

New knowledge networks of small-scale farmers in Europe's periphery

Sutherland, Lee-Ann; Madureira, Lívia; Dirimanova, Violeta; Bogusz, Malgorzata; Kania, Jozef; Vinohradnik, Krystyna; Creaney, Rachel; Duckett, Dominic; Koehnen, Timothy; Knierim, Andrea

Published in:
Land Use Policy

DOI:
[10.1016/j.landusepol.2017.01.028](https://doi.org/10.1016/j.landusepol.2017.01.028)

Publication date:
2017

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in ResearchOnline](#)

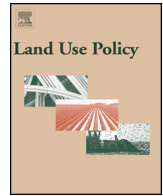
Citation for published version (Harvard):
Sutherland, L-A, Madureira, L, Dirimanova, V, Bogusz, M, Kania, J, Vinohradnik, K, Creaney, R, Duckett, D, Koehnen, T & Knierim, A 2017, 'New knowledge networks of small-scale farmers in Europe's periphery', *Land Use Policy*, vol. 63, pp. 428-439. <https://doi.org/10.1016/j.landusepol.2017.01.028>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please view our takedown policy at <https://edshare.gcu.ac.uk/id/eprint/5179> for details of how to contact us.



New knowledge networks of small-scale farmers in Europe's periphery[☆]



Lee-Ann Sutherland^{a,*}, Lívia Madureira^b, Violeta Dirimanova^c, Malgorzata Bogusz^d, Jozef Kania^d, Krystyna Vinogradnik^g, Rachel Creaney^{a,f}, Dominic Duckett^a, Timothy Koehnen^b, Andrea Knierim^{e,f}

^a Social, Economic and Geographical Sciences Group, The James Hutton Institute, Craigiebuckler, Aberdeen AB15 8QH, United Kingdom

^b Centre for Transdisciplinary Development Studies (CETRAD), Universidade de Trás-os-Montes e Alto Douro (UTAD), Edifício de ECHS – Pólo II – Quinta de Prados, 5000-801 Vila Real, Portugal

^c Agricultural University of Plovdiv, 12 "Mendeleev" Blvd., 4000 Plovdiv, Bulgaria

^d University of Agriculture in Krakow, Faculty of Agriculture and Economics, Institute of Economics and Social Sciences, Department of Social Policy and Agricultural Extension, Mickiewicza Ave. 21, 31-120 Krakow, Poland

^e Leibniz Centre for Agricultural Landscape Research (ZALF), 15374 Müncheberg, Germany

^f Geography & Sustainable Development, University of St. Andrews, St Andrews KY16 9AL, UK

^g The State Higher Vocational School in Tarnow, Department of Economics, 8 Mickiewicza St, 33-100 Tarnow, Poland

ARTICLE INFO

Article history:

Received 18 October 2016

Received in revised form 14 January 2017

Accepted 22 January 2017

Available online 20 April 2017

Keywords:

AKIS

Farm advisory services

Networks

New entrants

PRO AKIS

ABSTRACT

In this paper we assess the types of knowledge networks utilised by small-scale farmers in four case studies (located in Bulgaria, Poland, Portugal, and the United Kingdom). We focus on knowledge acquired to inform three new activities being undertaken by study participants: agricultural production, subsidy access and regulatory compliance, and farm diversification (specifically agritourism). Findings demonstrate that the new knowledge networks are dominated by different forms of expertise: formal 'agricultural advisors' identified in the case studies primarily offer codified managerial knowledge through centralised networks, suggesting that state-funded services for small-scale farmers are largely embedded in traditional, linear models of knowledge transfer. Production and diversification knowledge is exchanged through 'distributed' and 'decentralised' networks, where a range of actors are involved across varying geographical distances. Findings highlight issues associated with the quality and independence of both 'free' and paid advice, as well as the importance of combining tacit and codified knowledge for credibility. In all four cases, we found that small-scale farmers utilise formal advisory services primarily for accessing subsidies (e.g. completing application forms), rather than acquiring production knowledge. The authors argue that by utilising the state funding allocated to advisory services for small-scale farmers primarily to enable these farmers to access subsidies, important opportunities for innovation by both advisors or farmers can be lost.

© 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

In recent years, small-scale farming has received increased attention in academic and political debates. The United Nations 2014 International Year of Family Farming in particular drew attention to family farms, including smallholder farming.

UNGA Resolution 66/222 affirmed that Family Farming and smallholder farming are important bases for sustainable food production aimed at achieving food security, and recognized their important contribution in providing food security and eradicating poverty in the attainment of the internationally agreed development goals, including the Millennium Development Goals. (IFAD, 2014, p. 1)

La Via Campesina (2013) similarly maintains that small and medium-sized 'peasant' farms represent the economic and social backbone of European agriculture, basing their argument on research findings that the average European farm size is just 14 ha. Davidova et al. (2013) argue that there is an important

[☆] An earlier version of this paper was presented at the 12th European IFSA Symposium, Harper Adams University, UK, July, 2016.

* Corresponding author.

E-mail address: lee-ann.sutherland@hutton.ac.uk (L.-A. Sutherland).

role for small-scale farms in rural areas, alleviating poverty, supplying speciality foods to short or direct food supply chains, as well as contributing to biodiversity and other gainful activities in the wider rural economy. A [European Parliament resolution \(2014\)](#) similarly states that small farms play key roles relating to nature (such as maintenance of the countryside and biodiversity), society (through providing employment and reserve workforce for other sectors) and culture (through the preservation of traditions, and manufacturing traditional products), as well as creating favourable conditions for animal welfare. These contentions are supported by special provisions within the European Union's Rural Development Programme (RDP) to promote farm development and business diversification ([Wilkin, 2009](#)). These provisions include the Small Farmer Scheme and RDP funding to provide economic development advice to small-scale farmers ([European Commission, 2013](#)), in order to increase their commercial viability. The [European Parliamentary Research Service \(2014\)](#) estimated that enlargements of the EU in 2004 and 2007 tripled the number of small-scale and semi-subsistence farms in the EU, substantially increasing the impetus to address small-scale farming specifically in European policy.

Despite this recognised importance of small-scale farming, structural changes in European agriculture favour larger-scale farms ([Zegar, 2012](#); [European Commission, 2011](#)). Smaller scale farms not only lack economies of scale, they are more likely to be occupied by older, less business-oriented farmers ([Zagata and Sutherland, 2015](#)) and frequently represent semi-subsistence farms ([Davidova et al., 2013](#)), which function primarily as a buffers against poverty rather than as productive commercial businesses. Small-scale farms also lack the land base necessary to secure substantive loans for investment in farm development, an important barrier for new entrants (see [Sutherland, 2015](#)). Widespread privatisation of agricultural advisory services across Europe in recent decades has further disadvantaged small-scale farms: as [Kidd et al. \(2000\)](#) point out, private advisory services may disproportionately serve those who can afford them (i.e. larger scale farms). In line with this, [Labarthe and Laurent \(2013\)](#) argue that the dismantling of public extension services in Europe has disproportionately impacted on small-scale farms, making these farms less visible as clients for privatised advisory services, and advisors in general less responsive to small-scale farming needs. The obligation introduced by the European Commission for member states to establish Farm Advisory Systems (FAS) in 2003 (see [European Commission, 2015](#)), has not changed that emphasis, even amongst publically funded advisory services. A review of the FAS in 2009 found that the main beneficiaries were large-scale farms ([European Commission, 2009](#)).

The FAS review also identified an important trend in the type of information that is provided; it found that in 14 member states, advice on Cross Compliance was the sole focus of the FAS ([European Commission, 2009](#)). The review recommended that FAS advisors should go beyond helping farmers meet their practical obligations under cross compliance and explain how these obligations contribute to sustainable agriculture, provide access to advice on a broader range of topics, and enable establishment of new information networks ([European Commission, 2009](#)). These recommendations imply that the advice available through these services is primarily oriented towards regulatory adherence, rather than increasing understanding of the principles of sustainable land management and animal husbandry. There is thus a marked contrast between the FAS assessed in the report, and the historic role of state-funded agricultural advisory services in many European countries, of transferring knowledge on new scientific advances and technologies.

The FAS review implies a transition towards advisory services focused on 'managerial knowledge' (i.e. the knowledge and skills to manage resources, grants, legislation and bureaucracy, [Koutsouris,](#)

[2008](#)), rather than adoption of new technologies. This transition is one of a number of changes occurring in the advisory sector. In addition to privatisation, changes include the broadening range of knowledge topics in demand, reflecting the increasing diversity in products and specialisation of producers ([Klerkx and Leeuwis, 2008](#)). Numerous studies have also pointed to the growing disconnection between agricultural advisory services and scientific research (e.g. [Kania et al., 2014](#); [EU SCAR, 2013](#); [Van Crowder and Anderson, 1997](#)). A key issue is that privately funded advisory organisations cannot afford to undertake research directly, leaving advisors to provide standardised, potentially out-of-date information to small-scale farmers ([Labarthe and Laurent, 2013](#)). This disconnection is problematized as representing an important loss of innovation potential and up-take in the agricultural sector.

Although important, access to formal advice (through public, private or charitably funded professional advisors) represents only one aspect of contemporary agricultural knowledge systems. Social scientists have long since rejected the notion that linear knowledge flows from scientists to extension agents to farmers are the best way to ensure innovation in the sector ([Van Crowder and Anderson, 1997](#); [Chambers et al., 1989](#); [Dockés et al., 2011](#), [Röling and Wagemakers, 1998](#)). Indeed, [Garforth et al. \(2003, p. 324\)](#) points out that "an almost universal finding from studies of farmers' sources of information and influence is that 'other farmers' are their most frequently reported source". Recent research has emphasised that both local knowledge and scientific knowledge are important for achieving sustainability in agricultural systems ([Curry and Kirwan, 2014](#); [Kania and Kapłan, 2014](#); [Labarthe and Laurent, 2013](#); [Tovey, 2008](#)). Instead, innovation and up-take of new farming technologies or practices are widely accepted as resulting from iterative engagement in non-linear knowledge networks or systems. In line with this, recent literature emphasises the importance of advisors as facilitators of knowledge exchange within these systems ([Österle et al., 2016](#); [Cristóvão et al., 2012](#)).

In this paper, we focus on newly established knowledge networks of small-scale farmers. Integration into new networks for the purpose of gaining knowledge suggests active intentions to change farming practices, adopting new or established innovations. To ensure the assessment of new knowledge networks, the research focused primarily on new entrants to small-scale farming. Sustaining a cohort of new entrants is widely recognised as critical to the ongoing vitality and competitiveness of Europe's agricultural sector ([Sutherland, 2015](#)). New entrants in particular are expected to bring with them new ideas and skills which can be operationalised on their farms ([Regidor, 2012](#)). CAP measure 112 (2007–2013) specifically focused on establishing new farms, drawing on a budget of €2.84 billion from the European Agricultural Fund for Rural Development ([ENRD, 2014](#)).

The research is structured to address three primary research questions:

- What types of knowledge do small-scale farmers access when undertaking new activities?
- What types of network characterise different topics of knowledge?
- What is the role of formal advisory services in these new knowledge networks?

We also focus on three major knowledge topics: commodity production; access to subsidies and regulatory compliance knowledge; and business diversification knowledge (specifically agritourism). The paper is structured as follows. First, we provide a conceptualisation of knowledge acquisition amongst small-scale farmers. We then present the methods underpinning the research, including an overview of the agricultural knowledge systems addressed in the study sites. We present findings in relation to

each topic, concluding with a discussion of the implications of the research findings for providing supports to small-scale farmers in Europe.

2. Conceptualising new knowledge networks within agricultural knowledge systems

The concept of ‘agricultural knowledge and information systems’ was developed in opposition to extension thinking from the 1950s and 1960s, which emphasised linear knowledge flows from research to extension to farmers. It promoted the idea that farmers exchange and produce knowledge in conjunction with a number of sources, which include research, agricultural advisors, and education/training and support services (Röling, 1988; Röling and Wagemakers, 1998). In recent years, the AKIS concept has been appropriated to address European policy concerns about innovation, and re-termed ‘agricultural knowledge and innovation systems’, reflecting an ideological shift towards innovation (Dockès et al., 2011). AKIS in reference to information systems has tended to emphasise ‘traditional’ participants in knowledge development (researchers, advisors, extensionists, educators) (Kania, 2015), whereas AKIS in reference to innovation includes a broader range of individuals and organisations (e.g. farmer organisations, charities, up and downstream supply chain members). Innovation in this sense refers to novelty: in products, processes or organisation (OECD, 2010). For the purposes of this study, we adopt this broader AKIS approach, with innovation understood as products, processes or practices which are new to the farm (i.e. innovations do not have to be ‘new to the world’ but can be new to a market, or indeed new to the business involved).

Within the overall AKIS concept, a number of different conceptualisations of information, knowledge, types of knowledge and innovation can be operationalised (i.e. the AKIS construct is overarching, rather than presenting an established conceptual approach). When assessing knowledge exchange and development, two general forms of knowledge are typically identified: tacit (implicit) and codified (explicit) knowledge,¹ a distinction which can be traced back to Polanyi (1958). Implicit knowledge or ‘know how’ is acquired through practice and experience, and is not necessarily related to cognitive learning (Curry and Kirwan, 2014). Riding a bicycle is a frequently mentioned example where people successfully undertake an activity without necessarily being able to explain how they do it. In contrast, explicit or codified knowledge can be easily reported and documented (e.g. through scientific reports), although it may require translation into more adapted knowledge, suited to practical application (see EU SCAR, 2012).

Nonaka and Takeuchi (1995) undertook in-depth studies on how tacit knowledge can be made explicit. They identified four types of knowledge creation which ideally follow on from and build upon each other (Nonaka and Toyama, 2003). Tacit or implicit knowledge is acquired through *socialisation*, which means that the learning person is directly and actively exposed to an environment that induces personal experiences (i.e. ‘hands-on learning’). Through communication about these experiences, tacit knowledge is artic-

¹ The literature also offers distinctions between ‘information’ and ‘knowledge’. Leeuwis and van den Ban (2004), in one of the longest running textbooks on agricultural and rural innovation, notes that information is an aspect of knowledge: information is knowledge that has been captured and stored (e.g. in a book, web-site, newspaper) whereas knowledge represents the ability to put that information into practice. As such, humans possess knowledge of which they are not overly aware. In line with this, the possession of information does not equate to the ability to successfully utilise that information in a practical setting. As such, the distinction between information and knowledge overlaps considerably with the differentiation between tacit and codified knowledge. We opt not to distinguish between information and knowledge in this paper.

ulated and becomes explicit – a step that is called *externalisation*. Sharing this explicit knowledge with knowledge from other people, systemising and integrating it, requires *combination* activities. Then, using the explicit and combined knowledge practically in new situations induces a fourth ‘embodying’ step, called *internalisation*, where the (new) knowledge becomes tacit or implicit at a higher level (Nonaka and Toyama, 2003, p.5).² As such, tacit knowledge most easily spreads within social networks, which enable the collective sharing of ideas and activities for common aims. In contrast, codified knowledge translates mental frameworks into symbols, and is therefore more easily made explicit (e.g. through textbooks, websites) (Knickel et al., 2008). Tovey, (2008) discusses an important further distinction within usage of the term ‘tacit knowledge’. Although often used interchangeably, she points out differences between ‘lay knowledge’ and ‘local knowledge’ – lay knowledge is associated with practices of resource use; ‘local knowledge’ is specific to a local area. Lay knowledge thus is not necessarily location specific.

In assessing of types of knowledge, we follow Klerkx and Proctor (2013) and Ingram and Morris (2007) in applying Lundvall and Johnson’s (1994) typology, differentiating between “know what”, “know why”, “know how”, and “know who”. Although it is tempting to consider “know what” (knowledge about ‘facts’) and “know why” (principles of how things work) as “codified knowledge”, and “know how” (practical skills) and “know who” (who to go to for information) as “tacit knowledge”, the distinction is not this clear. “Know what” and “know why” could reflect extensive lay or local knowledge, whereas scientists themselves require “know how” in order to produce valid research and “know who” in order to disseminate it. This study thus addresses these different forms as relative, rather than absolute.

The different types of knowledge are associated with different types of network. Smedlund (2008) draws on Baran (1964) and Barabási (2002) to identify three primary types of networks, which link to different types of knowledge. Centralised networks, featuring a central node through which all knowledge flows, are most useful for ‘routine problem solving’ (e.g. explicit, standardised knowledge, such as advice on general regulatory issues). Codified knowledge is most likely to be transmitted in this type of network, representing ‘know why’ and ‘know what’. A central node can channel this information (e.g. an agricultural advisor), or individuals can access it directly, through transmittable sources such as books and web-sites. Fig. 1 presents an idealised centralised network, where a number of farmers interact on a one to one basis with an advisor, who interacts with other advisors (in her own or other organisations).

The second type of network is a ‘distributed network’ – dense networks of ties where primarily tacit knowledge is exchanged. Distributed networks resemble ‘communities of practice’ or ‘networks of practice’ (e.g. peers who exchange personal knowledge to varying degrees). As such, these networks depend on ‘social capital’ – simply defined as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (OECD, 2001, p. 41). Social capital is both generated by and important for maintaining what Granovetter (1973) terms ‘strong’ ties, based on close personal relationships; exchanges are based on altruism and/or the belief that reciprocal services will be provided. As the knowledge lodged in these networks is primarily based on experience, it is most useful for practical activities. Owing to the close nature of the ties, associated innovation processes are incremental (i.e. major innovations are not typically introduced, owing to commonalities of experience). Fig. 2 demonstrates a net-

² Broader conceptualisations of internalisation and externalisation in relation to learning can be traced back to Berger and Luckmann (1966).

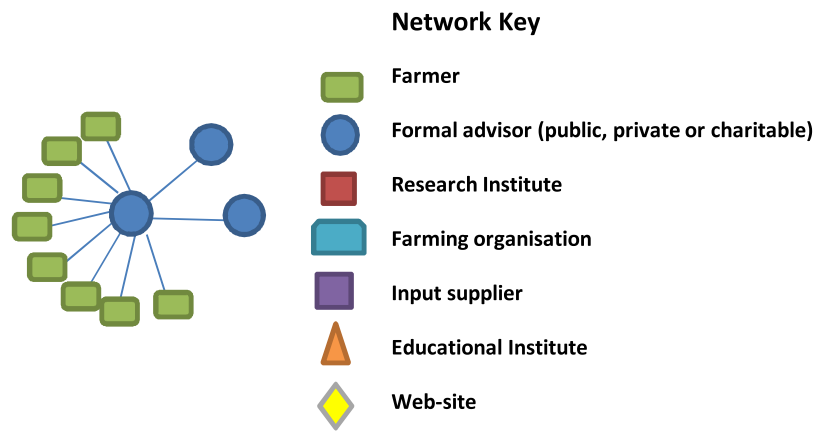


Fig. 1. Example of a centralised network structure.

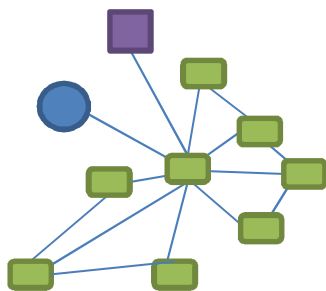


Fig. 2. Example of a distributed network structure.

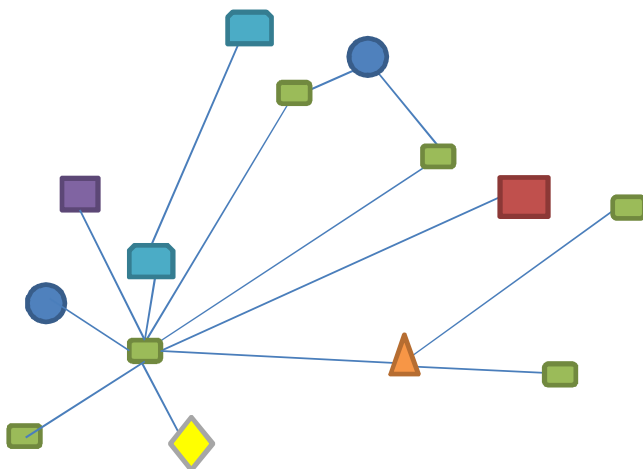


Fig. 3. Example of a decentralised network.

work where the farmer in the centre primarily has links to other farmers.

The third type is decentralised networks, with multiple nodal points connecting diverse individuals. Decentralised networks thus involve knowledge from outside of peer group (i.e. drawing on weak ties, as per Granovetter, 1973) or 'structural holes' (Burt, 2004) to connect disparate groups and their associated knowledge. Smedlund (2008) associates this type of network with the acquisition of what he terms 'potential knowledge' (e.g. of future or cutting edge innovations). Gatekeepers link diverse groups; brokering these boundaries can be an important function. These types of networks are characterised as being in constant change and asymmetric, as the actors involved have considerable differences (e.g. business size). Fig. 3 presents an idealised decentralised network, with the farmer exhibiting both local and distant ties to a

wide variety of actors. Klerkx and Proctor (2013), in their empirical application of Smedlund's work, found that the distinctions are blurred in practice: advisors in their study draw on both decentralised and distributed networks for keeping up-to-date. Farmers can be expected to do the same.

In this paper we argue that the small-scale farmers engage in different types of networks to access different types of knowledge. The structure of these networks reflects the farmers understanding of available sources of knowledge, and their credibility. Network structure also influences the potential for new innovations to be introduced.

3. Method

In this paper, we assess the knowledge embedded in new farming networks in contrasting case studies in Poland, Bulgaria, Portugal and the United Kingdom. Findings are based on qualitative field research in four study sites undertaken in 2014. The cases were selected as part of the PRO AKIS (Prospects for Farmer's Support: Advisory Services in European AKIS) 7th Framework Project, funded by the European Commission. The focus of the PRO AKIS project was to investigate the role of agricultural advisory services across Europe in Agricultural Knowledge and Information Systems (AKIS). A subtopic focused on investigating the performance of advisory services with regard to small-scale farmers. Although it was clear from the study that small-scale farmers access a wide range of knowledge, there were remarkable similarities in the structure of the networks accessed by study participants for different activities. It is these differential network structures that are the focus of this paper.

The selected case studies addressed a diverse range of small-scale farmers. They include new-entrants and semi-subsistence farmers in Plovdiv region, Bulgaria; small-scale farmers diversifying into agritourism in the Carpathian Mountains of Poland; newly established small-scale blueberry producers in the central-north region of Portugal; and new-entrants to crofting on the west coast of Scotland (UK). The four cases have in common the establishment of new knowledge networks, as well as the small scale of the farms involved, relative to national farming characteristics. We have not attempted to standardise a definition of small-scale farming, utilising instead the accepted definitions of small-scale farming in the study sites. As Davidova et al. (2013) note, there is no commonly accepted definition of a small-scale farm. Owing to the differences in land capability, the definition of small-scale farming applied in this research ranged from less than 1.5 ha in Portugal to less than 20 ha in the United Kingdom (not including access to common grazing of over one hundred ha in some cases).

The case studies also represent different ‘types’ of small-scale farm: [Labarthe and Laurent \(2013\)](#), identify three primary types: semi-subsistence farms, hobby farms and small-scale commercial farms producing for the market. Semi-subsistence farms are those on which goods produced are primarily consumed within the household. The [Davidova et al. \(2013\)](#) review found semi-subsistence production to be characteristic of nearly half of all farms in Europe, and approximately 75% of holdings under 2 ha. Hobby farming is undertaken recreationally, typically representing a cost to the household, whereas small-scale commercial farms can represent innovative farm businesses. Total numbers of these types of holding are unknown, as it is not possible to assess motivations from Eurostat figures. All three types are present in this study, with semi-subsistence farms most common in the Bulgarian case, small-scale commercial farms particularly evident in the Portuguese case and to a degree the other three countries, and hobby farming more common in the UK case.³ Although a range of participants were assessed in each case study, not all case studies explored networks relating to all three topics. In Poland, for instance, production information was not considered; in the Portuguese and Bulgarian cases, diversification was not considered. This reflects the characteristics of the regions under study and the PRO AKIS project structure. Further details on each case study are included in Section 3.2.

In each case study, 15–25 semi-structured interviews were undertaken with small-scale farmers who were establishing new knowledge networks, as well as 4–8 key informants within the agricultural knowledge system (primarily formal agricultural advisors). In Portugal and the United Kingdom, farming respondents were selected using a snowball sampling method, based on initial lists provided by farming associations. In Bulgaria and Poland they were purposively sampled to reflect participation in public and private advisory service provision (Bulgaria) and innovative agritourism enterprises and co-operation with advisory services (Poland). A joint analytical framework was developed collaboratively by the researchers to ensure that the interviews had sufficient similarity in terms of topics covered for comparative analysis. Topics addressed in the interviews included: new farmer knowledge demands; processes, actors and methods used to obtain knowledge; supply of knowledge to farmers; and characteristics of knowledge flow. In all four cases the interviews were analysed qualitatively, in relation to the questions in the joint analytical guide. For a summary of study participants see [Table 1](#).

3.1. Limitations

Study participants demonstrate a wide range of approaches to small-scale farming. By including this variety, a number of limitations emerge. The cases are very different, making it difficult to assess whether the differences which arise are context specific. We focus in the paper on the similarities across the cases – although qualitative research by nature is not generalizable, similar findings in cases located in four corners of Europe suggests that the issues identified are not limited to the case study sites. This is consistent with [Mason \(2002\)](#) who argues that principles derived from qualitative research can be expected to apply to similar situations.

Owing to the overall focus of the PROAKIS project, participants were primarily those who had accessed formal advisory services (public, private or charitably funded), although with the exception of the Polish case, there were a small number in each case study who had not. As such, the participants as a whole represent ‘active knowledge seekers’. However, the advisors interviewed for this study concurred that the majority of small-scale farmers in all

four of the study sites had no engagement with state or private agricultural advisory services. In focusing on those who have accessed services, we are therefore assessing how those small-scale farmers who do engage with advisory services structure these interactions, in relation to other sources of knowledge.

4. Case studies

In this section we present brief descriptions of the four case studies [Fig. 4](#). In all four cases, research was undertaken in regions where there are larger scale farms, but small-scale farms are common. In all of the cases, both public and private advisory services serve small-scale farms as a subset of the total farming population in the associated region.⁴

4.1. Plovdiv region, Bulgaria

In Bulgaria, the case centred on small-scale vegetable producers in Plovdiv region. Bulgarian agriculture is characterised by a high rate of small-scale ‘subsistence’ farmers who mainly produce for their own consumption, but also sell to the market. Land reform in the 1990s led to restitution of land to pre-communist owners, or their heirs, leading to an extremely fragmented ownership structure ([Swinnen, 1999](#)). The case study focused on young people accessing RDP funding to establish new farms (typically small-scale vegetable or orchard production). Owing to the restrictions on new entrant supports (Measure 112), the study participants were all less than 40 years old with newly established farms and were undertaking farming on a full-time basis, primarily on rented land. The average size of the farms in the region is about 6.8 ha.

Formal agricultural advisory services are relatively new in Bulgaria, established as part of post-communist reforms. Public advisory services such as the Agricultural Municipal Services and National Agricultural Advisory Service (NAAS) primarily provide (free) information related to subsidy and grant access. Fee-for-service advice is also provided by private consultancy companies and input suppliers. Small-scale farmers also rely on advice from local agronomists, friends and family members; there are substantial numbers of former Soviet era experts (e.g. agronomists, production specialists) trained to work in the collective farming system who continue to reside in rural areas. NGOs are also among the main actors identified, offering a wide range of services (e.g. targeted small-scale farming programmes), also lobbying on behalf of farmers’ interests. In most cases, farmers have formal relations with these organizations and consultancies are free-of-charge.

4.2. Central north Portugal

In Portugal, the case focused on new entrants who were taking up small-scale soft-fruit production (i.e. blueberries). The crop was introduced to the region in the 1990s, with limited success. Efforts were renewed in the late 2000s, through initiatives developed by local governments to utilise RDP Measure 112 to address unemployment and land abandonment. At the national level, this programme experienced an enormous up-take from young people who were unemployed and/or seeking to complement their household incomes. Similar to the Bulgarian case, the new entrants were accessing RDP funding, and as such were necessarily under the age of 40, but in this case not full-time: blueberry production was primarily a part-time, supplemental activity. Owing to the small geographical scale of most horticultural enterprises, to

³ Research by [Pinto-Correia et al. \(2015\)](#) demonstrates that hobby farms can also be found in Bulgaria and Portugal, but these were not included in this study.

⁴ In comparing four case studies, there is insufficient space to consider single cases in detail. For further information on the individual cases, see the synthesis and case study reports available on the PROAKIS web-site (www.proakis.eu).

Table 1
Study participants.

	Farming participants	Stakeholders/Key Informants	Age range of farming participants	Farm size	Main Activities
Bulgaria	17	4	Under 40	3–6 ha	Mixed horticulture
Poland	15	5	All ages	3–9 ha	Agritourism
Portugal	25	6	Under 40	1.5 ha and under	Blueberries
United Kingdom	21	8	All ages	0–20 ha plus common grazing	Mixed livestock, horticulture, diversification (including agri-tourism)

**Fig. 4.** Location of case study regions (Source: [Madureira et al., 2015](#)).

identify small-scale farms, the Portuguese sample was restricted to small-scale blueberry producers with less than 1.5 ha, earning less than 25,000 Euros/year from agricultural production, and who had established their farm post-2007, with at least one harvest. These farmers market their produce collectively into international markets, certified by Global GAP.

In Portugal, state funded advisory services have been declining since the 1990s, and at the time of the study focused primarily on regulatory advice (e.g. advice on cross compliance). Activities such as training, information provision and consultancy are primarily undertaken by farm business organizations (FBOs). For the new blueberry producers, a number of private project developers provide a 'package' of services which includes an RDP funding application on the basis of a business plan, infrastructure development (e.g. irrigation) and information on how to achieve Global GAP production standards. Up and down-stream enterprises (e.g. phyto-pharmaceuticals, irrigation, agricultural equipment and machinery, nurseries and laboratories) provide technical information. As a new crop to the region, there is limited tacit knowledge available locally about production or marketing; at the time of the study, a new organisation had been set up to address this gap (the 'Small Fruits Cluster' (SFC)), bringing together diverse types of actors, including public and private advisors, farm business organisations, researchers from the national agricultural applied research institute, as well as experienced producers from southern Portugal

to improve production knowledge of the new producers. More detail on the SFC can be found in Section 5.2.

4.3. Carpathian mountains, Poland

In Poland, the research focused around advisory service provision to small-scale farms which were developing agritourism enterprises in the Carpathian Mountain region. The Carpathian is the largest and the most important mountain tourist region in Poland, and the only Polish region including mountain landscapes ([Lijewski et al., 2008 pp. 320–321](#)). The participants in the Polish case were located in three Carpathian provinces (Malopolska, Podkarpackie and Silesia) and selected to represent a range of agritourism providers which had been operating for between 3 and 16 years.

Poland has an extensive state agricultural advisory service – it has a much longer history of advisory services than most countries in Central and Eastern Europe, owing to the history of private farming. The formal knowledge and informational transfer scheme in Poland is led by the Agricultural Advisory Centre (a governmental institution subject to the Minister of Agriculture and Rural Development), which is responsible for collecting and processing knowledge, and then transferring it to 16 provincial advisory institutions which directly interact with farmers. Poland is unusual in having dedicated advisors within the public agricultural advisory services which focus on agritourism. The state Agricultural Advi-

sory Centre Division (CDR), in Krakow performs consultancy tasks on rural tourism, local environmental issues, countryside cultural heritage concerns and traditional regional products and also, on the support to non-agricultural forms of economic activities for farmers and their families. Additionally, Chambers of the Agriculture (agricultural stakeholders' organisations) – address agricultural problems and represent member interests, including agritourism businesses. There are also a number of private advisory companies.

4.4. *Isles of Skye, Harris and Lewis, Scotland, United Kingdom*

In the United Kingdom, the case study centred on new entrants to crofting, a traditional form of small-scale farming (typically involving sheep and cattle production, but also tourist accommodation and market gardening) on the islands of Skye, Harris and Lewis. Participants could be of any age, but were selected on the basis that they had occupied a legally established croft for less than 12 years. By definition, crofts represent small-scale agricultural holdings, most of which are situated in the crofting counties in the north and west of Scotland. Crofting is typically part-time, with participants averaging less than 20% of household income from this source (Shucksmith and Rønningen, 2011). More than half of the new entrant crofters either have or are aiming to produce livestock; 16 are diversifying into holiday homes and most have multiple activities (i.e. are pluriactive).

Crofting is the only case in the study where there is a legal distinction between crofts and other types of farm, but it is still served by the same advisors, with the addition of the Scottish Crofting Federation which also provides training. Crofters in United Kingdom utilise a range of advisory services and advice platforms to obtain information and knowledge. These include public and privately funded advisory services, specific crofting organisations, up and downstream suppliers, lay experts and family members. The Scottish Government provides a block grant to Scottish Agricultural College to provide free and subsidised services to crofters.

5. Findings: characterising new knowledge networks

In this section we focus on the knowledge networks associated with three topics: state grants, subsidies and regulations, commodity production, and diversification into agritourism. An overview of access to advice can be found in Table 2. It is important to note that all of the farmers in the study accessed a number of different sources of knowledge. The associated networks evolved over time, typically starting with a single entry point, based on recommendations from family or neighbours. The networks develop and expand iteratively; in later years, depending on the success of the interaction, the initial relationship may have grown, or been discontinued altogether and replaced with other sources. As such, the networks presented here overlap and have been simplified for presentation purposes. As access to subsidies was the most common type of knowledge accessed through formal advisory services by study participants, we address it first.

5.1. *Subsidies and regulations*

Knowledge relating to subsidy access can be termed 'managerial' knowledge (Koutsouris, 2008), in that it relates primarily to completion of administrative forms. The main measures to which the agricultural producers and candidate agricultural producers vary between countries (see Table 3)

Assistance with completing these applications was usually supplied on a one-to-one basis with a formal agricultural advisor, typically working either for the state advisory service or a private advisory company. In a few cases the applications were completed by NGOs (e.g. charities assisting with applications for

agri-environmental grants). For both private and public sector advisory services, the applicant typically had to pay a fee or percentage of the resultant grant to the advisor. The exception was Bulgaria, where public advisory services provide this assistance free of charge, but payment is required by private consultancy companies.

Knowledge of state subsidies represents 'codified knowledge', with the guidance notes and application forms publically available through web-sites. 'Know what' in this context represents knowledge about how to access state grants and subsidies and 'know how' the ability to achieve successful applications. Owing to the perceived complexity of these applications, the small-scale farmers in this study typically opted to have experts complete their forms. This was despite a high level of educational achievement: most of the Bulgarian, Portuguese and Scottish small-scale farmers involved in the research held university-level qualifications. In Poland, the achievement was typically to secondary school level. Key informants across the four sites were consistent in describing the application forms as unnecessarily complicated, stating that even farmers with university education struggled to complete the forms independently. Participants also reported working with advisors out of fear of making mistake, not wishing to jeopardise an important source of farm income. The function of the advisory services thus becomes to 'translate' the codified knowledge available on state web-sites into usable form, which then (in combination with the advisor's 'know how' based on previous experience) led to successful applications. Form completion is offered as a service – the advisor simply completes the form using data garnered from consultations with the farmers involved and their own tacit knowledge; *externalisation* of this tacit knowledge and translation into a form usable by the farmer does not appear to occur – the skill of form completion remains with the advisor. As such, the networks formed are centralised in nature, with advisors acting as central knowledge hubs. The farmers involved thus return annually for similar services.

Small-scale farmers have a choice of where to seek assistance in accessing subsidies and grants (i.e. 'know who'). For those establishing new farm holdings, this is often the first point of entry into formal knowledge systems; new farmers typically act on recommendations of family members and neighbours, who base their recommendation on the successfulness of their own past applications (i.e. 'know who' based on reputation for 'who how'). For example, in Bulgaria some participants drew on neighbour recommendations to inform their decision to pay for a private consultation, rather than to seek the free advice available from the state advisory service. In Portugal, project developers (often free-lancers), farm business organisations and more recently private advisory companies provide this service; choice is similarly influenced by the experiences of neighbours and relatives. Private advisors also exist in the Scottish case, but are not common in the region studied: the extensive nature of holdings and limited profitability of the associated crofts make it difficult to compete with state-funded advisors, whose work is subsidised by the state through a block funding grant. Instead, some of these forms are completed by community 'secretaries' who have substantial past experience (tacit knowledge); small-scale farmers with professional backgrounds (such as accounting) may attempt to complete the applications without assistance. In these latter cases, the codified knowledge is translated by lay experts – individuals with relevant practical experience or non-agricultural business training.

Facilitating subsidy access was the primary use of state agricultural advisory services by study participants: state-funded advisors in Bulgaria, Poland and the UK reported spending the majority of their time on these tasks. In Portugal their role was minimal, owing to a very limited availability of state advisory services in general. In each of the countries, private advisors also offer these services, util-

Table 2
Access to advice in the study sites.

	Subsidy access	Commodity production	Diversification into agri-tourism
Bulgaria	Primary activity of state-funded advisory services (free) Privately funded advisors also available. Fees are contingent on application success.	Vegetable production advice most commonly accessed from friends and neighbours. State-funded advisors not perceived as credible.	N/A
Poland	Primary activity of state-funded advisory services; fees charged for completing applications. Private advisors also charge fees for applications.	N/A	Free advice provided by state-funded services. State advisors and tourism associations encourage network development through events.
Portugal	Mostly privately funded advisors. Fees are contingent on application success.	Soft fruit production advice from a producer and processor network involving other actors. State-funded advice with limited availability. Limited local production knowledge.	N/A
United Kingdom	Primary activity of state-funded advisory services (subsidised but not free). Few private advisors available.	Mixed livestock production advice most commonly accessed from friends and neighbours. State-subsidised advisors more credible if they were also crofters (farmers)	<i>Ad hoc</i> access to advice from a range of public, private, informal sources.
Network types	Centralised networks	Bulgaria and the UK: distributed networks Portugal: decentralised networks	Poland: centralised and de-centralised networks UK: de-centralised networks

Table 3
Measures applied for by case study participants.

	RD 112 Young farmers	RD 141 Subsistence farms	214 Agro-ecological	RD 311 Diversification into non-agriculture activities	RD 312 Micro-enterprises	RD 413 Local development strategy)	Single Farm Payment
Bulgaria	X	X	X				
Poland	X	X	X	X	X	X	X
Portugal	X					X	
Scotland	X		X				X

ising different fee for service models. In Bulgaria and Portugal, fees for service are based on the success of the grant application – payment is proportionate to the amount of funding received, whereas in Scotland and Poland, there is a one-off fee for the application. In both cases, the fee for service creates an incentive to write a fundable application, rather than one which particularly suits the farm set-up or farmers' skill, owing to the desire for customer retention; there is also an incentive to go with 'tried and true' options (i.e. a tendency not to innovate), as evaluators are more likely to fund established approaches.

The business case for hiring an advisory service to complete application forms and apply for grants is fairly straightforward, in that fees for service provided are expected to yield direct financial rewards, in the form of successful applications. In the case of regulations (e.g. adherence to standards of cross compliance), the intervention is oriented towards ensuring that subsidy payments or entitlements are not lost. Participants sought multiple sources of knowledge to achieve these standards, and indeed to accurately understand what the requirements were. In some cases, they sought advice from the individuals who had completed the subsidy forms (i.e. public or private advisors), but more commonly, they relied on knowledgeable neighbours (who would be required to adhere to similar standards) – or on input suppliers (e.g. suppliers of cattle and sheep tags were expected to know the regulations for electronic identification, such as which types of tags should be used for which types of sheep). In this latter case, there were widespread problems with inaccurate knowledge being circulated: although often trained agronomists, the input suppliers were not familiar with the details of the recent EID legislation, and offered explanations based on 'common sense' and past experience, which was not always accurate. Training courses were also provided by state advisory services, although not always deemed affordable by

study participants. As such, regulatory knowledge was accessed through distributed networks of ties between trusted individuals, similar to that of production knowledge, which we address next.

5.2. Production

This section presents findings from the Bulgarian, Portuguese and British case studies.⁵ In all three cases study participants were new entrants to farming (i.e. individuals who had not set up farms before, although they may be successors to an existing farming business); they typically did not have formal agricultural training. The small-scale farmers in the study produced different commodities: vegetables in Bulgaria, soft fruits in Portugal, and mixed livestock in Scotland. Contemporary production advice covers a wide range of topics, such as soil assessment and maintenance, cultivation and harvesting techniques, disease recognition and management. In contrast to subsidy access, there is a wide variety of means to access production advice, including formal education, training courses, open days, work experience, magazines, books and through the internet. Study participants also accessed advice from: public, private and charitably funded agricultural advisors, agricultural pharmaceuticals stores, neighbouring farmers, family members with agricultural experience, accountants or accounting companies, seedlings importers, processors, scientific institutes, producer associations and non-governmental associations.

⁵ The Polish case was of established small-scale farmers who were diversifying into agritourism; they were therefore not establishing new knowledge networks related to production.

By far the most common source of production knowledge in the Bulgarian and British sites was friends and neighbours (i.e. tacit lay and local knowledge). As such, the knowledge was located primarily in distributed networks of dense interpersonal ties. Portugal was an exception because blueberry production has been introduced from outside the region – and thus without an established set of local knowledge on which to draw. In this case, the creation of the CSF by farm business organisations and profit and non-profit producers groups, translated and disseminated knowledge to new entrants. Because the blueberries were marketed jointly at national level in an earlier cooperative effort, the poor standards of production in the past at the study site negatively impacted on the overall reputation and quality of Portuguese blueberry production, due to the inexperience and often poor advice available to the new entrants in the sector. Experienced farmers from southern Portugal and additional regional private entities were thus motivated to address this problem in central Portugal, forming and participating in a decentralised network that improved the quality of the commodity for export by these new entrants.

In all three sites, provision of production advice was a secondary activity for state-funded advisory services, as described in Section 5.1. In both Portugal and Bulgaria, advice on production was part of the ‘package’ of services available to participants who had already achieved RDP funding. However, almost all of the Bulgarian respondents indicated that although they retained their relationships with their formal advisors for advice on business planning and project implementation, they were not accessing them for their production activities. Advisors recognised as having ‘know how’ and ‘know why’ related to subsidy applications were not similarly credited with ‘know how’ and ‘know why’ in relation to production. In Portugal, the study participants indicated that they would have liked to access production advice from the state advisory sources (i.e. it was a trusted source) but this was no longer available. The quality of production advice provided by private consultants to the blueberry producers in the Portuguese was highly questioned, owing to their lack of practical experience: the advisors were perceived as invested in securing the success of the application, but were less concerned about choice of varieties or adapting the business plan to land capability, leading to substantial complaints by study participants. Instead, the SCF was specifically established to address the problem of poor quality production knowledge being transferred from private advisors to new entrant farmers. In Scotland, state-funded agricultural advisors were more likely to be identified as credible sources of knowledge relating to production, because many of the advisors were operating their own crofts. They achieved credibility through a combination of codified and tacit knowledge, although in some cases this tacit knowledge was not deemed sufficient to address location-specific production issues. When small-scale farmers did access advisory services for assistance with production, it was typically to acquire specific pieces of codified knowledge, such as soil analysis. State advisory services in Scotland and Bulgaria were also involved in facilitating the spread of tacit and codified knowledge through group events (e.g. farm open days); in Portugal this function was fulfilled by farming organisations. As such, advisors were involved in knowledge brokering, enabling the *externalisation* of tacit knowledge through targeted *combination* activities.

A further issue for small-scale farmers was the cost of advice. Study participants reported that private consultancy companies are not often accessed by small farmers for production advice because it is perceived as expensive. Instead, input suppliers, such as agro-pharmacy stores, accounting companies and import trade organizations are accessed. In Bulgaria, there is an agro-pharmacy store in almost every village and small-scale farmers use such stores not only for acquisition of the required seeds, preparations or fertilizers but also for consultancy on various diseases or pests on

the plants they grow. These consultancies are generally free-of-charge, but linked to purchase of recommended inputs. As trained agronomists located in the local community, they combined tacit and codified knowledge, and were part of the farmers’ distributed networks. Credibility in supply of ‘know what’ and ‘know why’ production knowledge was thus based on a combination of tacit and codified knowledge not necessarily found within formal advisors.

This combination of tacit and codified knowledge was similarly sought out when accessing expertise of friends and neighbours. A pattern of overlapping roles, or ‘hybrid knowledge’ amongst chosen local advisors was observed. For instance, recently some of the longer term Portuguese blueberry producers have become private advisors and/or project developers and may also be members of the board of a farmers’ association. Consequently, the same individual often acts as a facilitator, a supplier and a demander of knowledge and expertise within the network – thus engaging with multiple roles in the distributed network. In the UK site, local veterinarians who are also crofters can provide this hybrid knowledge. The distributed networks characteristic of production knowledge networks, thus include a range of actors, primarily based on tacit knowledge but also including a degree of codified knowledge. However, this knowledge was not automatically available to everyone who wished to join the networks; particularly in the Scottish case, longer term crofters were not always willing to share their expertise with newcomers. In these cases, social capital associated with long-standing family relationships was necessary to activate these connections. Study participants also reported gaining access to knowledge through participation in community events such as collective sheep gathering (i.e. *socialisation* and *externalisation* of tacit knowledge).

It is important to note that within this range of actors in the network, knowledge of recent scientific or technological advances (i.e. ‘know why’) is peripheral – relatively few innovations in production were introduced. The knowledge exchanged by farmers was primarily tacit (i.e. the ‘know how’ associated with animal husbandry and horticultural production). However, in some cases, farmers also sought codified knowledge directly from source material (e.g. blueberry producers searched for new varieties on-line).

5.3. Diversification and business development

In this section, the data comes from the Poland and UK case studies. Owing to the part-time nature of production activities on most of the small-scale farms in the study, demand for knowledge on diversification is quite common, but most difficult to meet through traditional advisory services, owing to the range of diversification options available. In the cases studied, provision of tourist accommodation was the most common form of diversification, representing a supplemental form of income to the primary farm.⁶ For these purposes, we define agritourism as “rural enterprises which incorporate both a working farm environment and a commercial tourism component” (McGeehee, 2007, p. 111). In the cases studied, provision of tourist accommodation was the most common form of diversification, representing a supplemental form of income to the primary farm. ‘Agritourism’ can also include tourism packages, educational farms, and farms for children, for seniors and specialising in services related to herb cultivation. The types of knowledge required include legal regulations (e.g. around

⁶ In Scotland, other forms of diversification included bee-keeping, renewable energy projects, gourmet salt-making and market gardens. Some of the very new entrant crofters were yet to diversify their crofts but diversification plans included a microbrewery, an art studio, a weaving enterprise, and an art studio, a writing retreat. In the Polish case, participants were purposively selected from agri-tourism providers.

taxation, housing standards), marketing, management of service provision and access to EU supports. As such, there is overlap with the managerial knowledge discussed in Section 5.1. We focus here on knowledge relating to developing tourist activities (including accommodation) and marketing. Knowledge on these topics can be acquired through individual consultations, workshops, study trips, training, and cooperative networks.

The two cases represent opposite extremes in terms of organised state involvement. In Poland, the National Agricultural Advisory Centre – a governmental institution subject to the Minister of Agriculture and Rural Development – is responsible for collecting and processing knowledge, and then transferring it to advisory institutions that directly interact with farmers. The Agricultural Advisory Centre Branch in Krakow has specific responsibility for both rural tourism and agritourism. Knowledge related to agritourism and innovative activities are transferred initially to specialists at provincial Agricultural Chambers, agritourism associations, and since 2004 (when Poland joined the EU), with Local Action Groups. The Agricultural Advisory Centre in Krakow has also direct connections to with farms. There is thus a largely centralised network within the Polish advisory system, which transfers knowledge between divisions and ultimately to farmers directly on an individual basis. However, the National Agricultural Advisory Centre also works to establish decentralised networks: every two years the Agricultural Advisory Centre along with Provincial Advisory Centres, brings together representatives of scientific centres, advisory institutions, agritourism associations, the Polish Federation of Rural Tourism, the owners of agritourism farms as well as representatives of the two ministry departments responsible for rural tourism – the Ministry of Agriculture and Rural Development and the Ministry of Sport and Tourism – for an agri-tourism conference. There is also some evidence of decentralised networks facilitated by agritourism providers associations – in this case the Malopolska Agricultural Chamber (MIR) in Krakow, which organises fairs, exhibitions, shows, conferences and other projects promulgating agritourism knowledge. Distributed networks of agritourism providers do not appear to exist, partly because of the distance between agritourism operations but also because immediate neighbours would be in competition with each other. Instead, both tacit and codified knowledge are accessed through a combination of centralised and decentralised networks.

In contrast, knowledge exchange in the Scottish case is almost completely separated from the state-funded agricultural advisory system. The exceptions are a small number of developments which have been facilitated through the Scottish RDP. Instead, tourism activities undertaken by participants (primarily accommodation such as bed and breakfasts, but also self-catering accommodation and a small caravan site) are developed on a largely *ad hoc* basis, through decentralised networks, which include formal business development advice provided by rural development agencies, accountancy advice on tax, architectural services, group marketing through the Scottish Crofting Federation, and informal connections to agritourism providers in other regions. These can be providers in other parts of Scotland through the Scottish Crofting Enterprise Website (affiliated with the Scottish Crofting Federation to promote croft produce and holidays), or connections within the previous locales of the new entrant crofters. Specific knowledge on diversifying into tourist accommodation appears to be obtained partly through 'trial and error' (i.e. *socialisation*), whereby the accommodation is constructed and lessons subsequently learned through market experimentation. Respondents also frequently drew on networks and skills established before becoming crofters (ranging from joinery to previous tourist service provision). In terms of the networks that the Scottish respondents access within, these are numerous and relatively informal, in so much as it likely that each

crofter involved in diversification has a different network which they interact with for knowledge exchange. As such, networks are decentralised, and 'know who' particularly important for acquiring new knowledge.

6. Discussion

Findings demonstrate the diverse knowledge networks of small-scale farmers in the study sites. In pursuing new activities, networks range from highly centralised one-to-one interactions with formal advisors to access subsidies, to more distributed networks for production knowledge and decentralised networks for diversification knowledge. The small-scale farmers in the study were often highly educated and pursued a variety of knowledge sources. In this section we discuss the broader implications of key findings.

Access to state funding (particularly RDP grants) was the most common reason given by study participants for accessing formal advice. Although this is an important finding (i.e. that pursuit of state funding was the primary use of state-funded and private agricultural advisors by small-scale farmers), findings cannot be taken to suggest that this is the case for small-scale farming across Europe. In some European countries, such as Romania, small-scale farms are not eligible for RDP funding. Even within the study countries, advisors estimated the number of small-scale farms that do not access formal services is high. One of the main reasons is they do not meet the eligibility requirements for state funding. For example, farmers who are above 40 years-of-age or have been registered as agricultural producers for period longer than 14 months are ineligible to apply to measure 112. Other producers have land ownership issues or do not wish to increase their economic units, which is a requirement for measures 112 and 141. High transaction costs relative to the associated financial rewards also limit engagement. Findings thus relate primarily to those small-scale farmers who are able to access state funding.

The research confirms earlier findings that small-scale farmers are under-served by formal advisory services (Kidd et al., 2000; Labarthe and Laurent, 2013). Privatization of advisory services assumes that farmers are willing and able to pay for these services; small farmers are typically less likely to do so (Cristóvão et al., 2012). Although most of the study participants were involved with formal advisors, this represents a deliberate sampling strategy of the researchers, rather than a feature of small-scale farms in the study sites. However, what became evident from the study was that when these formal advisory services do interact with small-scale farmers, it is primarily to enable access to government funding, through top-down service provision in centralised networks. In the cases assessed here, multiple problems were identified: there is limited scope for innovation in terms of the method of interaction, or the originality of the associated application. In order to retain their business, both state and private advisors are incentivised to promote applications which have been successful in the past, and to retain their knowledge of the application process and requirements. This is consistent with Ingram (2008) and Sutherland et al. (2013) who argue that privatisation of advisory services puts pressure on advisors to develop grant proposals which are more suited to the farmers' preferences than achieving the aims of the grant application. In addition, this one-to-one method, with the expertise retained by the advisor, reinforces historic top-down knowledge transfer patterns, which Smedlund (2008) argues are not suited to most forms of innovation. Österle et al. (2016) similarly point to the top-down model adopted by many private advisory services, arguing that the state should do more to facilitate farmer learning. Although the subsidies accessed through these services are intended to support commercial business development, it is thus difficult to say if this is the case, as the advisors do not appear to be

providing 'know why' to farmers in usable form, and the farmers involved often do not trust their advisors to provide valid production knowledge.

The findings thus lead to an alternative perspective on one of the most commonly identified problems associated with privatisation of advisory services: the disconnection between advisors and up-to-date scientific information (Labarthe and Laurent, 2013). While we agree that this is an issue, we suggest that given that the major demand for state advisory services – at least from the small-scale farmers in this study – is for application completion, the more pressing concerns appear to be the availability of the advisory resource to small-scale farmers and the lack of credibility on production-related topics. Neither issue would be addressed by establishing stronger connections between advisors and recent scientific research. Indeed, owing to the limited availability of advisors, we question whether training advisors in recent scientific advances would be the best use of existing advisory funding. Garforth et al. (2003) argue that owing to the vast array of scientific research being undertaken, particularly by private companies, it is unlikely that individual advisors could adequately address this growing range of topics.

Acting as a brokering agent between research and farmers (e.g. organising training courses) appears a more useful and achievable function for advisory services, although adopting this role presents a number of challenges (Klerkx and Leeuwis, 2009). State-funded agricultural advisory service providers in Bulgaria, Poland, and the UK do offer this brokering role, in the form of open days or network facilitation, but we suggest that a rebalancing is needed: simplification of subsidy access procedures could free up state advisors to facilitate decentralised networks for production and diversification knowledge exchange. The study findings thus support the implementation of simplified funding applications for small-farmer inherent in the 2015 CAP reforms. However, the existing disconnection from advisory services may mean that a high percentage of small-scale farmers will not be aware of their eligibility for these supports.

In seeking production knowledge, the participants in this study often relied on a 'hybrid actors': individuals with both codified and tacit knowledge. Local experts included input suppliers, retired veterinarians, and former collective farm employees, who had both scientific training and practical experience. Although presented as 'free', this knowledge typically comes at a cost. Input suppliers, for instance, are typically trained agronomists, who have knowledge of what inputs are available (i.e. 'know what' and 'know why'), and what is being purchased by others in the local area ('know what'). They can thus offer 'free' advice to existing and potential customers, but this is oriented towards product sales. However, Sutherland et al. (2013) found that the commercial, charitable or private status of the source of advice was less important, in terms of credibility and trust, than the history of positive interactions with the advisor in question. This is in line with generic social-psychological research, which operationalises trust as result of repeated and meaningful interaction between two individuals (Deutsch, 1973). In our case, it is the very specific constituents of a good advisor such as 'congruency, empathy and appreciation' of the client (Hoffmann et al., 2009) that are fundamental for the success of such relationships. Similarly, Kaberis and Koutsouris (2012) found that the trust could develop over time, particularly in situations where inputs were changing rapidly (e.g. new regulations and changing pesticide needs). Input suppliers offering biased production knowledge will not retain trust. Advisors have the opportunity to gain this trust through interactions relating to grant access, but it was the lack of tacit knowledge (rather than codified knowledge) which undermined trust on production-related issues. This further supports our argument that advisors could more usefully be trained and incen-

tivised to facilitate knowledge exchange, rather than seeking to address the disconnection to scientific advances.

'Free' advice is also not necessarily freely available, requiring 'know who' and social capital to access in some cases. Individuals require reasons to share their commercial business knowledge, particularly with potential competitors (Garforth et al., 2003). In the Portuguese case, expert pioneer farmers and the regional entities involved in the soft fruit exports were motivated to assist provide assistance to new entrants to guarantee a quality product for the international market (Madureira et al. (2015)). Scottish farmers were more reluctant to share their knowledge, until the new entrants demonstrated willingness to undertake experiential learning through group events (i.e. to engage in *socialisation*). Small-scale farmers themselves were sometimes hybrid actors, bringing considerable knowledge to farming from off-farm employment or training. This was particularly important for diversification of the farm business, enabling them to make the 'bridging' connections characteristic of decentralised networks. We suggest that there is scope for considerable further development of these resources within agricultural knowledge and innovation systems, through providing training and opportunities for these recognised local leaders, and facilitating mentoring activities.

7. Conclusion

Small farms play an important role in the European countryside, providing employment, maintaining landscapes and nature, preserving both traditions and traditional products (European Parliament, 2014). They also offer opportunities for new entrants to engage in innovative farm business development opportunities. Findings demonstrate that both state-funded and private services for small-scale farmers are largely embedded in traditional, linear models of knowledge transfer, and confirm earlier research that small-scale farmers are under-served by formal advisory services. By utilising the state funding allocated to advisory services for small-scale farmers primarily to enable these farmers to access subsidies, important opportunities for innovation by both advisors or farmers can be lost. We argue for a re-balancing of supports for small-scale farmers, such that advisors are incentivised to act as facilitators, and small-scale farmers themselves can become actively enrolled in AKIS as hybrid experts.

Acknowledgements

Funding for this research was provided by the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 311994, and the Scottish Government's Strategic Research Programme (2011–2016). An earlier version of this paper was presented at the International Farming Systems Conference in at Harper Adams University, Newport, UK, July, 2016.

References

- Barabási, A.-L., 2002. *Linked: The New Science of Networks*. Perseus Publishing, Cambridge, MA.
- Berger, P.L., Luckmann, T., 1966. *The Social Construction of Reality*. Penguin Books, London, 249p.
- Burt, R.S., 2004. *Structural holes and good ideas*. *Am. J. Soc.* 110, 349–399.
- Chambers, R., Pacey, A., Thrupp, L.A., 1989. *Farmers First. Farmer Innovation and Agricultural Research*. Intermediate Technology Publications, London, UK.
- Cristóvão, A., Koutsouris, A., Kügler, M., 2012. *Extension systems and change facilitation for agricultural and rural development*. In: Darnhofer, I., Gibbon, D., Dedieu, B. (Eds.), *Farming Systems Research into the 21st Century. The New Dynamic*, pp. 201–227.
- Curry, N., Kirwan, J., 2014. *The role of tacit knowledge in developing networks for sustainable agriculture*. *Soc. Ruralis* 54, 341–361.
- Davidova, S., Dwyer, J., Erjavec, E., Gorton, M., Thomson, K., 2013. *Semi-subsistence Farming – Value and Directions of Development*. European Parliament,

- Directorate-General for Internal Policies Policy Department B Structural and Cohesion Policies. Agricultural and Rural Development. Accessible at: [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/495861/IPOL-AGRI.ET\(2013\)495861_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/495861/IPOL-AGRI.ET(2013)495861_EN.pdf).
- Deutsch, M., 1973. *The Resolution of Conflict*. Yale University Press.
- Dockès, A.-C., Tisenkopfs, T., Bock, B., 2011. Reflection paper on AKIS. Accessible at: <http://ec.europa.eu/research/agriculture/scar>.
- ENRD, 2014. Measure 112. Setting up of Young Farmers (Accessible at: Progress snapshot 2013/updated May 2014. Accessible at: http://enrd.ec.europa.eu/enrd-static/app-templates/enrd.assets/pdf/measure-information-sheets/C_Infosheet_112.pdf).
- EU SCAR, 2012. Agricultural Knowledge and Innovation Systems in Transition – a Reflection Paper, Brussels (Accessible at: <file:///C:/Users/ls40359/Documents/Papers/Smallscalefarming/EUSCAR2012.pdf>).
- EU SCAR, 2013. Agricultural Knowledge and Innovation Systems Towards 2020 – an Orientation Paper on Linking Innovation and Research. SCAR – Collaborative Working Group AKIS-2, 204 pp.
- European Commission, 2009. Report from the commission to the European Parliament and the Council on the application of the Farm Advisory System as defined in Article 12 and 13 of Council Regulation (EC) No 73/2009. Accessible at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0665:FIN:en:PDF>.
- European Commission, Agriculture and Rural Development, 2011. What is a small farm? EU Agricultural Economic Briefs Brief No 2. Accessible at: http://www.google.co.uk/url?sa=t&ct=j&q=&esrc=s&source=web&c=1-&ved=0CCMQFjAAahUKEwlluPF64TGAhXDWh-QKHdOIAFs&url=http%3A%2F%2Fec.europa.eu%2Fagriculture%2Ffrural-area-economics%2Fbriefs%2Fpdf%2F02_en.pdf&ei=gZ4VaWFHsO1UdPlgtgF-&usq=AFOjCNEcM6vdfPMLdwj1kv9ThKIAjLobWQ.
- European Commission, 2013. CAP Reform – and explanation of the main elements. Memo, Press Release Database. Accessible at: http://europa.eu/rapid/press-release_MEMO-13-621_en.htm.
- European Commission, 2015. Farm Advisory Systems (Accessible at: http://ec.europa.eu/agriculture/direct-support/cross-compliance/farm-advisory-system/index_en.htm).
- European Parliament, 2014. European Parliament resolution of 4 February 2014 on the future of small agricultural holdings (2013/2096(INI)) <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2014-0066+0+DOC+XML+V0//EN>.
- European Parliamentary Research Service, 2014. Future of Small Farms (Accessible at: <http://epthinktank.eu/2014/02/15/future-of-small-farms/>).
- Garforth, C., Angell, B., Archer, J., Green, K., 2003. Fragmentation or creative diversity? Options in the provision of land management advisory services. *Land Use Policy* 20, 323–333.
- Granovetter, M., 1973. The strength of weak ties. *Am. J. Soc.* 78, 1360–1380.
- Hoffmann, V., Gerster-Bentaya, M., Christinck, A., Mamusha, L., 2009. *Rural Extension: Basic Issues and Concepts*, vol. 1., 3rd ed. Margraf Publishers.
- IFAD, 2014. Legacy of IYFF 2014 and the Way Forward (Accessible at: <http://www.ifad.org/events/iyff/legacy.pdf>).
- Ingram, J., Morris, C., 2007. The knowledge challenge within the transition towards sustainable soil management: an analysis of agricultural advisors in England. *Land Use Policy* 24, 100–117.
- Ingram, J., 2008. Agronomist-farmer knowledge encounters: an analysis of knowledge exchange in the context of best management practices in England. *Agric. Hum. Values* 25, 405–418.
- Kaberis, N., Koutsouris, A., 2012. Reflections on the ‘expert syndrome’: a Greek case study on extension education. In: *Producing and Reproducing Farming Systems: New Modes of Organisation for Sustainable Food Systems of Tomorrow* (10th European IFSA Symposium), Aarhus, Denmark, 1–4 July 2012 <http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2012/IFSA2012.WS1.1-Kaberis.pdf>.
- Kania, J., Kaplon, A., 2014. Zrównoważenie produkcji rolniczej w wybranych gospodarstwach województwa małopolskiego (Sustainability of Production in Selected Agricultural Holdings in the Malopolska Province). *Roczniki Naukowe SERIA XVI*, 134–140.
- Kania, J., Vinogradnik, K., Tworzyk, A., 2014. Advisory services in agricultural system of knowledge and information in Poland. In: *Proceedings of the 11th European IFSA Symposium*, Berlin, Germany, pp. 123–133.
- Kania, J., 2015. Agricultural knowledge and information systems in European bioeconomy. *Econ. Reg. Stud.* 8, 5–11.
- Kidd, A.D., Lamers, J.P.A., Ficarelli, P.P., Hoffmann, V., 2000. Privatising agricultural extension: caveat emptor. *J. Rural Stud.* 16, 95–102.
- Klerkx, L., Leeuwis, C., 2008. Matching demand and supply in the agricultural knowledge infrastructure: experiences with innovation intermediaries. *Food Policy* 33, 260–276.
- Klerkx, L., Leeuwis, C., 2009. Establishment and embedding of innovation brokers at different innovation system levels: insights from the Dutch agricultural sector. *Technol. For. Soc. Change* 76, 849–860.
- Klerkx, L., Proctor, A., 2013. Beyond fragmentation and disconnect: networks for knowledge sharing in the English land management advisory system. *Land Use Policy* 30, 13–24.
- Knickel, K., Brunori, G., Rand, S., Proost, J., 2008. Towards a better conceptual framework for innovation processes in agriculture and rural development: from linear models to systemic approaches. In: *8th European International Farming Systems Conference Proceedings*, Clermont-Ferrand, France.
- Koutsouris, A., 2008. The battlefield for (sustainable) rural development: the case of Lake Plastiras, Central Greece. *Soc. Ruralis* 48, 240–256.
- La Via Campesina, 2013. A Year for Agricultural Policy to Radically Support Small-scale Family and Peasant Farming (Available at: <http://viacampesina.org/en/index.php/main-issues-mainmenu-27/sustainable-peasants-agriculture-mainmenu-42/1523-a-year-for-agricultural-policy-to-radically-support-small-scale-family-and-peasant-farming>).
- Labarthe, P., Laurent, C., 2013. Privatization of agricultural extension services in the EU: Towards a lack of adequate knowledge for small-scale farms? *Food Policy* 38, 240–252.
- Lijewski, T., Mikulowski, B., Wyrzykowski, J., 2008. *Geografia turystyki Polski*. Polskie Wydawnictwo Ekonomiczne. Warszawa.
- Madureira, L., Koehnen, T., Pires, M., Ferreira, D., Cristóvão, A., Baptista, A., 2015. Advisory services for small-scale farmers: how effective are their responses to farmer needs and demands? WP 4-AKIS on the ground: focusing knowledge flow systems. Topic 1 Synthesis Report. www.proakis.eu.
- Mason, J., 2002. *Qualitative Researching*, second ed. Sage, London, UK.
- McGeehee, N.G., 2007. An agritourism systems model: a Weberian perspective. *J. Sustain. Tour.* 15, 111–124.
- Nonaka, I., Toyama, H., 2003. The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowl. Manage. Res. Pract.* 1, 2–10.
- Österle, N., Koutsouris, A., Livieratos, Y., Kabourakis, E., 2016. Extension for organic agriculture: a comparative study between Baden-Württemberg, Germany and Crete, Greece. *J. Agric. Educ. Ext.* 22, 345–362.
- OECD, 2001. *The Well-being of Nations. The Role of Human and Social Capital*. Centre for Educational Research and Innovation. Organisation for Economic Co-operation and Development (Accessible at: <http://www.oecd.org/site/worldforum/33703702.pdf>).
- OECD, 2010. Ministerial Report on the OECD Innovation Strategy. Innovation to Strengthen Growth and Address Global and Social Challenges. Key Findings (Accessible at: <http://www.oecd.org/sti/45326349.pdf>).
- Pinto-Correia, T., Gonzalez, C., Sutherland, L.-A., Peneva, M., 2015. Countryside consumption: transition towards lifestyle land management. In: Sutherland, L.-A., Darnhofer, I., Zagata, L., Wilson, G.A. (Eds.), *Transition Pathways Towards Sustainability in European Agriculture*. CAB, Wallingford, UK, pp. 69–84.
- Polanyi, M., 1958. *Personal Knowledge. Towards a Post-critical Philosophy*. Routledge & Kegan Paul, London, UK.
- Röling, N.G., Wagemakers, M.A.E. (Eds.), 1998. *Facilitating Sustainable Agriculture: Participatory Learning and Adaptive Management in Times of Environmental Uncertainty*. Cambridge University Press, Cambridge.
- Röling, N.G., 1988. *Extension Science: Information Systems in Agricultural Development*. Cambridge University Press, Cambridge, UK.
- Regidor, J.G., 2012. EU Measures to Encourage and Support New Entrants. European Parliament Directorate-General for Internal Policies, Policy Department B Structural and Cohesion Policies. Agriculture and Rural Development, Accessible at: [http://www.europarl.europa.eu/RegData/etudes/note/join/2012/495830/IPOL-AGRI.NT\(2012\)495830_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/note/join/2012/495830/IPOL-AGRI.NT(2012)495830_EN.pdf).
- Shucksmith, M., Ronningen, K., 2011. The Uplands after neoliberalism? The role of the small farm in rural sustainability. *J. Rural Stud.* 27, 275–287.
- Smedlund, A., 2008. The knowledge system of a firm: social capital for explicit, tacit and potential knowledge. *J. Knowl. Manage.* 12, 63–77.
- Sutherland, L.-A., Mills, J., Ingram, J., Burton, R.J.F., Dwyer, J., Blackstock, K., 2013. Considering the source: commercialisation and trust in agri-environmental information and advisory services in England. *J. Environ. Manage.* 118, 96–105.
- Sutherland, L.-A., 2015. EIP-Agri Focus Group. New Entrants into Farming: Lessons to Foster Innovation and Entrepreneurship. Discussion Paper (Accessible at: https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/fg14_new_entrants_starting_paper_2015_en.pdf).
- Swinnen, Johan F.M., 1999. The political economy of land reform choices in Central and Eastern Europe. *Econ. Transp.* 7, 637–664.
- Tovey, H., 2008. Introduction: rural sustainable development in the knowledge society era. *Soc. Ruralis* 48, 185–199.
- van Crowder, L., Anderson, J., 1997. Linking research, extension and education: why is the problem so persistent and pervasive. *Eur. J. Agric. Educ. Extens.* 3, 241–249.
- Wilkin, J., 2009. Wielofunkcyjność rolnictwa – konceptualizacja i operacjonalizacja zjawiska. (Multifunctionality of Agriculture – Conceptualisation and Operationalization of the Phenomenon). *Więści Rolniczo 4* (145), Polish Academy of Science, IRWiR Warszawa, pp. 9–28.
- Zagata, L., Sutherland, L.-A., 2015. Deconstructing the ‘young farmer problem in Europe’: towards a research agenda. *J. Rural Stud.* 38, 39–51.
- Zegar, J.S., 2012. Rola Drobnych Gospodarstw Rolnych W Procesie Społeczniezrównoważonego Rozwoju Obszarów Wiejskich (The Role of Small Farms in the Socially Sustainable Development of Rural Areas). *Problems of Small Agricultural Holdings 1*. University of Agriculture, Krakow, pp. 129–148.