary report (2 pages + list)

1. **General remarks on the analysis of educational resources**
   How was the analysis performed? Following the guidelines?
   Any additional sources/methods used?

2. **Key results and discussion**
   Which educational resources were you able to detect? (Link to the list below)
   How do they fit into the NEWBIE project? Are they of value for other countries?

What are the key elements that prepare students for a career in farming?
Is there a focus on alternative business models and entrepreneurship?
Which educational resources should we consider for:

- WP3 discussion circles/steering group meetings and
- WP4 toolkits and recommendations?

3. List of relevant educational resources

Including links to the website, if applicable

NEWBIE

New Entrant network

Business models for Innovation, entrepreneurship and resilience in European Agriculture

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