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Magyar
Nemzeti
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Európai Mezőgazdasági Vidékfejlesztési Alap:
a vidéki területekbe beruházó Európa



DARANYI IGNÁC TERV

A projekt a Magyar Nemzeti Vidéki Hálózat Elnökségének értékelése és javaslata alapján, az Európai Mezőgazdasági és Vidékfejlesztési Alap társfinanszírozásában, a Nemzeti Vidékfejlesztési Program Irányító Hatóságának jóváhagyásával valósul meg.

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Foreword

The Europe 2020 strategy of the European Union (EU) is focused on delivering growth that is: *smart*, through more effective investments in education, research and innovation; *sustainable*, thanks to a decisive move towards a low-carbon economy; and *inclusive*, with a strong emphasis on job creation and poverty reduction¹.

Amongst recent developments on this subject, two have had a special influence on this thematic issue of *Studies in Agricultural Economics*.

Firstly, the EU's Rural Development Policy for the programming period 2014-2020 will have six priorities that are intended to ensure a focused contribution of the Rural Development Programmes towards the attainment of the Europe 2020 targets. These are:

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

Secondly, the Regional Studies Association European Conference that was held in Delft, the Netherlands, in May 2012 included several contributions that explored smartness, sustainability and inclusiveness in rural areas in a broader regional context. Five of the papers in this thematic issue originated from presentations made at that conference.

The first three papers in this issue look at different aspects of the flow of knowledge in rural areas, an important contributor to 'smartness'. Fröhlich *et al.* surveyed German school children and found that most lack an understanding of the impact of agriculture on the environment. They conclude that agricultural education in Germany does not adequately teach modern agricultural practices or the importance of modern agricultural challenges.

From their study of local self-governmental authority

websites in Mazowsze in Poland, Owsński *et al.* identified dramatic differences in the extent of 'local networks', as quantified by local website links, and proposed that an important determinant is the broadly conceived culture, including the 'smartness' aspect. An analysis by Nemes and High of Hungarian AKS institutions is the third contribution. It examines the most important current trends and problems limiting the effectiveness of the current AKS institutions and introduces the concept of LINSAs and its relevance in the Hungarian context.

The next three papers address the topic of 'sustainability' in rural areas. Fieldsend reviewed the influence of factors that affect labour supply, and those that affect enterprise and economic dynamism, on rural employment potential. He recommends that a regional development strategy must include a specific 'Rural Renaissance' component if regional economic resilience is to be achieved.

The limited contributions to supply and social life, and the weak economic viability of many village shops in Germany, are shown by Küpper and Eberhardt. Permanent public and civic support is required to sustain many small shops in small villages. Travnikar and Juvančič look at the impact in Slovenia of EU funding disbursed under the measure *Modernisation of agricultural holdings*. Their results confirm a positive relationship between farm investment support and agricultural labour productivity. Differences in labour productivity between different farm types are also demonstrated.

'Inclusiveness', in terms of community engagement in rural areas, is the subject of the final two papers. Go *et al.* show how embedded governance, which builds on social capital, guided by institutional policy, enabled three villages in the province of Trentino, Italy, to pull together their resources within the frame of one networked destination formation. Finally, the impact of LEADER on improving 'smart' places is discussed by Pollerman *et al.* From the findings of the evaluation of Rural Development Programmes in Germany they conclude that LEADER focuses on establishing preconditions for innovation and not on implementing innovations themselves.

The theme and purpose of this issue of *Studies in Agricultural Economics* are consistent with the aims of the Hungarian National Rural Network (MNVH) action plan. These are, namely, the social and economic development of the countryside, and to develop inter-regional and international relationships in a practice-oriented manner.

Andrew Fieldsend
Budapest, May 2013

¹ EUROPE 2020: A strategy for smart, sustainable and inclusive growth. COM(2010) 2020 final. Brussel: European Commission.

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Gabriele FRÖHLICH*, Marlen GOLDSCHMIDT* and Franz X. BOGNER*

The effect of age on students' conceptions of agriculture

Agricultural literacy is increasingly regarded as an important issue in sustainability education, yet little survey data regarding children and adolescents are available. We therefore surveyed two different age groups, fifth and sixth graders (n=122) and tenth graders (n=158) of German schools, about their conceptions of farmers' duties, thereby identifying seven distinct conceptions. The conception most frequently mentioned by the younger students was animals (85.7 per cent) followed by processing (68.7 per cent), whereas the older students named the conception plants (76.0 per cent) most often, followed by animals (65.2 per cent). We found discrepancies in the sub-conceptions of animals between the two age groups, but none in plants. Ecology-related aspects (5.1 per cent) were only mentioned by the older students. We then examined the effect of a student having an agricultural family background on the conceptions named. Only 25 per cent of the younger students and none of the older students reported a past contact with farms through visits or guided tours. We found that regardless of having an agricultural family background, most students lack an understanding of the impact of agriculture on the environment. Consequently, we conclude that agricultural education in German schools does not adequately teach modern agricultural practices or the importance of modern agricultural challenges.

Keywords: agriculture literacy, alternative conceptions, school education, context-related learning

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Introduction

Even before any educational interventions, children and adolescents have scientifically correct, less correct or even incorrect conceptions, originating from individual everyday experience (Tanner and Allen, 2005). Within the literature, there are many different terms for non-scientific conceptions, like *preconceptions* (Novak, 1977), *misconceptions* (Helm, 1980) or *everyday conceptions* (Lewis and Kattmann, 2004). In the following, we will use *alternative conceptions* (Driver and Easley, 1978) for non-scientific conceptions as a neutral term. Conceptions are very stable and firmly held (Duit and Treagust, 2003a; Treagust and Duit, 2008), even when students later learn about the correct scientific conceptions. During learning processes that consider the discrepancy between the alternative and the scientific conceptions, confusion on the students' side may arise and impede the learning process (Vosniadou *et al.*, 2001, Poehnl and Bogner, forthcoming). The conceptual change theory describes the methodology and principles of how mostly nonscientific conceptions can potentially be modified into scientific ones (Posner *et al.*, 1982). Such a change or even a total replacement of students' alternative conceptions is not a linear process and is generally very difficult to achieve (Duit and Treagust, 2003b). For a conceptual change process to take place, teachers and educators must first gather information about any alternative conceptions the students may have and then confront the students' alternative conceptions by presenting the scientific ones. The students' dissatisfaction with their alternative conceptions combined with the discrepancy between the conceptions themselves should start a process to modify the existing conceptions. The theory has subsequently been revised based on studies showing that there are still more or less big fragments of the alternative conceptions kept in the students' minds. Such studies have addressed how hybrid conceptions arise (Gilbert *et al.*, 1982); the development of the synthetic model (Vosniadou and Brewer, 1992); and peripheral conceptual change (Chinn and Brewer, 1993). Nevertheless, regarding the state of research on the efficiency of conceptual change approaches, 'there appears to be ample

evidence in various studies that these approaches are more efficient than traditional approaches dominated by transmissive views of teaching and learning' (Duit *et al.*, 2008, p.636).

In our present study, we identified the conceptions which students held before and at the end of secondary school regarding the field of agriculture as well as farmers' duties. To the best of our knowledge, there are currently no published studies about students' conceptions of this topic. In the field of agriculture and alternative conceptions, there are only a few studies: Trexler *et al.* (2000) analysed fifth graders' understanding of livestock and meat production; Heleski and Zanella (2006) asked animal science students about their conceptions concerning general husbandry practices; Meischen and Trexler (2003) mentioned a few studies about the agricultural literacy of elementary school students; and Trexler (2000) found that elementary school students did not show much understanding of modern agriculture, its place within society and its effects on the environment.

Our research focused on general farmers' duties. This may at first seem to be a very simple task, but it is an important first step in identifying students' conceptions and ideas about agriculture. In the agricultural field, owing to the fact that the students learn mostly through secondary and tertiary sources, stereotypes are developed and kept in a student's imagination (Wright *et al.*, 1994).

The need to overcome the previously described knowledge gap was first highlighted when agricultural literacy was defined in the 1990s (Frick *et al.*, 1991). Agricultural literacy defines and explains the principles and conceptions which every citizen should know about agriculture: the societal and global importance of agriculture; agricultural policy; agriculture's relationship with the environment and natural resources; plant and animal science; the processing, marketing and distribution of agricultural products.

However, why is knowledge about the agricultural industry and production practices important? Why is there a need for agricultural literacy? In the light of the recent food scandals (e.g., mad cow disease, *E. coli* outbreaks, antibiotics in meat and dioxin in eggs), the increasing environmental problems are to a vast extent thought to be caused by modern

agricultural practices (Leising *et al.*, 1998), and there is an ongoing debate about adequate food prices in politics and the media. Consequently, it is important for the next generation to have enough agricultural literacy to be in a position to form well-founded opinions about the future development of the agricultural industry and food production (Hubert *et al.*, 2000). The US National Research Council has already stated in 1988 that 'all students should receive at least some systematic instruction about agriculture' sometime over the course of their schooling (Meunier *et al.*, 2003, p.23).

In Bayern, Germany, where our study took place, such advice is not as common, but the awareness of the importance of agriculture education is increasing as shown by the requirement that every elementary student visits a farm and the government's financial support of these visits. Agriculture has a long tradition in Bayern and still is of importance in the nowadays modern industrial state. One third of the agricultural farms in Germany are situated in Bayern, which comprises a fifth of the size of Germany. The average size of a farm in Bayern is about 32 ha and nearly half of them are farmed as a sideline and as a family business. In 2011 the utilised agricultural area was about 44.6 per cent of the land coverage, which was a decline of 9 per cent in comparison to 1970 (Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten, 2012). Nevertheless, agriculture still dominates the countryside, but fewer and fewer people are in close contact with agricultural practice.

As an added benefit, interdisciplinary agricultural involvement substantially improves students' scientific thinking and awareness of complex ecological conceptions (Ivanitskaya *et al.*, 2002; Knobloch, 2008). Integrating agriculture and agricultural topics within the curricula of scientific subjects could beneficially increase interests of individual people in science by connecting real-world applications with everyday lives (Lynch, 2000). In a pilot study at a secondary school, agriculture was integrated in science lessons during a complete school year: based on the higher student achievement levels he found, Balschweid (2001) showed this to be a more effective way of teaching science compared to teaching the usual content.

The low priority that has been assigned to agricultural education in schools' curricula in, for instance the United States (Trexler and Suvedi, 1998; Terry *et al.*, 1992), as well as in Germany (Bischopink and Brandes, 2002; Busch, 2003) could have diverse reasons:

- The potential of agriculture as a science subject (including mathematical, chemical, biological and physical aspects) which relates to the everyday lives of students has not yet been realised by many teachers (Knobloch, 2008).
- Most teachers have little knowledge about agriculture. They therefore do not feel very competent concerning the issue nor consider agriculture as the important topic it is today (Ball *et al.*, 2003).
- A typical syllabus for teaching agriculture often includes a field trip to a farm or food-processing plant. Due to time-management problems or other reasons, these field trips are mostly cancelled (Prokop *et al.*, 2007).

To get a first impression about previous experience and knowledge, we asked students a simple question about what duties they consider typical for farmers. We expected a pattern association about the diverse fields of agriculture with the exception of the global trade markets. Based on these theoretical considerations our research objectives included answering two major questions: (1) What conceptions of farmers' duties do students have at the beginning and at the end of secondary school? and (2) Are there any differences between the conceptions of students with or without an agricultural family background?

Methodology

We selected fifth and sixth graders as subjects (87 fifth graders, 25 sixth graders; 50 boys, 62 girls; age: $M = 11.7$, $SD = 0.64$) as well as tenth graders (73 male adolescents, 85 female adolescents; age: $M = 16.0$, $SD = 0.81$); all the subjects were selected from 14 different classes from five different cities in the state of Bayern in Germany. The communities have populations of 13,000 to 73,000 inhabitants and the students came either directly from each city or from the rural surroundings. None of the schools had implemented agricultural education programmes or projects.

We chose age groups at the beginning and at the end of secondary school. All the subjects were surveyed about their conceptions of farmers' typical duties. They were asked to provide the first two conceptions that came to mind. The responses were iteratively categorised by following the method of inductive category development, a very common method in qualitative analyses (Figure 1, Mayring, 2000). In the first step, all the student answers were categorised according to the research question into 12 categories. An inter-rater reliability analysis using the Cohen's Kappa statistic was performed to determine the consistency among raters. Based on 10 per cent of the participants, all randomly selected, we calculated Cohen's coefficient Kappa for inter-rater consistency: $\kappa = .73$. According to Mayring (2000), this can be considered as sufficient.

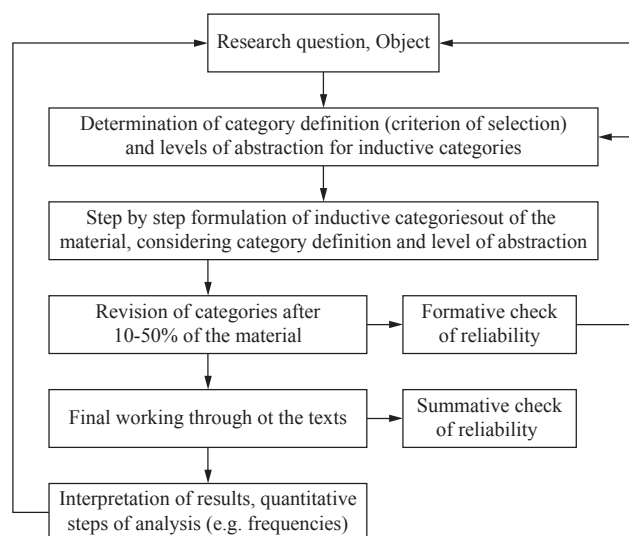


Figure 1: Step model of inductive category development (according to Mayring, 2002).

In the following steps, the categories were revised (feedback loops), and we extracted seven main categories out of the 12 preliminary ones and classified the answers according to these categories. Additionally, the two most frequent categories, *animals* and *plants*, were analysed in more detail to gain further insight into the students' conceptions of these categories. We also examined whether the students had an agricultural family background as well as the frequency and reason for individual farm visits.

Results

We selected seven different main conceptions (see Table 1) out of the total conception data body. The most popular association pairs derived from the younger students' responses were *animal – processing* (40.5 per cent), followed by *processing – animal* (31.0 per cent) and *animal – animal* (9.5 per cent). In comparison, the older students' responses were mostly *plant – animal* (40.6 per cent), *animal – plant* (27.1 per cent) and *plant – plant* (16.7 per cent).

Figure 2 shows the frequency as a percentage of all the participating fifth and sixth graders in comparison to tenth graders. The biggest difference between the two student groups is the naming of a plant-related conception: 76.0 per cent of the tenth graders named this type of conception in comparison to 8.9 per cent of the fifth and sixth graders. *Animals* is the conception most often reported by the younger students (85.7 per cent), whereby 65.2 per cent of the tenth graders named *animals* as the second most common conception. Also the fifth and sixth graders named *processing* more often than the tenth graders (68.8 and 29.8 per cent respectively). Ecological aspects, however, were only associated by the tenth graders (5.1 per cent).

For a more detailed analysis, we compared the sub conceptions of *animals* and *plants* from the two sample groups. In each of these categories, we identified eight sub conceptions named by the younger students and six named by the older students. Regarding the animal-related duties, the percentage of students who named *milking* is the biggest difference between the subsamples (fifth/sixth graders: 40.9 per cent; tenth graders: 1.6 per cent). Other notable differences include the naming of *feeding* (fifth/sixth graders: 12.5 per cent; tenth graders: 4.4 per cent) and animals such as *cows* (0.5 per cent) and *chickens* (0.5 per cent) were specifically named only by the younger students (Figure 3).

Comparing the individual answers with respect to plant-related aspects, we found no significant differences between the subsamples (Table 2).

Table 1: The seven main categories of Bavarian students' conceptions about the duties of farmers in 2011 (two answers per student).

Item	Main categories
What are the most important duties of farmers?	Activities related to... - Animals, e.g. feeding, breeding - Plants, e.g. field work, sowing - Ecology, e.g. land management - Processing, e.g. food production - Technology, e.g. tractor driving - Marketing, e.g. selling of products - Others, e.g. doing agriculture

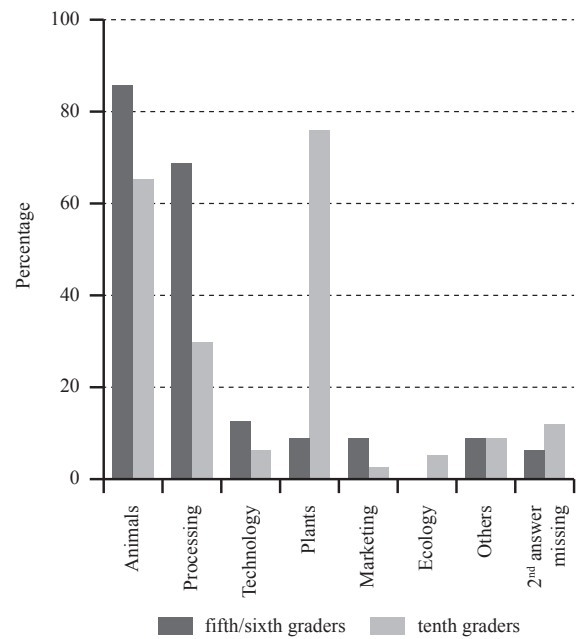


Figure 2: Percentage of the main categories of farmers' duties generated from the conceptions named by Bavarian fifth/sixth grade and tenth grade students concerning the duties of farmers in 2011.

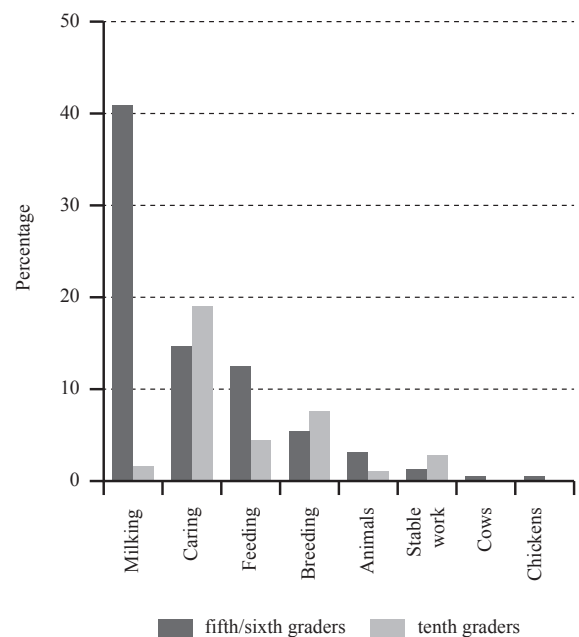


Figure 3: Comparison of the sub conceptions of animal-related duties of farmers named by Bavarian fifth/sixth grade and tenth grade students (percentage of all answers) in 2011.

Table 2: Comparison of the sub conceptions regarding farmers' plant-related duties between Bavarian fifth/sixth graders and tenth graders in 2011 (percentage of all answers).

Duty	Fifth/Sixth graders (%)	Tenth graders (%)
Agricultural land use	17.4	18.4
Harvesting	7.6	9.5
Crop	5.8	3.2
Cultivation	4.5	8.2
Sowing	2.2	2.5
Vegetables	1.8	3.2
Plant breeding	0.9	-
Manuring	0.9	-

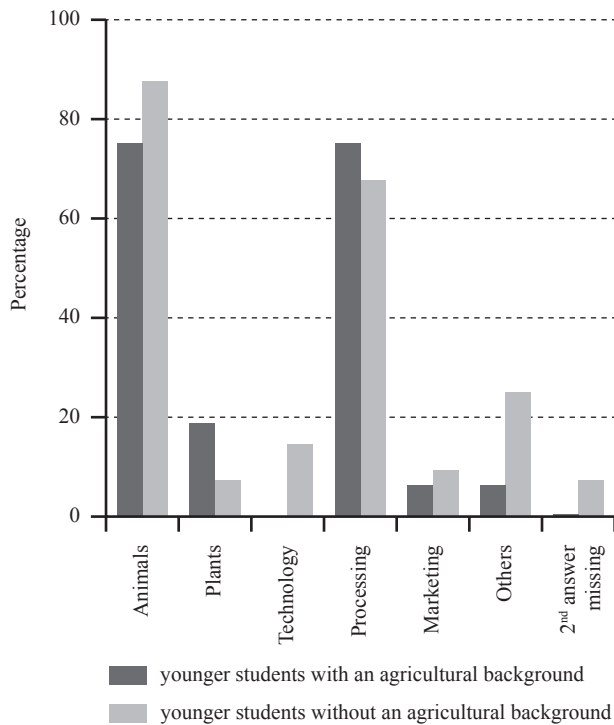


Figure 4: Comparison of the conceptions concerning the duties of farmers as named by Bavarian fifth and sixth grade students with (n=16) and without (n=96) an agricultural family background in 2011.

Dividing the group of fifth and sixth graders into groups of students with (n=16) and without (n=96) an agricultural family background, we found further differences in the answers concerning the duties of farmers (Figure 4). Students with no agricultural family background named the category *animals* most often (87.5 per cent) followed by *processing* (67.7 per cent). Students with an agricultural family background, however, named these two categories with similar frequency (*processing*, *animals*: 75.0 per cent). Interestingly, the category *plant* was named twice as often by students with an agricultural family background compared to those without (18.8 per cent c.f. 7.3 per cent). The answer spectrum for these students was also greater (*others*: 25.0 per cent c.f. 6.3 per cent). Of the students without an agricultural family background, 7.3 per cent had problems identifying a second duty.

We also examined the answers provided by tenth graders with (n=22) and without (n=136) an agricultural family background and found interesting results. This comparison of naming divided in the existence of an agricultural fam-

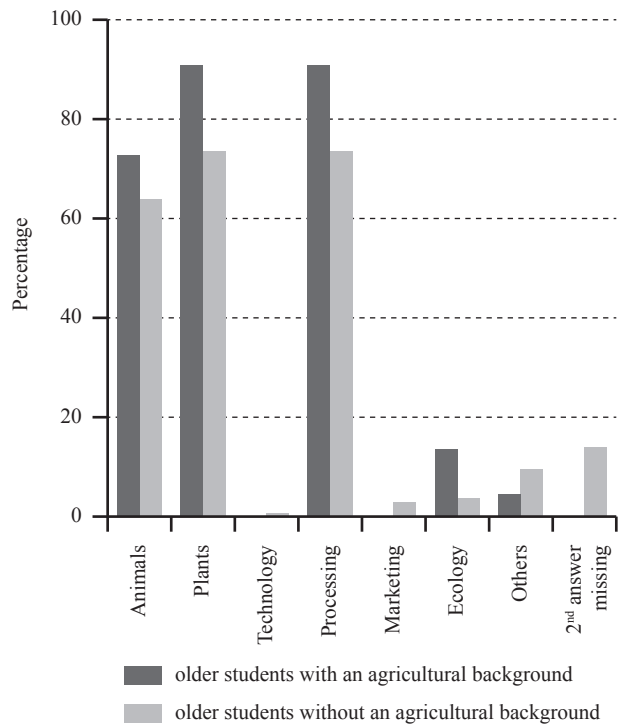


Figure 5: Comparison of the conceptions concerning the duties of farmers as named by Bavarian tenth grade students with (n=22) and without (n=136) an agricultural family background in 2011.

ily background is also very interesting for the older students (Figure 5). All the students without an agricultural family background named *animals* (72.7 per cent), *plants* (90.9 per cent) and *ecology* (13.6 per cent) more often than the other group (64.0, 73.5 and 3.7 per cent respectively). Furthermore, 14.0 per cent of the students without an agricultural family background could not name a second duty.

To gather additional information, we asked the students how often they visit a farm on average. Independent of age, most of the students reported having visited a farm several times in the past (fifth/sixth graders 53.6 per cent; tenth graders 44.3 per cent). In the younger student sample group, except for those students who visited a farm infrequently (fewer than several times), visiting friends and family was the most often stated reason. Just four of the fifth and sixth graders and two of the tenth graders named either a kindergarten or school field trip as a reason for a visit. Also comparable between the two subsamples is the percentage of students who never visited a farm: 4.5 per cent and 4.4 per cent (Table 3).

Table 3: Frequency and most reported reasons for farm visits of the sample groups of Bavarian students.

Frequency	fifth/sixth graders (%) (n= 112)	Most reported reason	tenth graders (%) (n= 158)	Most reported reason
Every day	2.7	Family home (100%)	3.8	Friends/Family (83.3%)
Several times a week	14.3	Friends/Family (50.0%)	9.5	Friends/Family (53.3%)
Several times	53.6	Friends/Family (36.7%)	44.3	Friends/Family (64.3%)
Infrequently	25.0	Visits/Guided tour (64.3%)	38.0	Friends/Family (50.0%)
Never	4.5	-	4.4	-

Discussion

The main focus of our study is the quantitative and qualitative analysis of students' conceptions about farmers' duties at the beginning and at the end of secondary school. Most of the students' conceptions, independently of age, include very simple conceptions of farmers' duties. Some of the associations do not include activities as required, but instead function as substantial umbrella terms such as for example *animals* and *plants*. Considering these answers, we may conclude that these students do not have detailed conceptions about the duties of farmers. The production of food, generally mentioned as the main duty of farmers, was defined as *processing*. Most of the students named either specific animal- or plant-based products such as milk or vegetables without merging them to one higher-level category, for example food production. Interestingly, none of the conceptions of modern agricultural practices, such as bioenergy, soil conservation and efficient management, were stated: Therefore, either the students do not know about these practices or they may not consider them as important duties of farmers. Our results indicate that students seem to have a very old-fashioned image of farmers and use stereotypic associations concerning the related duties. The students often focus on the manual labour of farmers and nearly completely miss the chemical, physical, economic or ICT-related tasks and/or competencies involved. This result is in line with Ruth *et al.* (2005) who analysed this issue in the mass media by specifically pointing to an underrepresentation of modern and authentic agriculture on television (Searls *et al.*, 1985).

The older students naming plant-related aspects much more often than the younger ones might be due to individual cognitive development: 11- to 13-year-olds see animals as very important, whereas plants are of no interest (Kellert, 1985, Morgan, 1992). This is in line with our results where the older students (15- to 17-year olds) named plant conceptions nearly as often as animal conceptions. Students of this age group apparently see the farmers' duties as nearly equally divided between animal and plant related duties. In conclusion, our results suggest that the students either have the conception of a farm with animal- as well as plant-production or they see plant-based production as the focus of agricultural production.

This can be clearly seen when the conceptions are analysed in more detail. With regard to the number of animal-related duties named in relation to the total number of conceptions, the fifth graders named *milking* most often (40.9 per cent), while the tenth graders seldom named this aspect (1.6 per cent). For the younger students, milk seems to be far more important than it is for the older ones in this context. Milk production and cows seem to be for many of them the embodiment of agriculture.

As the results another study also indicate (Poudel *et al.*, 2005), our students were not likely aware of the importance of the agriculture-environment link. However, we can say that the tenth graders may be more aware than the fifth and sixth graders of the relation between agriculture and environment since at least 5 per cent of the duties that they name are ecology-related duties. This suggests that either the students may not know the impact of agriculture on the environ-

ment or they do not consider the environmental aspects of agriculture to be very important. Regardless of the reason, the students seem to lack knowledge about the close interrelation of agriculture and ecology. Considering the severe environmental problems caused by agriculture, students as the future generation should know about the relationship between agriculture and ecology as they have to face these problems in the future.

Yet when we compared the answers between students with and without an agricultural family background, we found that ecology-related duties were named more often by students with an agricultural family background. This corroborates on the one hand the importance of farmers' ecology-related duties and on the other hand the knowledge gap regarding these duties experienced by students with less contact to agriculture.

Matthews and Falvey (1999) showed that non-metropolitan tenth graders have a more negative view of the impacts of agriculture on the environment than metropolitan students. Our results show that the tenth graders with an agricultural family background mentioned ecological aspects more often than the students with no agricultural background. However, our students might have mentioned ecological duties more often, an indication of the duties' perceived importance, because they know about the negative impact of agriculture on the environment. As the younger students did not mention ecological duties at all, we recommend teachers and educators to focus on this important aspect when educating younger students.

Summarising our findings, we find no relevant differences in the answers from both age groups except in the case of plant-related aspects. Therefore we assume that the agricultural education in secondary schools in Bayern, Germany are not providing students with deep knowledge of agricultural practices nor focusing on the preliminary challenges and tasks of modern agriculture. Of course, the main duty of farmers is producing food, but most of the students could not think of anything else. There may be a reason for that which involves the frequency of the students' farm visits: only the younger students reported infrequent visits to a farm through guided tours, which may have been organised by schools; the most common reasons for both age groups to visit a farm were friends or family. To what extent they got to know background knowledge when visiting friends or grandparents is questionable. For this reason, it is school education that must ensure students attain agricultural literacy. To change the conceptions of the students to reflect a more in-depth understanding of farmers' duties, we suggest interventions or programmes where the students could get an opportunity to get more in contact with agriculture and actual farmers. The most efficient way would be to get the students actively involved with a farmer's work, possibly arranged as farm-stays on a modern farm with large-scale production facilities. If that is for some reason not possible, the teachers should at least show scientific documentaries since these also have effects on students' awareness and learning (Barbas *et al.*, 2009). The students on educational farms often are only exposed to very simple images and basic ideas of agriculture. Most of the farms offering pedagogical programmes are very different from modern farms, for example, with respect to

the size, amount of animals and farming techniques. Therefore, it is not only important for the students to have real experiences on such farms, where it is easier to implement students as workers, an authentic life experience at modern industrialised farms is also important.

Another reason for the lack of agricultural literacy could be, as already mentioned, teachers' lack of knowledge about modern agricultural practices. Anderson *et al.* (2010) conducted a study with teachers at different educational levels (pre-kindergarten through secondary school) about their conceptions of agriculture. The teachers' conceptions mainly consisted of those in animal and plant production, as in our study with the students. It is therefore important not only to educate the students but also the teachers in agriculture literacy. The teacher training should also be done on farms to give the teachers the opportunity to gain a deeper understanding of agriculture by talking to farmers and experts. Additionally, the idea of agriculture as a science subject seems to be an innovative method of teaching and should be fostered in schools.

In conclusion, we find that it is absolutely essential to apply interventions that teach modern agriculture practices or to restructure the curricula in such a way that the students learn the required knowledge.

Potential limitations of the study

To achieve this, we used the paper-pencil-method to get quantitative data. A more qualitative analysis, however, would be very interesting to obtain more in-depth information about the students' images of agricultural practices. According to the students' answers in our study, students may form their conceptions based on picture booklets or personal experience on small farms. For future research on agricultural conceptions, we suggest interviews or focus groups to gain more in-depth knowledge about agricultural literacy in different age groups. As there appears to be a lack of knowledge regarding the impact of agriculture on the environment, this should also be a focus of future investigations.

Although the teacher's knowledge is regarded an important factor as well (Frick *et al.*, 1995; Knobloch, 2008; Anderson *et al.*, 2010), we were not able to collect such data due to administrative restrictions. However, to the best of our knowledge, this is the first study to collect the conceptions of Western European (in our case, German students) students about agriculture. In the United States, the awareness of the importance of agricultural education was established about 20 years ago. Yet in Europe, this realisation of the importance of agricultural education is just at the beginning, and the research in this educational field has just started.

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Smartness, culture and local authority ICT awareness: an empirical enquiry for a province in Poland

The paper reports on a sequence of analyses of the local self-governmental authority website-related features in conjunction with the socio-economic characteristics of the respective administrative units (counties and municipalities). These analyses had two objectives: (a) assessment of the local authority websites, their content and functionality, also in a dynamic perspective, and (b) inquiry into the potential interrelations between the specific features of the websites and the nature of the local unit, with special emphasis on the local development in the rural areas and its forward path. The study has been carried out for the capital province of Mazowsze in Poland, but some hints as to a quasi-comparative international study are also provided. First of all, substantial progress between 2003 and 2008 in the quality of the local authority websites is shown. Further, the conclusions from the study imply a rather loose connection between the characteristics of these websites and the socio-economic profile of the unit, including the characterisation along the urban-rural dimension. At the same time, though, an important role becomes apparent, played by the broadly conceived local culture, including the 'smartness' aspect, as perceived by the present authors. This role of culture and 'smartness' is visible in the very clear divergences from the general regularities observed, and is partly also associated with the socio-economic function of the respective local unit, as distinguished from the, say, income and education level characteristics of the local population.

Keywords: ICT, local development, local authority website, website-based network, culture, smartness

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Introduction

This article is devoted to the connection between local development and some information and communication technology (ICT) related characteristics, as seen in the perspective of culture in general, and 'smartness' in particular. 'Smartness', therefore, is considered here not in terms of some technological development (that might, for instance, in the rural circumstances, include 'precision farming'), but as a quality, belonging to the broadly conceived sphere of 'culture', allowing for effective and efficient ('sustainable') behaviour at the level of the community. Indeed, in the first decade of the 21st century the notion of 'smart communities' and 'smart cities' became quite popular and was supported through international programmes or commercial initiatives (see ec.europa.eu/energy/technology/initiatives/smart_cities_en.htm or www.intelligentcommunity.org). All of them, though, are heavily oriented at the technological underpinnings (ICT, energy, transport, waste processing etc.).

Regarding ICT we have been looking not so much at the technology but, instead, at the quality, functionality and content of the local authority websites in the capital province of Mazowsze in Poland, and at the local networks, formed by the links, originating from these websites. This was the main subject of our investigations over a period of more than ten years. The results were then considered jointly with the socio-economic characteristics of the respective units and an attempt was made to draw some intelligible conclusions therefrom. Both the course of analysis and the main conclusions from the study have been reported in a number of papers (e.g. Owsinski and Pielak, 2011 and Owsinski *et al.*, 2010).

Here, we would like to take a slightly broader perspective in which ICT and economic development are seen against the background of broadly conceived culture, where culture includes the societal 'smartness', as opposed to the purely technical meaning of the word. It is, namely, hypothesised

that culture, along with the available resources, form the proper basis for local development. Culture, in this sense, includes social and intellectual capital, but seen exactly from the point of view of quality and (largely informal) institutions, rather than from the formally quantitative one (e.g. share of adult people with university degrees).

Given the frames of this paper and its quite pragmatic orientation, we omit a more general discussion of 'culture', 'community' and 'smartness', concentrating on the operational notions that are used throughout. In this context, a good example for the opposition mentioned of the informal vs. formal is provided by the comparison of some regions in Poland: in southern and south-eastern Poland the *submontane* communities preserved to a high extent rural networking, collaboration, family cohesion and traditional values, while emphasising the necessity of being active ('enterprising') and making life one's own project. These communities had been very poor throughout history, but especially so in the 19th century and at the beginning of the 20th century. They are also characterised by a very positive and disciplined attitude towards education of children (high status of a teacher in the rural primary school). Men and women from this area were known to emigrate in high numbers but, at the same time, to form and maintain close links abroad and/or with the home location and family. Teams of *mountaineers* are known to build and repair houses across Poland and, indeed, outside of the country. For decades, though, and even until quite recently, this region (along with the entire eastern part of Poland) was opposed, as traditional, lagging and 'not promising', to the western parts of the country that formerly belonged to Germany, where the educational level of population has been distinctly higher and where fewer people have been directly employed in agriculture in the rural areas (Czapiewski and Janc, 2008). These western regions have been regarded as 'more advanced' and 'promising'.

Yet, it has been finally noticed that even in purely economic terms these traditional areas in the south of Poland

fare distinctly better than the previously favoured 'more advanced' western regions (for analysis of the false statistical basis of the previous opinions see Owskiński, 2008a,b, and Owskiński and Andrzejewski, 2010). This opposition is to a large extent explained by the fact that while in south-eastern Poland family farming persisted during the communist period, even though the farms there hardly provided decent subsistence, the western parts were dominated by large state and cooperative farms in which people were employed as farmhands and which, following communism, collapsed under economic pressures. This particular opposition is also very similar to that analysed in Morita and Chen (2010) for two Chinese provinces and their rural populations with differing historical and socio-economic backgrounds.

To conclude: it is information exchange, collaboration and networking that make (at least some) of the Polish *sub-montane* communities the truly 'smart' ones. Technology, with ICT, comes next – it is just an instrument, taken up and applied within the culture that is capable of securing its effective use.

So, the notion of culture used here includes *attitude toward educational investment* as well as *social learning, trust, cooperation*, and also *risk-taking*. This leads directly to the issue of *local networks*, as being important for the way a given community behaves and develops. These aspects are not only important for the general dynamics of development or growth, as opposed to stagnation, passivity or withdrawal, they are crucial for securing the resistance of a community and its sustainability under the impact of negative impulses ('smartness' being another way of putting this).

In this paper, we shall firstly review the results from the consecutive stages of the website-oriented study, to then comment on the potential and actual relationships to the socio-economic characteristics of the respective administrative units. On this basis some hypotheses will be formulated. Finally, we shall try to infer some further-reaching statements related to the culture and 'smartness' of the local communities.

The background to the local authority website analysis

E-government and e-administration have made great progress in recent years. Given the spread and ample functionality of e-administration, it is the completeness of the web-provided public service, its provision for the handicapped etc. that became of importance, linked with the efforts to bridge the 'digital divide' separating the ICT-rich from the ICT-poor.

Several methodologies have been used to evaluate e-administration. Vintar *et al.* (2003), Decman *et al.* (2003), Peters *et al.* (2004), Hu *et al.* (2005) and St-Amant (2005) adopt or extend the European Union (EU) 'four stage model' defined, for example, in Capgemini (2005) and Wauters *et al.* (2007). In stage one, the *information phase*, the government creates a website with online information on procedures and services. In stage two, a *one-way communication phase*, the public website provides downloadable forms. In stage three,

the *two-way communication phase*, users are able to complete forms, upon which they receive a confirmation. In stage four, the *transaction phase*, the service is processed entirely online, including decision, delivery and, if necessary, payment.

Lee (2003) proposes, instead, a 'five stage model': attracting, informing, creating a community (online forum, events, e-Magazine, domain identity and community services), delivery, and innovation (transformation of existing services and introduction of new innovative services).

Hence, we have come to the point where the *networks*, especially as effectively related to local development, have come into view. *Networks* have long been seen as an important factor in local development (Landabaso, 2000). The primary examples usually refer to small-scale (family) businesses in rural Italy after the Second World War. The importance of *networks as a factor* was noted particularly for the peripheral and rural areas, where agglomeration factors are nonexistent, and networks somehow substitute.

There is, though, yet another dimension to the existence and functioning of networks, especially informal ones. They reflect the *degree of trust*, the crucial component of *social capital*, necessary for sustainable local development (Helliwell and Barrington-Leigh, 2010). So, networks appear as a fundamental factor in local development; the local authority, and its websites, playing an important role in creating, maintaining and strengthening them (see, in particular, Smith, 2009).

We do not refer to any kind of networks that may exist, especially in 'cyberspace'. Numerous networks, for example established through social portals, have little bearing on facilitation of local socio-economic development, even if they can be effectively used to, say, set up a demonstration. What we primarily mean are the networks that offer (a) useful information and (b) business opportunity. We propose that the networks we mean refer to *knowledge* in several ways: (a) enhance the knowledge of the web user; (b) are themselves a kind of data – or knowledge base, and (c) imply exchange of information between the nodes – participants to the network. 'Knowledge' is important here, for the gist of the matter is in effective use, and infrastructure availability is just a necessary condition. Worse even, just trying to get the ICT infrastructures available to everybody must not necessarily yield expected positive effects (see Vigdor and Ladd (2010) for scholarly achievements, Michaels *et al.* (2010) for effects on skill demand and Bhuller *et al.* (2012) for connection with criminal behaviour). For broader accounts on factors of local development and success, with emphasis on rural areas see Bański and Czapiewski (2008) and Owskiński (2008a,b).

Although our perspective encompasses also the potential formal ('organised') networking – see e.g. Krebs and Holley (2002) for the connection between community smartness and formal networking – we insist on the informal dimension, an inherent component of culture.

Yet, we are not suggesting that networking and connectivity are absolute safeguards in the sense that their growth leads always to better and safer development. A careful hypothesis is that there is an *optimum*, both in terms of quantity and the nature of structure, beyond which additional risk

may arise (see Butler *et al.* (2010) for trust in general and Battiston *et al.* (2009) for networking and the financial crisis). This risk relates, on the one hand, to the sheer excessive connectivity that may lead to systemic collapse (McLean *et al.*, 1978) and, on the other, to the way in which connectivity within the network is ensured, or enforced (the case of mob-likes).

Actually, a broader hypothesis would imply a cultural connection, involving trust, networking, education and knowledge (see also Czapiewski and Janc, 2008; Guiso *et al.*, 2010; and Smith, 2009). The respective connection is not only visible and pertinent, but also surprisingly persistent (Chitu *et al.*, 2012).

The past investigations on local authority websites

The research on local authority websites (see Owsński and Pielak, 2011) aimed to assess the progress in their quality and functionality, and the connection with the socio-economic character of the respective units. Several assessment systems were developed and applied to functionality and information content, the latter in both administrative and in broader terms (information on the area). The results were then compared with the corresponding data on *economic situation, degree of urbanisation, function of the area and its peripherality*.

Investigations were carried out for Mazowsze, the capital province of Poland, the agglomeration of Warszawa being its core. This is the largest of the 16 provinces of Poland, with 41 *counties* (5 ‘urban’ and 36 ‘landed’) and 314 *municipalities*. A very high degree of differentiation of the municipalities and of counties causes that the choice of the sample from this province does not introduce a bias. It can safely be said that virtually all types of Polish counties or municipalities are represented, except for those with very special natural conditions (seaside, mountains etc.), implying the broader validity of empirical observations and conclusions therefrom.

Tables 1 and 2 present the summary of results of the early stage of investigations that were devoted to the assessment of the quality and functionality of the county authority websites with the WAES methodology. WAES is composed of 40 binary criteria (YES-NO), split into two almost equal

Table 1: The average WAES scores of the counties of Mazowsze province, Poland in the years 2003-2008.

Year	2003	2004	2005	2006	2007	2008
Average score	14.6	22.2	27.9	28.3	30.9	33.2
Annual increase %		52.3	25.5	1.5	9.2	7.5
Average for:						
-- Clarity	8.6	13.6	16.3	16.4	17.7	18.3
-- Interactivity	5.9	8.6	11.6	11.9	13.1	15.0
-- Clarity-Interactivity	2.7	5.1	4.7	4.6	4.6	3.3
-- Interactivity / Clarity	0.7	0.6	0.7	0.7	0.7	0.8
Some other statistics:						
Minimum value	0	0	9	0	22	23
Maximum value	35	35	36	36	37	38
Standard deviations of scores	9.9	7.5	5.3	5.9	3.5	3.2

Source: research of the authors, here and further on

domains: *Clarity* (information provided on the website on the local authority and its chapters) and *Interactivity* (what can be done over the web by a citizen?). Thus, for each criterion either a point could be scored or not (is this information/function available? YES = 1, NO = 0). During the period 2003-2008 an important advance in the quality and functionality of the websites took place, along with the decrease of the range of scores (Table 1). The latter is due, on the one hand, to the overall advance of the county websites and, on the other, to the existence of the upper limit of 40 score points, so that there has been less and less room for differentiation. In view of the latter phenomenon, the verifications of WAES scores for the counties were stopped after 2008.

Table 2 illustrates the degree of association of the WAES scores with the character of the counties in terms of some general aspects (L in the last column is a function, aggregating the four variables from the preceding columns). The shift in the correlation values in 2007 lasted for just one year (they returned to the previous levels in 2008) and was mainly caused by a significant improvement in 2007 of the websites of the five urban counties.

Table 2: Correlation coefficients between WAES scores and selected indicators for the counties of Mazowsze province, Poland in the years 2003-2007.

Year	Population density	Share of urban population	Share of agricultural land	Share of forest area	L
2003	0.183	0.086	-0.194	-0.100	0.180
2004	0.233	0.172	-0.194	0.068	0.216
2005	0.195	0.110	-0.239	0.080	0.188
2006	0.149	0.089	-0.211	0.074	0.150
2007	0.467	0.429	-0.430	-0.038	0.470

General statistical data used to form the Tables come from BDR GUS (Polish Central Statistical Office local database)

Given the wide disparity of characters of the Masovian counties (e.g. their populations ranging by two orders of magnitude and the population densities by three orders of magnitude), the results in Table 2 are very telling: the domination of the ‘highly urban’ areas is only marginal with the respect considered. This effect, of course, might be attributed to the fact that, with time, most, if not all, of the WAES criteria became a formal ‘must’, even if there were important delays in actual implementation across the population of administrative units.

Thus, we have then looked at the aspect that has not been included in the formal requirements, set on the local authority websites, namely broader information on the area – its assets, resources, opportunities, services etc. in a broad sense. In this manner the WSOSI system of criteria was developed, encompassing 14 domains x 5 aspects in each domain = 70 items, again treated in a binary way (e.g. does the website provide information on the local medical public dispensaries? YES = 1, NO = 0, or does the website provide information on hospitality industry facilities? YES = 1, NO = 0). The 14 domains included health service, education, sports and recreation, public transport, other public service, history and sightseeing, etc. Because the verification had to be done ‘by hand’ and so represented a laborious task, the exercise was performed for a sample of representative municipalities,

Table 3: WSOSI scores for representative municipalities of Mazowsze province, Poland and corresponding counties (max=70).

Commune	Commune WSOSI scores	County	County WSOSI scores	Difference: county-commune	Ratio: commune/county
<u>Jabłonna</u>	44	<u>Legionowo</u>	57	13	0.77
<u>Nieporęt</u>	54	<u>Legionowo</u>	57	3	0.95
Stara Biała	16	Płock	33	17	0.48
Zakrzew	24	Radom	42	18	0.57
Łąck	10	Płock	33	23	0.30
Łochów	55	Węgrów	42	-13	1.31
Leoncin	13	Nowy Dwór	34	21	0.38
Rzekuń	6	Ostrołęka	56	50	0.11
Grudusk	23	Ciechanów	48	25	0.48
Belsk Duży	46	Grójec	49	3	0.94
Sanniki	3	Gostynin	22	19	0.14
Korczew	25	Siedlce	26	1	0.96
Ceranów	0	Sokołów	40	40	0.00
Karczew	57	Otwock	51	-6	1.12
Average	27	-	42	15	0.65

Underlined are the municipalities and counties associated with the agglomeration of Warszawa; **bold** are those where the score for municipality is higher than for the respective county

Table 4: Some characteristics of selected communes of Mazowsze province, Poland and their WAES+WSOSI website scores.

Commune	Population density (persons km ⁻²)	Businesses per 1000 inhabitants	Weighted distance (km)	WAES+WSOSI score
Nieporęt	127	131	20.2	82
Łochów	89	67	51.7	78
Belsk Duży	63	61	33.6	74
Jabłonna	198	128	12.6	72
Grudusk	40	66	61.1	38
Stara Biała	90	48	15.0	37
Zakrzew	115	62	30.6	35
Korczew	29	11	83.2	35
Rzekuń	67	60	34.5	28
Łąck	52	61	40.0	27
Leoncin	32	73	37.3	24
Sanniki	69	56	70.1	14
Ceranów	22	9	97.4	3

the level of municipality being considered more appropriate for it (the scope of potential information being appropriately narrow). The results from the basic exercise done in 2009 are shown in Table 3.

The municipalities selected for this exercise were representative in the sense that the dominating functions of the respective areas could be classified into (a) service and industry, (b) housing (residential), these being largely associated with suburban areas of larger agglomerations, first of all Warszawa, (c) nature and recreation, (d) (productive) agriculture and (e) periphery, the latter meaning primarily subsistence farming. There were at least two municipalities from each of these, some of them representing mixed functions. Table 4 subsumes the results from the WAES and WSOSI studies for the sample of municipalities.

The 'weighted distance' in the fourth column is the harmonic mean of distances to the county seat and to Warszawa (in some cases to yet a third local centre), taken as a proxy for peripherality. As the maximum scores for WAES and

Table 5: WSOPI scores of communal websites of Mazowsze province, Poland for information on other entities (as of November 2009).

Commune	Score	Commune	Score
<i>Jabłonna</i>	53	Nowe Miasto	11
<i>Nieporęt</i>	50	Sanniki	10
<i>Nadarzyn</i>	49	Raszyn	8
Łochów	44	Leoncin	7
Żabia Wola	44	Grudusk	4
<i>Karczew</i>	40	Stara Biała	4
<i>Lesznowola</i>	35	Jedlnia Letnisko	0
Belsk Duży	28	Przyłęk	-4
Korczew	24	Rzekuń	-5
Klembów	23	Zakrzew	-7
Klów	22	Rościszewo	-8
<i>Michalowice</i>	15	Szulborze Wielkie	-15
Olszanka	15	Kuczbork Osada	-16
Ceranów	14	<i>Izabelin</i>	-19
Łąck	14	Wieczfnia Kościelna	-23

italics denote communes located within/next to Warszawa agglomeration or closely connected with it

WSOSI are, respectively, 40 and 70, the overall maximum is 110. It can be noted that values of all variables are highly differentiated, by about an order of magnitude. Based on the data collected it can be stated that the quality and content of the local authority websites only slightly decreased along the urban-rural axis, but peripherality, especially in conjunction with other aspects (e.g. economic entrepreneurship), has a clear influence on the respective scores (see Ceranów, the bottom line municipality in Table 4).

The next stage of the investigations was to assess the place and role of the local authority websites as a (core) node of a local community network. Firstly we checked the presence and accuracy of information on the local authority website concerning local institutions, services, businesses etc., whether of public or of private character (e.g. transport, health care, education, sports and culture), a kind of extension of WSOSI. For each item, for which address data were provided a point score was attributed. In the case of wrong (e.g. outdated and changed) information negative scores could be assigned. Thus, there were no lower or upper bounds on the WSOPI scores for individual municipalities. Table 5 summarises the results (the WSOPI scores) from this step of our investigations.

The municipalities listed in Table 5 constituted the proper sample of this investigation. The 30 communes were selected on the basis of three criteria: (a) function (roughly analogously as before); (b) association with an urban centre (primarily Warszawa) vs. peripherality; and (c) general socio-economic characteristics (population density, businesses per 1,000 inhabitants etc.). One of the reasons for the WSOPI study was to test the differentiation of the results that could be telling for the investigation of the links between local websites, forming networks. From this point of view the study turned out to be fully successful – the differentiation of scores, shown in Table 5 is quite formidable.

For each municipality listed in Table 5, all live links appearing on its website were checked. The links were classified according to the website they led to, into:

- *Global or continental* (e.g. Google, Yahoo, European Commission etc.);

- *National* (e.g. ministries, but also companies and platforms of national reach);
- *Regional* (e.g. provincial authorities, provincial chapters of national services etc.);
- *Local* (e.g. organisations located in and pertaining to the given municipality, to neighbouring municipalities, the county, in which the municipality is located, the neighbouring counties);
- *Internal* (referring to various locations within the same website and/or different bodies associated with the local authority); and
- *Undefined* (the case of some corporate websites, which could hardly be assigned to any of the above classes. None of these, though, seemed to belong among the local links).

We were interested in the *local* links. For each link that led to a functioning website of a *local* organisation we also checked the links appearing there, according to exactly the same classification as above. We thus obtained for each municipality a depth-two graph of local web-based connections. Regarding the graphs obtained for each municipality, we were interested in their *dimensions* (number of nodes), *density* (number of edges compared to the number of nodes), the presence of *feedbacks*, as well as the *role of the local authority website and perhaps other important nodes*.

Altogether some 4,000 websites were encountered (only those that were ‘live’ and correct were accounted for). Yet, only close to 1,800 were singular websites and not repeated references to the same addresses, and of those 780 were classified as *local*, and therefore included in the analysis (which was performed for 29 out of 30 selected municipalities, as in one case the website changed significantly during the observations). A specially developed software application supported the search for the links, but its results had to be checked by an analyst.

We found the results surprising, alas, not in a positive sense, but also very telling. We start with the overview of dimensions of the graphs obtained. Table 6 shows that

Table 6: Numbers of websites observed in the study for particular municipalities of Mazowsze province, Poland.

Commune	Number of websites included in the network	Commune	Number of websites included in the network
Jabłonna	3	Nowe Miasto	10
Nieporęt	7	Sanniki	3
Nadarzyn	50	Raszyn	0
Łochów	20	Leoncin	2
Żabia Wola	37	Grudusk	7
Karczew	15	Stara Biała	7
Lesznowola	9	Jedlnia Letnisko	11
Belsk Duży	18	Przylęk	3
Korczew	3	Rzekuń	2
Klembów	2	Zakrzew	4
Klwów	6	Szulborze Wielkie	2
Michałowice	48	Kuczbork Osada	1
Olszanka	8	Izabelin	7
Ceranów	0	Wieczfnia Kościelna	1
Łąck	4		

the ‘local networks’ differed dramatically. Already at the simplest level the range of the number of (local) websites involved is between 0 and 50! This reminds us very much of the results from Table 5 (municipalities in Table 6 are ordered in the same sequence as in Table 5).

We can see the domination of the municipalities associated with Warszawa agglomeration (such as Nadarzyn and Michałowice) or situated on large transport routes (Żabia Wola). At the same time, though, clear exceptions can be observed (e.g. Raszyn on the one hand and Belsk Duży, as well as Nowe Miasto and Jedlnia Letnisko, on the other). These cases might be explained with the factor of culture / smartness, referred to in this paper. It appears also quite justified to note that side by side with a sort of general tendency, explained above (and confirmed also by, say, Ceranów and Wieczfnia Kościelna), there is a broad room for a specific approach or attitude of a given local administration, both in terms of positive and negative divergence from the tendency.

It was, however, also obvious that, generally, the *networks were much smaller than expected*, and there were *many cases of only marginal local networks* and of *complete lack of them* – so that in such cases one could hardly speak of networks at all.

The graphs obtained could be visualised through the incidence matrices, i.e. the square matrices, in which both columns and rows correspond to respective nodes (websites) appearing in the graph and a link between two nodes is a black dot in a specific row and column. Figure 1 illustrates the differentiation of results, i.e. three images of the incidence matrices corresponding roughly to three kinds of such matrices obtained. The three examples were obtained for Nieporęt, Michałowice and Nadarzyn. They provide the flair of the other, essential dimension of differentiation: the complexity of the local networks. Thus, although the list of websites for Michałowice (Figure 1b) is quite long (48), there is, in fact, no network within the scope of analysis undertaken (the two-links depth), just the list of these 48 links from the central node to other entities (the horizontal upper bar corresponding to the links from the municipal website to the other local ones). From this point of view the difference with Nieporęt (Figure 1a) is quantitative, not qualitative (also only links from the municipality website to several other websites).

The case of Nadarzyn (Figure 1c), the most complex network identified, is quite different: there are several ‘returning nodes’ (more than one horizontal line and quite a lot of isolated ‘nodes’ beyond the upper bar) and a kind of sub-network. The role of the municipal node goes here beyond the simple ‘indication of links’. There are only few municipalities for which such networks of links were identified in the sample: Belsk Duży, Łochów and Nadarzyn, and, to a lesser extent, Lesznowola and Żabia Wola. Naturally, the number of websites involved in such cases is well above the average, although even for a small number of websites the ‘returning links’ might occur.

Another interesting group is constituted by municipalities such as Michałowice: those with considerable numbers of websites involved, but completely ‘flat’ structures, namely, for instance, Karczew, Nowe Miasto and Jedlnia. What is the cause? Lack of an adequately enterprising local

community, which would reciprocate the links, at least to a certain extent? Lack of interest for reasons of ignorance, or for justified reasons – that is, a sort of experience that such an activity does not bring tangible results? i.e. ‘culture’?

In this context, the extremely broad differentiation of the municipalities closely associated with the agglomeration of Warszawa, echoing some of the results reported above, seems very telling. The more intricate analyses that were carried out, referring to graph-like structures, only complement the image already provided.

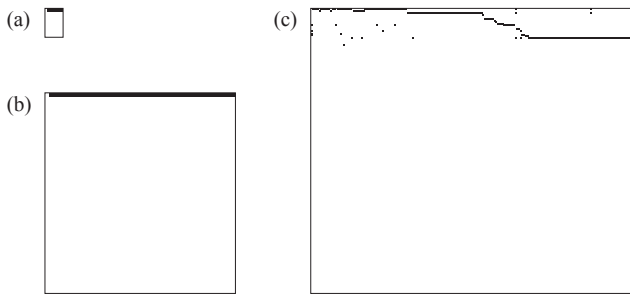


Figure 1: Adjacency matrices obtained for the websites of three municipalities in Mazowsze province in Poland: (a) Nieporeć (7 websites), a municipality neighbouring upon Warszawa; (b) Michałowice (48 websites), also neighbouring upon Warszawa; and (c) Nadarzyn (50 websites) on a transport axis to/from Warszawa.

An international comparison

In the course of work reported, a shorthand international comparison was performed involving Romania (Tulcea, Braila and Galati, i.e. three units), Spain (Andalusia, Extremadura and Asturias, altogether 1238 units, some of them, however, very small indeed), the Netherlands (North Holland, 61 communes), and the United Kingdom (North Yorkshire, eleven units). Altogether, close to two thousand basic local administrative units have been checked as to their websites and, wherever applicable, WAES methodology was applied (and some hints and the potential WSOSI study also were gathered). Owsński and Pielak (2011) give more detailed results of this study. Here, we shall only quote one of the conclusions from this study, namely that the websites of the local administrative units in Mazowsze are quite on a par with the European average, as inferred from this study, actually, most of them distinctly exceeding this average as to the content and functionality of the municipality websites. Another conclusion, quite trivial, though, was that the smallest units displayed either a lack of a website altogether, or the minimum standard content and functionality.

Discussion

The results obtained in the entire study reported imply the following statements, which might be interpreted to an extent as propositions:

- The quality and functionality of the local authority websites, reflecting the effort put into their development and maintenance, is only slightly better for the urban areas than for the rural ones, but peripherality

certainly plays a role;

- There is a very pronounced differentiation of the qualities, associated with the local authority websites, including the networks they might form, for the administrative units featuring very similar location and – to a lesser extent – also functionality conditions;
- The developments, related to urban sprawl, rural ageing, industrial fluctuations and overall business climate, exert a visible influence on the way ICT is perceived and used (as significantly correlated with, on the one hand, closeness to large agglomerations, and, on the other – degree of peripherality), but
- Local, highly persistent community structures, having their own profiles, exert an influence that might even be more tangible;
- There is an impact of the local resources on the website-related qualities, these resources being understood in a broad manner, including natural resources that can be exploited, location rent (again: suburban municipalities), as well as features of the population themselves.

If we wish to check the results obtained, summarised in the propositions above, against the landscape of local cultures, we should try to reconstruct the cultural dimensions from the stage of investigation here reported. Thus, in the sequence of the studies and results reported, we have:

- High urban (Warszawa agglomeration) and urban (e.g. Radom or Płock) culture against the rural varieties (counties such as Sokołów, Ostrołęka or Gostynin);
- Suburban (residential, and service and industrial), recreational and holidaymaking, intensive farming, and subsistence farming, or peripheral; as well as
- Additional location-rent situations, such as related to the main transport routes, or simultaneous closeness to urban areas and natural amenities (forests, lakes etc.).

In relation to Figure 1 the above distinctions of culture ought to be necessarily regarded in the perspective of local broadly conceived resources. Location, in particular, is a very definite resource, with either a positive or negative impact on the development capacities. This is particularly true of the suburban locations with the naturally associated residential, service and petty business functions. Such differentiation explains, in particular, the very pronounced variety of the website-related assessments in both of the extreme here considered spatial positions – the suburban ones and the peripheral ones. If the suburban location is perceived as the sufficient source of advantages, then no other undertaking is worth endeavouring than those directly related to the location (e.g. housing development and planning, associated with them, along with the commercial surfaces). Similarly, in the peripheral situation, nothing shall bring positive effects and the effort spent on advertising, information provision and promotion would appear to be wasted.

The variety and persistence of results, registered and shown here for comparable socio-economic and spatial circumstances, constitute the evidence that local culture, includ-

ing ‘smartness’, exerts a very pronounced impact on the way the local communities function, even if, on the observable surface, little is seen in terms of economic (income and employment) effects, which might be perceived later on or in a broader (spatial) perspective.

Two stories support the above conclusion. Two municipalities, neighbouring upon Warszawa on two geographically opposing sides – one considered until quite recently the richest municipality in Poland, under communism populated largely by inventive and enterprising people, growing flowers and vegetables under glass for the Warszawa market and for exports (yes: these private producers would export their products to GDR, Russia, Czechoslovakia etc through the state-run intermediary). After 1989, with increasing energy costs and opening borders, they turned to different kinds of activities, with a portion of the population still clinging to flower and vegetable growing. They are still considered among the richest communities in Poland, and their municipal website is among the best and quite intensively networking. At the other (geographical) end is a municipality that features extremely low infrastructure indicators (Owsinski, 2008b), a very high number of businesses per population number, and one of the ugliest suburban landscapes. Its municipal authority website is among the weakest and most inactive. The same applies to the suburban municipalities that are (by choice?) the ‘bedroom’ quarters.

Similarly, among the spatially peripheral municipalities, some authorities renounce ICT entirely while others try to use this medium as much as possible, in close correlation with the nature of activities taken up among the population (e.g. leisure and recreation and diversified farming). The attitude thus identified tends to persist, and it definitely applies to a much broader domain.

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NEMES Gusztáv* and Christopher HIGH**

Old institutions, new challenges: the agricultural knowledge system in Hungary

This paper explores and analyses the Hungarian institutional system for the creation and the transfer of knowledge in the field of agriculture and rural development. We consider the constitution and operation of the Agricultural Knowledge System (AKS) in Hungary, focussing on the formally organised aspects, and suggest that both the structure and content of the knowledge needed in the sector have significantly changed during the past decades. These changes, especially in relation to the sustainability of agriculture, pose significant challenges to traditional AKS institutions, which often have failed to change in line with the new requirements. Based on a literature review, interviews and a national stakeholder workshop, we offer an analysis of Hungarian AKS institutions, their co-ordination, co-operation and communication with each other and with Hungarian rurality, and of the arising issues and problems concerning the creation and the flow of knowledge needed for sustainable agriculture. We also briefly explore characteristics of emerging bottom-up structures, called LINSAS (learning and innovation networks for sustainable agriculture), and explore the significance of the findings in this article for the study of AKS in Europe. This article is based on preliminary results of the SOLINSA research project, supported by the European Union's Seventh Framework Programme.

Keywords: sustainable agriculture, LINSAS, Hungary, rural development

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Introduction

Traditionally, a formal agricultural knowledge system (AKS) consists of three functions: (a) research, (b) education and (c) extension (advisory service) (Riveira and Sulaiman, 2009; Brunori *et al.*, 2011), operating together to implement agricultural policy. The delivery of these functions has a long history in most European countries, usually involving significant state funding and a range of institutions including ministries, universities, research institutes, and training and advisory services. The result has been largely technological knowledge and innovation, appropriate to the ruling productivist paradigm, delivered to producers through mainly top-down structures. Such knowledge has in the past made an important contribution to the implementation of the Common Agricultural Policy (CAP), and its counterparts in Central and Eastern European countries, and therefore to food security and the development opportunities in European rural areas.

As the old productivist paradigm is replaced by agricultural policies that take sustainability into account, the capacity of traditional (formal) AKS to adequately support sustainable agriculture and rural development is increasingly questioned. As the underlying value system has shifted, so too have the actors involved, the types of knowledge required and the modes of delivery. Instead of just technological innovation, there is now more emphasis on management issues (cross compliance, diversification, quality control etc.) and on maintaining thriving rural communities. Knowledge and innovation to enhance these processes cannot be simply produced in laboratories and distributed through top-down advisory services. Networks, procedural knowledge and social learning are required for the new system, posing significant challenges to the traditional AKS and generating alternative, often bottom-up solutions. Informal learning and tacit knowledge is clearly relevant to operation of an AKS, and the new requirements place a greater emphasis on them. However, in this paper we focus on the formal system, as it

is still very important in terms of impact and resources, and because it is an important site of mediation for more informal forms of knowledge.

The SOLINSA (Support of Learning and Innovation Networks for Sustainable Agriculture) project (www.solinsa.net) aimed to explore these issues through action research and comparative analysis over a three year period. This article presents the first findings of the research in relation to Hungary. We explore and analyse the evolution of the Hungarian AKS, exploring the most important changes in the system. We also give a comprehensive analysis of the current AKS institutions describing their roles and how they are co-ordinated, vertically and horizontally, and examine the most important trends and problems limiting their effectiveness. We introduce the concept of LINSAS (learning and innovation network for sustainable agriculture) and its relevance in the Hungarian context. Finally we conclude with some reflections on the significance of the findings in this study in relation to the study of AKS in Europe.

Methodology

This study draws on multiple methods. A review of the available literature provided an overview of the history and present state of AKS. We also conducted eleven semi-structured interviews with experts and different stakeholders (four governmental, two educational and five NGO representatives). Our objective was to involve the main influential actors with possibly conflicting views on AKS and sustainable agriculture and rural development. The interviews were recorded, summarised and analysed, with the aim of identifying the main issues, conflicts and dysfunctions of the system. Based on this work we produced a discussion paper that was distributed to a range of AKS stakeholders.

AKS stakeholders were then invited to a national stakeholder workshop held in Budapest. The 17 participants

represented relevant government institutions, NGOs, producer organisations etc. Our three main aims were (a) to validate and collect feedback on our AKS Country Report; (b) generate common thinking and obtain input for further analysis (for a SWOT and a System Innovation Performance Matrix); and (c) to initiate/enhance networking between different AKS stakeholders. These aims were achieved, and the workshop was characterised by a very positive and friendly atmosphere and a general acknowledgement of the value of the study.

Changing challenges for AKS - a brief historical context for Hungary

Until the late 1980s AKS had a clear, fairly simple, top-down structure in Hungary. Agriculture was part of the state-run planned economy. It was large scale, reasonably modernised and organised into state-run co-operatives and state farms, often managing thousands of hectares. Large scale farms ('official agriculture'), however, were complemented by small scale, part-time, semi-subsistence agriculture, representing a very different type of land use and workforce management (Szabó, 2011). In practice this meant tiny household plots, often in semi-integration with cooperatives or state-farms (Juhász, 2001). Thus some inputs available for large-scale farming, including AKS, were used (often free of charge) by the household farmers, whilst the marketable part of this semi-subsistence production was typically integrated by the cooperatives and state farms. By the end of the 1980s, household agricultural production, on only a few per cent of the land, produced more than 30 per cent of the total Hungarian agricultural output (Fertő and Mohácsi, 1997).

Knowledge created and transferred used to have a primarily technological nature, with the main objectives being the increase of productivity and efficiency. AKS was fundamentally centralised, top-down and politically controlled. Research was mainly carried out by universities and research institutes. Most of the latter belonged to the Ministry of Agriculture (MA), though some of the important research institutes were (and still are) part of the network of research institutes of the Hungarian Academy of Sciences (MTA). The delivery of knowledge went through a two-tier system. Most was passed through the network of 'agricultural engineers' employed by the cooperatives and state farms. An important role however, was also played by the well organised and functioning advisory system of the MA. This covered special topics such as new machinery and production methods, and was frequently used by producers. Agricultural education was also governed by the MA, which defined the number of agricultural technicians and engineers to be trained. Studying was state-financed and young graduates had plenty of job opportunities in the industry.

Socialist industrial agriculture had another important AKS institution that acted as a source of integration, knowledge and innovation, the so called 'production systems' (Kozári, 2000; Schlett, 2004). These were half a dozen state funded integrators, knowledge brokers, specialised in strategic agricultural sectors (cereal production, animal

husbandry, fruit production etc.), working with many agricultural co-operatives, together covering very large areas. These 'production systems' organised quality input purchase and production, helped development, the dissemination of knowledge, even imported modern 'western' technology (e.g. John Deere and Pioneer machinery in the 1980s) and marketed Hungarian products on the world market. A key feature of their work was the establishment of good connections with universities and research institutes (e.g. providing finance and trial fields for experiments, giving direct commissions) that facilitated the efficient transfer of scientific knowledge and technical innovation into production. They even carried out monitoring and evaluation, collecting data from the cooperatives, analysing the results and giving first hand feedback and advice to achieve improvements in the production of individual cooperatives.

By the late 1980s, however, due to the many critical issues (huge workforce, hidden unemployment, overdependence on the Russian market etc.) fissures appeared in the apparently properly working agricultural system. The change of the political regime and the economic system in the early 1990s brought devastating changes, with strong implications for the AKS. Old state-run agricultural companies were destroyed or transformed and the land use system changed completely within a few years (Fertő and Mohácsi, 1997; Juhász, 2001; Szabó, 2011). During the transition period in the 1990s it was expected that a concentration process would take place that would result in a viable family farm dominated agricultural structure. This however did not happen. In 2000, some 80 per cent of farms were still smallholdings, of less than 5 ha. Thus the dual (large holdings – small scale farming) structure, with its inherent problems following historical patterns, remains dominant in Hungarian agriculture (Tóth, 2000; Oros, 2002; Ivicz, 2004; Schnicke, 2011).

In 2010 there were 8,800 farms functioning as commercial organisations (cooperatives and commercial farms) and 567,000 individual farms. Legal entities used on average 337 ha of land, whilst the average farm size of individual farms was 4.6 ha. Only 4 per cent of economic organisations used 1 or less than 1 ha, whilst two thirds of individual farms were equal to or smaller than 1 ha. Of the 567,000 individual farms 60 per cent produced for self consumption (KSH, 2012). Reminiscent of large state planned agriculture, the larger commercial farms use big, well established and sometimes imported state-of-the-art technology. Most of them are engaged in field crop production where they can easily benefit from scale economies. These are the farms mostly targeted by commercial advisors, from technology to integrated management and marketing (Szabó, 2011).

With the breakdown of old agricultural structures, AKS was becoming increasingly diverse, tasks and challenges were changing rapidly and the system was evolving towards a fragmented, reactive status. Traditional integrators, such as 'production systems' and state farms disappeared (Kozári, 2000; Szabó, 2011). Their role in the dissemination of knowledge and innovation was replaced by public and private institutions and new NGOs. Various trends followed each other in turn in state policy and in AKS as well. The first was decentralisation, when many responsibilities were given away by the state to lower administrative levels (local author-

ities) and NGOs or ‘quangos’. In terms of AKS probably the most important change was a new agricultural extension service called the *falugazdász* network. It was government funded but, inspired by the example of the Austrian system, was originally coordinated by the new Hungarian Chamber of Agriculture (Juhász, 2009). The service employed more than 1500 local advisors – recruited mostly from amongst the agronomists of the former co-operatives. It was aimed at supporting new small and medium scale commercial and subsistence farms and was available free of charge to the farmers. It functioned reasonably well throughout the 1990s with only minor changes. Prior to 2000, however, a new wave of centralisation re-nationalised many responsibilities. Today these extension workers (or rather a fraction of them) are employed by district offices (*járásai hivatalok*) and deal mainly with regulatory matters (Székely and Halász, 2010). The process of integration into the European Union (EU) brought new trends and new institutions too. The resources available and obligatory regulations both grew significantly. Multi-annual programming, partnership working and institutions conforming to EU rules became part of the official Hungarian AKS.

As a result of the political and economic changes, large (often international) commercial integrators entered Hungarian agriculture, transferring technological knowledge and innovation mainly to larger commercial farms. They brought innovations and knowledge (technological and organisational) from the international market directly into production. The structure of traditional research institutions and agricultural education was dissolving, funding and live connections with the sector were gradually lost, emphasised by the decrease in the number of research and higher education institutions.

The content and the structure of knowledge, needed both for innovation and daily routine in agriculture and rural development, were also changing rapidly. Instead of productivity, sustainability – a concept much more versatile and complex – became the main rhetorical objective of agricultural/rural policy. Thus, the formerly dominating industrial and technological knowledge became less important and was largely taken over by integrators and commercial consultancy (Székely and Halász 2010). At the same time, the demand for knowledge became much more diverse and fragmented, especially after the start of Hungary’s integration process into the EU. Much of the new knowledge demand was connected to EU policies. For agricultural producers, EU subsidies became an increasingly important part of their income. However, for finding the right (best) way through the maze of connected regulations and administration most actors needed assistance. Also, rural development policies became increasingly important, further complicating the knowledge demand. With this, multiannual programming, inter-sectoral development, local partnerships, community planning and multi-level governance became inherent parts of the system, posing completely new challenges to AKS.

During the last 15 years the Hungarian AKS has had difficulties in responding to new challenges. This was due partly to the decay of the old system and its institutions, and partly to the fact that new challenges needed new approaches, a more decentralised, versatile and network-oriented system

for the successful creation and transfer of knowledge and innovation for sustainable agriculture and rural development. Some difficulties were solved by commercial organisations, others by network-based approaches, often using new communication technologies and social networking. Others are still there, creating knowledge gaps and dysfunctions in sustainable agriculture. Based on our empirical research we will next explore the institutional map of Hungarian AKS, analysing current trends and problems.

Sectors, actors and their roles in Hungarian AKS

Research and education

State funded agricultural research has long traditions and a rather fragmented structure in Hungary. Research institutes are usually specialised in particular topics within agriculture and food science, dealing mainly with theoretical issues and basic research. The six most important ones belong to the Ministry of Rural Development (VM) and five others to the MTA. Some 26 independent smaller research institutes (e.g. the Fruit Research Institute) work on specialised topics and ten agriculture-related universities and faculties also have dedicated research institutes. Commercial companies, mainly large integrators, suppliers and machinery manufacturers also conduct (applied) research. Their research focuses on their business (e.g. marketable products and linked innovations) and is often based outside Hungary, but the results are communicated within the country. Sustainable agriculture is rarely in the focus of these research activities although there are some exceptions. One of these is the company Syngenta which is conducting advanced research and experiments in Hungary in the field of ‘green chemicals’ and pest management.

The main statutory body for education in agriculture is the National Rural Development Training and Advisory Institute (NAKVI, www.nakvi.hu), an agency founded and maintained by the VM, which acts as the main governmental body in the field of training and advice, and also as the implementing agency of the Hungarian National Rural Network (MNVH). It co-ordinates the 124 agricultural secondary schools Hungary, setting requirements, running training courses for teachers and providing general professional supervision. NAKVI also supervises adult education and lifelong learning within agriculture and rural development via the 20 training institutes maintained by the VM. It also organises compulsory, CAP regulated training, such as accompanying agri-environmental payments.

Hungary has 13 universities and/or faculties in agriculture, food science and rural development. They used to be specialised universities for different scientific areas and organisationally belonged to the MA. However, with the reorganisation of the universities in the late 1990s, they were transferred to the Ministry of Education (now the Ministry of National Resources) and are usually part of large ‘*universitas* type’ universities. In addition to official, state funded education, there are many courses, organised by NGOs,

mainly in the field of sustainable agriculture, biological production, renewable resources etc. These are mainly aimed at small producers, financed from public money and are often combined with some sort of financial support to participants.

Advice and consultancy

Advice and consultancy in Hungary are currently offered via a very fragmented, un-coordinated system. There are four main types of actors/institutions: (a) free advisory services at the national level, funded by the EU and domestic resources; (b) the Hungarian application of the Farm Advisory System (FAS), a consultancy service with 80 per cent support under the CAP; (c) commercial consultancy; and (d) free consultancy by input providers.

Free consultancy

Free advice is currently offered by two types of actors. The most widespread is the 'village extension service', functioning since the early 1990s. Currently some 600 advisors work as public servants, each serving 1 to 20 villages (depending on village size, production type, local specificities etc.) and giving free advice to producers. Their main task in recent years has been to help producers to fill out the Internet based electronic payment requests. Their role in the system is somewhat ambiguous. According to EU regulations, being public servants and partly responsible for the control over producers, they should not perform advisory services. In practice they often do anyway, but as such they cannot be held responsible for their advice since there is no contractual relationship between them and the producers (Bányai *et al.*, 2011).

The Hungarian Chamber of Agriculture (www.agrarkamara.hu) also runs, until the end of 2013, a free of charge, so called 'complex advisory service' with some 200 advisors. This service is partly subsidised by the technical assistance (TA) budget under the CAP (EUR 57 million for seven years), its main purpose being to give advice to all producers (not only members of the Chamber) concerning cross-compliance, direct payments, rural development measures, obligations, deadlines etc. They are also supposed to help with electronic applications and payment requests. However, until recently they had no access to the official producers and land area databases (which areas are entitled to receive agri-environmental subsidies, NATURA 2000 territories, etc.).

Subsidised consultancy - Farm Advisory System

Maintaining a Farm Advisory System (FAS) is an obligation for each EU Member State under the CAP. It is funded by the TA budget and consists of a range of different institutional levels. In Hungary NAKVI acts as the national level coordinator of the system: it selects, trains and monitors lower level centres and the advisors themselves, provides information, training material and IT background. There are seven Regional Advisory Centres (mainly universities) fulfilling similar tasks to NAKVI at the regional level. Some 82 Micro-regional Advisory Centres were also selected (county level agricultural chambers, consultancies, research institutes etc.) of which less than 50 per cent are active today.

These Centres make contracts both with the producers and the advisors and coordinate the process locally. At the bottom of the system there are 809 selected advisors (more than 200 are currently suspended for incompatibility). Micro-regional Advisory Centres have a yearly quota for a certain number of individual contracts with producers. Producers pay for the service, then can claim back 80 per cent of the contract value. One farmer may receive a maximum of EUR 1,500 during a seven year period (with a limit of EUR 700 per year) and may use the service up to three times during the seven years. The mechanism is quite cumbersome: firstly the farmer selects a registered consultant, agrees and signs a contract, pays the advisor, then submits his/her request for partial reimbursement to the VM. It can take up to 1.5 years to get the reimbursement. This system has been subject to many criticisms, including the administrative burden, late payments, the very limited amount of financial support and also the quality of the advice provided.

Commercial consultancy

Owing to culture, traditions and the currently available free or subsidised options, commercial consultancy is at a very low level in Hungary (Székely and Halász, 2010). Only very large or specialised commercial farms use such services. Contacts with advisors often originate from previous FAS contracts and sometimes even foreign advisors work with Hungarian producers, particularly focusing on highly specialised activities/topics. There are also larger EU consultancy networks, mostly present through Hungarian/foreign joint venture farms/businesses. These are expanding and competing with the local consultants. Two examples are (a) the famous, established wine DOC, Villány: this mixed ownership winery employs an Italian consultancy company (thus giving up the entitlement to the 80 per cent consultancy fee reimbursement) because of their knowledge of global trends, worldwide marketing etc.; and (b) a Dutch knowledge importer provided technology for strawberry producer farms that allows an earlier harvest, giving a comparative advantage on the market.

Another type of commercial consultancy concerns applications for investment in agriculture and rural development. This is a huge market, with many companies involved. Applications and reimbursement claims are normally very complex, requiring special knowledge and skills. The price of project writing and management is normally an eligible cost (sometimes up to 12 per cent of an investment), therefore this is a huge market for consultancy companies. In practice, consultancies normally receive a minimal fee for writing the project and they receive most of their fee as a percentage of the contract value in case of the bid succeeding.

Input providers, private sector actors

Since the early 1990s this sector has experienced a massive concentration process, by now leading the applied innovations market, aimed to satisfy specific market demands in three specific areas: (a) herbicide/fertiliser producers; (b) seed producers; and (c) agricultural machinery manufacturers and dealers. These companies are in many senses ahead of traditional

AKS suppliers, building networks and providing combined packages of technology (machinery, seeds and plant protection agents). One way of raising interest is through product shows where farmers can participate. These are hugely popular events, where entry is normally free of charge, that have become the main way of distributing and getting information on new technologies, chemicals, production methods etc. Large producers are also regularly visited by regional representatives of providers offering free consultancy concerning particular technologies. Their market behaviour is similar to integrators and public services, who lacking resources cannot match their activities. 'Sustainable agricultural practice' is not normally targeted by these companies, thus they target farms characterised by 'traditional industrial agriculture'.

'Rural development AKS'

The third and fourth axis of the second pillar of the CAP have somewhat separate objectives, content, actors and style in terms of AKS, all connected to the EU LEADER Programme. The basic elements of the system are the LEADER Local Action Groups (LAGs) and their local development agencies. LAGs are legally NGOs, however, they were initiated by the Ministry of Agriculture and Rural Development (MARD) specially aimed to create a micro-regional level institution for the LEADER Programme. These NGOs have established local development agencies to run and administer the programme itself. The 96 LAGs covered all rural areas and became essential parts of the AKS, creating, channeling and distributing knowledge and information connected to rural development and related subjects. They are translating central requirements to the language of the local people, bridging the gap between rural people and the Management Authority/Paying Agency. The LAG has become the 'mover and shaker' of local development affairs and in many cases a legitimate institution of local participatory democracy. Besides individual LAGs, some initiatives for cooperation and networking between LAGs can also be considered as important factor for AKS.

The Agricultural and Rural Development Agency (ARDA, www.mvh.gov.hu) is the main executive agency for the implementation, control and payments of rural development policies in Hungary, covering all measures under the CAP. It has a very strong position within the rural development policy system, with a big influence on both planning and implementation of new policies. ARDA has a central office in Budapest and seven regional offices (altogether approximately 1800 employees). The head office is responsible for strategy, legislation and IT, whilst regional offices deal with project applications and on-site control. As ARDA is controlling programme implementation, its understanding and approach has strong practical importance for AKS. There are notable differences within ARDA in this. The central office tends to be stricter and less tolerant with LAGs and beneficiaries, while the approach of regional offices is normally more flexible. Beneficiaries cannot approach ARDA directly, thus training on policy implementation (for example how to complete the forms) is only open to LAGs and only they can obtain information regarding practical problems.

The Hungarian National Rural Network (MNVH, www.mnvh.eu)

is an obligatory institution under the CAP Rural Development Regulation (RDR). Its task is to organise a network of interested governmental, local government and civil contributors, business and social organisations, professional bodies, and to develop inter-regional and international relationships in a practice-oriented manner. It is supposed to have a strong and important role within the rural development AKS by developing and supporting learning networks, helping information exchange, innovation and social learning, both in the domestic and the international arena. However, during the first 4-5 years of the present EU programming period MNVH managed to achieve very little from these objectives. The conclusion of the 2010 mid-term evaluation of RDR was that MNVH 'has not managed to significantly enhance networking and social learning' (VM, 2011). NAKVI acts as the implementing agency for MNVH. It is responsible for creating and distributing knowledge and information, preparing training material, publications, organising conferences and other events for knowledge exchange, alongside MNVH. In 2011 MNVH was re-established and since then it has become much more active, reinforcing its role in AKS. A series of conferences (for example the 'Rural Academy'), various flows of training and network meetings for LAG members were organised. They also publish a rural development magazine, have greatly improved the quality of their web page and have initiated transnational networking activities and the funding of small projects.

The Management Authority (Rural Development Unit within the VM) is the main governmental institution that initiates legislation. A two-way information flow between this unit and the rest of the rural development arena should form an essential part of the AKS. Without appropriate information from the local level a properly functioning rural development system cannot be designed. Similarly, without a thorough assessment of proposals by practitioners and perhaps other stakeholders, a smoothly working rural development system cannot (and should not) be conceived. Though this unit is responsible for the planning of an information and knowledge delivery system (a key determinant of successful domestic and international cooperation), as well as for the good operation of NAKVI and MNVH, interviewees and the findings of the CAP mid-term review indicate that on many accounts it has failed to meet expectations. For example, information flows are partial, comments/suggestions on official proposals are rarely considered, there is an endogenous and secretive planning procedure (confidential treatment of most important regulations until they are finalised, approved and thus unable to be modified), interaction is mainly limited to LAGs with no institutionalised procedure for other actors (e.g. project applicants, beneficiaries) to contact them.

Co-ordination in AKS - vertical and horizontal integration

The above described institutional system is very diverse. As a legacy of the past decades, a strong reliance on the role of government can be observed. However, our interviewees generally considered that government steering is inefficient,

often lacking information, strategic thinking and sometimes channelling funds through outdated or politically compromised institutions. Our analysis of current integration and co-ordination mechanisms led to the following conclusions.

In the field of research and education, old networks and connections are breaking down. Many research institutes have already closed, have been merged into other institutions or are fighting for financial survival, trying to obtain resources from any available sources. Assignments from the state or/and from companies are scarce. Co-operation/integration between different institutes or even between different departments or faculties of a given university are rare; 'everyone is trying to survive' as one interviewee said. At the same time, according to our interviews and the suggestions of the National Association of Rural Development Advisors, there is no appropriate post-graduate training for advisors and extension workers (Bányai *et al.*, 2011).

Co-ordination of advice, extension and consultancy lays with the VM and NAKVI, however, in practice it does not function efficiently. According to our interviews and other empirical studies (Székely and Halász, 2010), within the FAS, for example, regional and Micro-regional Advisory Centres are dispersed, geographically not evenly distributed and expressing significant differences between the qualities of their services. There is no quality control and rarely an 'insurance policy' to cover if things go wrong. The free service run by the Chamber of Agriculture is considered by our interviewees to be somewhat better governed. Advisors are well prepared; however, they mainly focus on direct payments. They are located in the Chamber's office ('they don't go to farms at all'), thus cannot reach smaller producers or deal with specific problems. The Village Extension Service does reach most villages and supports small producers too. However, their status is very uncertain, sometimes paradoxical for being advisors and controllers at the same time and for not having an accountable, contractual relationship with the farmers. The whole system is quite dispersed and feebly governed, demarcation between free and supported consultancy is lacking and the quality of available advice/service is incidental, depending more on the individual person acting as advisor than the institution behind him/her.

Horizontal integration/co-ordination between different actors of the system is also weak. Competition between them is sometimes distorted, as in the case of the advisory service of the Hungarian Chamber of Agriculture that has an advantage above the others with respect to available funds, infrastructure and access to databases. Being a FAS advisor is incompatible with any other brokering and extension work, while at the same time conditions are unfavourable (only three contracts per year per producer, low funds, etc.). Thus, only very few advisors can make a decent living by working solely in the FAS, further hindering the collaboration amongst advisors and consultancy companies. In contrast to the practice of other EU Member States, producer groups are excluded from FAS support in Hungary (only individual farmers are allowed). By limiting the number of producers in the programme, awareness raising and the creation of learning communities and producer networks has become more difficult, good examples can only be found in commercial advisory practice.

In 2011 a group of advisor organisations and academics initiated a movement for changing the currently fragmented, uncoordinated inefficient system of agricultural extension. Meetings were held and a working paper with many structural and practical suggestions was produced (Bányai *et al.*, 2011) that aimed at influencing the preparation of the new law for the Agricultural Chambers. Nevertheless, the initiative had finally little or no influence on the processes. The new law is operation now. Membership of the Chamber of Agriculture became obligatory (members also have to pay a fee now, based on their profit) and a whole new advisory system is being created. However, the financial background, division of tasks and responsibilities and the relationships to the already existing advisory system are still unclear.

Rural development institutions exhibit a much stronger vertical integration. LAGs are strongly monitored and controlled by the VM, ARDA and NAKVI, leaving very little space for own initiatives. Their detailed tasks and duties are set by the authorities, and mistakes or alterations are normally followed by immediate financial penalties. There are however great differences between LAGs in terms of their approach to rural development, the local population and their actual activities. This depends on several factors: training, knowledge, available information, LEADER methods, local politics, the personal approach of local development directors etc. Horizontal integration amongst LAGs is still weak, but rapidly developing with new resources becoming available for national and transnational co-operation.

Trends and problems of Hungarian AKS

During this research we identified three important trends and four kinds of shortages that cause dysfunctions in Hungarian AKS, as follows:

Trends

Technological progress has not been followed by development/education of management capabilities, much of agricultural society is still not aware of the importance of these issues. Small producers try to do the same as big ones. Complex, strategic consultancy, including technology, production and marketing issues, is almost absent, with the exception of large agricultural holdings that are able to pay for it. Particular technological knowledge created and distributed by input providers is often free of charge; however, it is often biased towards the products marketed, sometimes with potentially dangerous consequences for overall welfare (e.g. the impact on the environment, social and economic interests). Unbiased technological advice is therefore scarce for most producers.

Agricultural education has not followed trends in the sector either, it is not market oriented, and has lost track with the 'real world'. A consequent fall in the quality of agricultural education, followed by a sharp decrease in agricultural student numbers, forced faculties to close or to integrate into other universities. Most young graduates in agricultural (or

related) science have no practical experience; many start working in agricultural policy institutions without attachment to 'real life'. Direct research commissions from the industry (what used to be a frequent practice) have almost completely disappeared. Agricultural faculties are not research oriented anymore, whilst research institutes struggle for survival with rapidly decreasing R&D budgets.

The content and actors of knowledge transfer have changed radically. Much of the knowledge and information that is required today for sustainable rural development is rather complex, and impossible to create and distribute in traditional ways through the 'official AKS'. At the same time a whole range of network-based, bottom up institutions are emerging, especially in the field of sustainable agriculture and rural development. They are filling (or could potentially fill) many of the information and organisational gaps left by the 'official/traditional AKS'. Nevertheless, until now they have had little support and little influence.

Shortages

The lack of co-ordination was discussed in detail in the previous section. Both horizontal and vertical co-ordination is lacking from the system, especially in the field of agricultural extension and advisory services. There are many information and communication gaps and overlaps, and the system is complicated and inefficient. As a result, complex, quality advice is only available on a commercial basis.

The lack of stability in AKS means an ever changing institutional, legislative and financial environment and a consequent bureaucratic inefficiency. Changing political leadership (government, minister, or even a state secretary) implies the change of a significant part of the administrative staff within Ministries. Also, many officials are young graduates employed on short-term contracts. High workload and responsibility coupled with low pay and security all contribute to high turnover of staff in governmental institutions, resulting in the inevitable loss of knowledge and experience. Politics in Hungary often interferes with policy implementation, trying to gain political capital, through timing (accelerating or slowing payments), changing rules, favouring some socio-economic groups over others. For that control and responsibilities cannot be delegated, but have to be concentrated in the centre. Central administration, however, often lacks sufficient resources to actually exercise control, resulting in inefficient, rigid, red-tape bureaucracy, stopping learning, bottom-up initiatives and information exchange.

A lack of trust within the policy system is another serious problem, making both horizontal and vertical co-operation difficult. There is an institutional rivalry between the VM and ARDA and even between the central and the regional ARDA offices. Bureaucratic transparency and normative control is often forced over policy objectives, and there is a serious lack of trust towards beneficiaries too. Risk is normally passed down the line to beneficiaries by an almost hostile institutional environment; reflexivity and customer-friendliness are lacking. At the same time, governmental institutions can ignore deadlines for making decisions or payments or make other mistakes without any explanation.

A lack of intention to enhance social learning is also apparent. When it comes to policies for sustainable agriculture and rural development, the real emphasis is always on financial aspects and never on changing behaviours, approaches, enhancing capacities, building networks, in other words on social learning (Ison *et al.*, 2004; Korten, 1984). According to international experience, financial incentives alone are normally not sufficient to achieve long-term structural changes. Funds should primarily be used to raise interest, to buy people into the scheme, develop trust and a certain level of dependency. Then through training, advice, positive feedback, social networks and other tools, to achieve positive changes in behaviour, approach and practices becomes possible. Thus, the programme results in social learning, often contributing to the development of the communities involved, and may lay the foundations of long-term structural changes. However, it requires a thoughtful strategy, well-built institutions, educational material, and regular and conscious work that cannot be assured solely through funds. This kind of approach is normally missing from the Hungarian AKS and the policy system.

Owing to several factors, in rural development AKS (concerning the third axis of the RDR and LEADER) the situation is somewhat better. Firstly, social learning and the development of local networks is so deeply embedded in the LEADER methodology that not even a hostile environment can suppress it completely. Secondly, rural society had been promised this policy many years before the kick-off of the actual programme, thus the philosophy became widespread, preparing the ground for networking and social learning. Finally, compared to other policy areas this programme has a very low budget, making it uninteresting to strong traditional lobbies (agricultural; construction called the 'concrete lobby' in Hungary; environmental). Therefore the policy remained a playground for politicians and state administration, resulting in constantly changing rules, regulations and processes leading to continuous uncertainty and an obscure future. These circumstances outlined above are not ideal for policy implementation. However, they can still enhance local creativity, social learning, networking and the professionalisation of local agencies, at least in some fields.

Learning and Innovation Networks for Sustainable Agriculture - A way forward?

To answer emerging challenges by knowledge needs of sustainable agriculture normally unanswered by official AKS, many kinds of network-based alternatives have appeared in Europe. Some were emerging within existing research and extension services, others were commercial, or bottom-up NGO kind initiatives. In the SOLINSA project we call these LINSAs. LIN (Learning and Innovation Networks) refers to the way of operation, when organisations create and distribute knowledge and innovation, based on networks, social learning, and communities or networks of practice (Brunori *et al.*, 2011). SA (Sustainable Agriculture) refers to the topic of action including social, economic and environmental sustainability.

The SOLINSA working definition for LINSAs is as follows:

LINSA are networks of producers, customers, experts, NGOs, SMEs, local administrations, as well as official researchers and extensionists, that are mutually engaged with common goals for sustainable agriculture and rural development - cooperating, sharing resources and co-producing new knowledge by creating conditions for communication. (Brunori *et al.*, 2013).

Using a set of selection criteria (e.g. scale, complexity, incremental or radical innovation, top-down or bottom-up origin) 17 such networks were selected from across Europe for in-depth, qualitative action research. One of the goals of the research is to conclude with a more developed profile of an ideal LINSA, based on our fieldwork.

Since LINSAs in Hungary are hardly recognised for their potential in creating and channelling knowledge and information, there are virtually no governance mechanisms for their support. In the rural development arena (LEADER) there is a strong central governance aimed at the implementation of the RDR. Nevertheless, it does not recognise LAGs as LINSAs at all, let alone their networks or cooperations. Cooperation and information exchange between the VM (the policy makers), ARDA (the controllers) and the LAGs (the implementers) is rather poor. In the field of environmental NGOs governance is quite different. However, according to a study on the implementation of the Hungarian Agri-environmental Programme, there was an important alliance between the Ministry of Agriculture and Water Management (MEW - now part of the Ministry of Rural Development, VM) and the environmental NGOs (Nemes, 2010). This was based on historical co-operation, a common political platform, and a mutual understanding of common approaches towards conservation. Many previous activists, founders of NGOs, were latterly working in the MEW, even at high political levels. Personal contacts persist and assist co-operation. This greatly reinforced the environmental movement and its influence on policy making in Hungary at the end of the last decade. As an interviewee said: 'The Ministry and the large NGOs supported each other with information and expertise. Also, the MEW ensured funding for programmes and maintenance, and the NGOs could say things in the media that the Ministry could not for political reasons ...'

To have efficient support for LINSAs, a significant change in evaluation and monitoring of the results of rural-agricultural policies into a complex, methodologically thorough direction that at the same time provides for more qualitative analysis would be needed (High and Nemes, 2007). This could offer legitimacy for changing the currently prevailing focus on spending the money in a (top-down) transparent way and creating a mass basis to protect political positions, towards actually evaluating complex socio-economic and ecological outcomes of policies, against an accurate baseline. This could force policy makers to acknowledge the importance of social learning and achieve more support for LINSAs and sustainable rural development in general in Hungary.

Reflections on Hungarian AKS in the context of Europe

In the SOLINSA Project the AKS in Europe was described in six country studies (including the Hungarian) and an overall European policy review. An in-depth comparative analysis based on these reports (Hermans *et al.*, 2011) drew some overall conclusions concerning the European AKS.

There are large differences within Europe (and even within individual countries) concerning AKS, however, a certain level of fragmentation is quite characteristic. For some countries (England and the Netherlands) fragmentation is the result of a process in which the traditional roles of the AKS actors (research, extension and education) have slowly dissolved and become more entangled. This could be seen as a natural evolution of the system, based on decentralisation. Hungary, together with Latvia, however, represents the other extreme, where publicly funded extension services still hold an important position in AKS and the reported fragmentation is not so much the result of the lack of steering mechanisms, but it is more of a lack of political interest combined with limited funds.

Many countries reported difficulties with regard to the position of agricultural education and its role amongst traditional AKS actors of research and extension. These arise from either a lack of funds, or a lack of interest from students (or a combination of both). This difficult situation is further exacerbated by the absence of links between businesses and agricultural schools. It indicates that cooperation between these two types of organisations is perhaps not easy. Businesses commonly complain that the agricultural curriculum that is taught does not match agricultural practices. Hungary is no exception in this regard, and with its strong tradition of state funded institutes in agricultural education and research the decay of the system is all the more visible.

With regard to the support of LINSAs, it can be concluded that networking, knowledge co-creation and collaboration between different partners is very popular across the different countries, although its practical implementation is fraught with difficulties. Some of these are related to differences in organisational culture that make the collaborative process itself problematic, while others are rooted in the (lack of) institutional support or the organisation of the knowledge market or the type of links between the different parts of AKS. In Hungary, as a result of the centralised system, LINSAs have serious difficulties to get support or deliver knowledge and information to the official AKS. There are some exceptions to this rule, however, mainly in those areas where the official AKS has little tradition, such as biological production.

Drawing on the European comparison and on our country study we can say that Hungarian AKS is one of the more conservative, centralised systems in evidence, and is thus slow to react to new challenges and needs. Nevertheless, there are many alternative networks, processes experimenting with new directions, building up various nets of actors that are likely to become increasingly important actors for the official AKS too. These alternative networks and processes (LINSAs), and their communication with the official system is the subject of our ongoing research effort in this area.

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Rural Renaissance: an integral component of regional economic resilience

Rural employment based on a broad mix of industry sectors contributes to the adaptive ability of regions. Research carried out in the rural localities of eight contrasting case study areas in Bulgaria, France, Hungary, Romania and the UK reviewed a number of non industry sector-specific factors that can influence rural employment potential. These can be grouped into two categories. Firstly, those that affect labour supply (via the workforce and labour market), and secondly, those that affect enterprise and economic dynamism. Notwithstanding the diversity of the case study areas, some general conclusions about the impacts of these factors on rural employment can be drawn. Commuting and migration flows are complex and are affected by a number of different driving forces, such as young people seeking education and training, people seeking jobs, and people (including retirees) seeking a better 'quality of life' in rural areas. Thus demographic trends can be both a consequence of (via out-migration owing to lack of jobs), or a driver of (via in-migrants constituting new markets) rural job and employment trends. The potential for job creation in rural areas is strongly influenced by the levels of entrepreneurship, innovation, skills, business support and training in the territory. Lower population densities can impede the delivery of education and skills training. As most European Union regions include both urban and rural localities, the implementation of a smart, sustainable and inclusive regional development strategy must include a specific 'Rural Renaissance' component if regional economic resilience is to be achieved.

Keywords: rural employment, labour supply, enterprise, economic dynamism, European Union

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Introduction

Pendall *et al.* (2008) suggested that it is most precise to call a region 'resilient' if, when faced with a challenge, it responds in ways that maintain or even increase good outcomes. They define resilience as 'the persistence of some phenomenon in the face of some stress' (p.3). As Walker (1998) observes (p.187), 'any discussion of resilience ... must be prefaced by the question, 'The resilience of what to what?' ... The system needs to be defined in terms of (1) the variables that describe the state, and (2) the nature and measures of the external shocks'. Using the driving force, pressure, state, impact and response (DPSIR) model, this paper adopts Walker's approach to illustrate the contribution an effective rural development policy can make to regional economic resilience.

The Fifth (European Union, EU) progress report on economic and social cohesion (EC, 2008) used the NACE 30 sector¹ breakdown to identify EU high growth industry sectors in terms of average annual change in employment and average change in gross value added (GVA). Amongst 'drivers of economic growth', including sectors where an increase in one factor balanced any decline in the other, *Business activities* (K) and *Financial services* (J) had high productivity levels; *Trade* (G); *Hotels and restaurants* (H) and *Transport and communication* (I) had either high employment or GVA growth and average productivity; *Construction* (F) experienced strong employment growth combined with a fairly strong but below average GVA growth; and three high and medium-high tech *Manufacturing* sectors (DG, DL, DM) achieved high GVA growth despite a decline in employment. By contrast, EC (2008) notes that many sectors traditionally associated with rural areas have posted declines both in employment and GVA as an average of GVA in the

EU-27, such as: *Agriculture* (A) and *Fishing* (B); *Mining and quarrying* (C); *Manufacturing of food* (DA), *wood products* (DD), *basic metals* (DJ) etc.; and *Electricity, gas and water supply* (E).

These trends, if projected forward, imply that future employment growth in rural areas, if based on these traditionally 'rural' sectors, would be lower than in urban centres. Whilst this analysis was carried out before the economic recession, which is known to have caused particularly high job losses in sectors such as financial services, construction and logistics, the results are consistent with the employment predictions of a recently published report on skills supply and demand in Europe (Cedefop, 2010) which noted that, despite the recession, 'many of the underlying sectoral trends are so robust that they are not expected to change radically' (p.55).

The results of this sectoral analysis might appear to justify the 'growth pole' approach to regional development in which larger urban centres will disproportionately drive employment growth in geographical space. New jobs would be located at the growth poles and commuting would be facilitated by improved transport infrastructure (Parr, 1999a). Experience, however, has shown that the net effects of growth poles on their hinterlands are not necessarily favourable (Parr, 1999b). In fact in many regions such an approach has proved ineffective. Courtney *et al.* (2007) were not able to confirm even the widely held view that 'market towns' can act as 'sub-poles' for their rural hinterlands. Furthermore, in many parts of the EU, so-called 'remote' rural areas are not part of a 'labour market area' with a major urban centre (e.g. Radvánszki and Sütő, 2007).

Pender *et al.* (2012) reviewed several 'conceptual frameworks' for wealth creation and rural livelihoods and noted that difficulties exist in linking 'community factors' with 'more macro-level political factors, policies, and programs influencing them' (p.71). To overcome this, Fieldsend (2010) used the DPSIR model (which has been widely adopted with

¹ i.e. including the sub-sectors of manufacturing but excluding extra-territorial organisations and bodies.

environmentally oriented indicator sets) to show the theoretical link between ‘*driving forces*’ (such as skills levels) which affect economic prosperity, and policy *responses*. Employment represents the *state* in the model. This has an *impact* on economic prosperity and other issues such as social cohesion, which in turn influence policy (and socio-economic) *responses*. The DPSIR approach was preferred to alternatives, such as the ‘pyramidal model of regional competitiveness’ described by Lengyel (2009), as it captures the ‘feedback loop’ whereby responses (such as policy responses) can be applied (especially) to driving forces.

Addressing point (1) of Walker (1998), a measure of economic resilience could be the maintenance or increase of economic prosperity, as quantified by widely used indicators such as *personal income per capita* and *housing (crowding)*, measured as persons per room (Fieldsend, 2010). Consistent with the DPSIR model, Simmie and Martin (2010) used employment resilience as a proxy for economic resilience in their Cambridge and Swansea case studies. Separately, Fieldsend (2012) demonstrated a positive correlation between employment rate and GDP per capita of EU NUTS2 regions.

Simmie and Martin (2010) stress the importance to regional resilience of ‘adaptive ability’, of which sectoral variety can be a component. Although rural areas are often perceived to be economically dependent on only a few sectors, notably agriculture but also others such as tourism and mining, the evidence is that the economies of many if not most rural areas in the EU have a sectoral diversity approaching that of urban centres. For example, data disaggregated by NACE code and town/village location are available from the Hungarian Central Statistical Office 2005 microcensus for urban and rural areas in Hungary (2.68 and 1.67 million working inhabitants respectively). The employment profile of the villages is remarkably diverse. The most notable difference in employment profile is, as would be expected, in *Agriculture and related industries*, which accounts for 2.8 per cent of employment in Budapest and the towns, and 9.4 per cent in the villages. The percentage of jobs in *Mining and quarrying* in the villages is double that in Budapest and the towns, although the total number of jobs is small (0.4 c.f. 0.2 per cent). Notably, however, *Manufacturing* accounts for 27.1 per cent of jobs in the villages and just 20.2 per cent of jobs in Budapest and the towns. Three other sectors, *Construction; Transport and related industries* and *Public administration etc.* are marginally more highly represented in the employment profile of the villages. As these data are presumably based on the location of the worker’s residence rather than of the workplace, they may to some extent reflect the dependence of rural inhabitants on urban jobs, but they still imply that the sectoral diversity of the rural economy is greater than is commonly believed.

The case study results of Simmie and Martin (2010) suggest that endogenous sources of new knowledge combined with market driven and conscious entrepreneurial decisions could be among the key factors for understanding regional economic resilience. In the ‘adaptive cycle model’ described by Pendall *et al.* (2008), during the regional growth (‘exploitation’) phase productive, human and knowledge capital are accumulated. The ability of a locality to acquire and retain human capital (i.e. the skills and knowledge possessed by

workers) is a significant determinant of its ability to contribute to regional resilience. In line with this, the Index of Economic Resilience developed by Ekosgen (2009) measures resilience across five domains: industry mix, the workforce, enterprise, labour market and economic dynamism.

There is a need for more research on the role of rural areas in regional resilience. This paper discusses the factors affecting, firstly, labour supply (via the workforce and labour market) and secondly, enterprise and economic dynamism in rural areas. Rural Renaissance, i.e. mobilising the Strengths and Opportunities associated with these factors to promote sectoral diversity, is proposed as an approach to improving rural and regional resilience.

Methodology

The EU Framework 7 project ‘RuralJobs’ (www.rural-jobs.org) carried out case study research in Bulgaria, France, Hungary, Romania and the UK (Figure 1) to assess the potential for new sources of employment in rural areas. To maximise the representativeness of the results at EU level, the research was carried out in the rural territories of eight contrasting (in terms of GDP per capita, accessibility to urban centres of 50,000 or more inhabitants, and population density) case study areas (Table 1). Where possible, each case study area consisted of a ‘labour market’ or ‘employment’ area, as follows: ‘Travel to Work Area’ (TTWA) in the UK (Bond and Coombes, 2007); ‘Local Labour System’ (LLS) in Hungary (Radvánszki and Sütő, 2007); and ‘agglomeration area’ (AA) in Bulgaria (Anon., 2007). In France, a ‘Pays’ is the result of a collective bottom-up approach with regional



Figure 1: Locations of the RuralJobs research. Results from Andalusia Region and Lithuania are not included in this paper.

Table 1: Case study areas included in the RuralJobs research and their typology.

Name of case study area	Type*
1. Chelmsford and Braintree TTWA, UK	High GDP intermediate - accessible
2. Thames Gateway South Essex, UK	High GDP urban - accessible
3. Pays de Tulle, France	High GDP predominantly rural - accessible
4. Pays de Guéret, France	High GDP predominantly rural - remote
5. Pazardjik agglomeration area, Bulgaria	Low GDP intermediate - accessible
6. Hajdúszoboszló LLS, Hungary	Low GDP predominantly rural - accessible
7. Karcag Local Labour System, Hungary	Low GDP predominantly rural - remote
8. Bistrița-Năsăud county, Romania	Low GDP predominantly rural - remote

* GDP: +/- 50 per cent of the EU-27 average; for population density and accessibility thresholds see Dijkstra and Poelman (2008).

approval of its boundary. Only in Romania was it necessary to use a NUTS3 region as a case study area.

Information was gathered from (a) interviews with local actors, (b) quantitative data sets and (c) previously published (mainly local) studies. Approximately 20 interviews were conducted in each case study area in late 2009 and early 2010 (see Fieldsend, 2011). Interviewees were selected by the local research teams as being recognised local experts in rural employment. The results were used to conduct a SWOT analysis of rural employment potential in each case study area. A SWOT analysis based on the components of the DPSIR loop (Figure 2) can, in the words of Walker (1998), show the ‘state and nature’ of factors that influence the susceptibility of (rural) employment to ‘external shocks’. The *internal audit* (Strengths and Weaknesses) was based on the ‘assets’ of the case study area, i.e. the ‘driving forces’ which are internal to the DPSIR loop. The *external audit* (Opportunities and Threats) was based on factors influencing change in the rural economy (and therefore rural employment) in the case study area.

Results and discussion

The non sector-specific factors influencing rural employment potential can be grouped into two categories. Firstly, those that affect labour supply (via the workforce and labour

market), namely demographic trends, commuting and migration, and secondly, those that affect enterprise and economic dynamism. For each category the research identified both Strengths / Opportunities and Weaknesses / Threats in most territories (Table 2).

Demographic trends, commuting and migration

In the Chelmsford and Braintree TTWA the population of the rural areas increased more rapidly than that of urban areas between 2001 and 2007. Rural areas are seen as pleasant places to live and work, as shown by the following Strengths: ‘*Pleasant living environment*’ and ‘*High quality of life/life-style*’. Major population increases are planned for Thames Gateway South Essex. In Pays de Tulle since 1999 there has been a slight reversal in the long-term trend of population decline and the population has stabilised in Pays de Guéret since 1999. In both cases there has been a slightly positive net in-migration rate including a significant number of retirees. A Strength of the former is ‘*Pleasant surroundings*’ and of the latter is ‘*Pleasant living environment*’, both of which include the natural environment as well as physical capital and neighbourhood services. In Pazardjik AA in the period 2001-2007 rural population decline was greater than in urban areas. The slight decline population decline in the ‘accessible’ Hajdúszoboszló LLS contrasts with a stronger decline in Karcag LLS where ‘*Depopulation, high rate of migration*’ is a Threat. Rural population decline exceeding that in urban areas was also recorded in Bistrița-Năsăud county.

The two components of population change are ‘permanent’ migration and natural balance, and migration is listed by Fieldsend (2010) as a socio-economic *response* in the DPSIR model. Although there are contrasting demographic trends between the western and eastern EU case study areas, all studies noted a tendency for younger people to seek edu-

Table 2: Presence in each RuralJobs case study area of non sector-specific factors affecting employment in rural areas. See Table 1 for identities of case study areas.

Sector	Case study area							
	1	2	3	4	5	6	7	8
<i>Demographic trends, commuting and migration</i>								
Strength / Opportunity	♦		♦	♦	♦		♦	♦
Weakness / Threat	♦			♦	♦	♦	♦	♦
<i>Enterprise and economic dynamism</i>								
Strength / Opportunity	♦		♦	♦	♦		♦	♦
Weakness / Threat	♦	♦	♦	♦	♦	♦	♦	♦

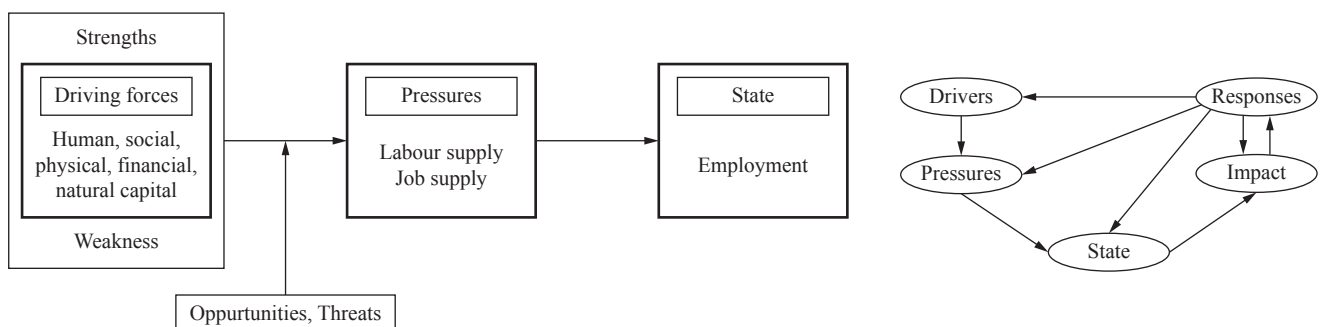


Figure 2: Relationship between the components of the SWOT analysis for rural employment and the DPSIR loop (inset).

cation or work outside rural areas. Contributing Weaknesses include 'Poor access to further and higher education' in the Chelmsford and Braintree TTWA, 'Exodus of young people for training and education purposes' in Pays de Guéret and 'Lack of sustainable livelihood boosts the migration movement and affects the demographic situation' in Pazardjik AA. Hajdúszoboszló LLS and Karcag LLS cite 'Aging population and high rate of migrations' and 'Migration of young and highly qualified people' respectively. It should be noted that many young people move to urban centres as they prefer an urban lifestyle (EEDA, 2008), and may move back to rural areas later in life either when they have a family or at retirement (Bosworth, 2010). However, irrespective of 'type' of case study area many young (and older) people would prefer not to move. The Threat to employment, via the creation of a 'low-skills equilibrium' is correctly recognised in Pazardjik AA: 'Departure of the young people from the rural areas and an increase in permanent unemployment, which leads to degradation of indispensable working behaviour and weak interest from the entrepreneurs to set up business there'.

Some Opportunities arising from migration of other groups were noted. In both Pays de Tulle and Pays de Guéret, 'Many incoming recently retired people have significant financial capital which can be mobilised for local projects'. Some 'Corréziens' have migrated out of Pays de Tulle for various reasons but they keep a strong attachment to the region and can 'Mobilise potential (savings, capital, image) for the benefit of the territory'. The 'Arrival of a new population of Mahorais' (i.e. from the French *département d'outre-mer* of Mayotte) has brought an influx of young people into Pays de Guéret.

Changes in the supply of workers do not necessarily lead to similar changes in employment rates owing to factors such as commuting and temporary (including international) migration. Fieldsend (2010) listed commuting as another socio-economic response in the RuralJobs DPSIR model. Commuting between rural areas and urban centres is mainly in the direction of the latter, and this can serve to obscure the lack of jobs in many 'accessible' rural areas. For example, in the Chelmsford and Braintree TTWA, where the rural employment rate in 2001 was 74.6 per cent, the jobs density was just 0.50, compared to 0.77 in urban areas. In other words, there was one job for every two people of working age. Commuting to urban centres within the case study areas as an important means of maintaining rural employment was also reported in Thames Gateway South East, Pays de Tulle, Pays de Guéret and Pazardjik AA (in the latter 'Mobility and flexibility of the working force and its propensity to commute daily instead of permanent leave of the region' is an Opportunity), and is evidently important (and noted as a Strength in the SWOT analysis) in the settlements in central Bistrița-Năsăud county. For example, about 70 per cent of the 4,500 employees of the multinational company Leoni, based in Bistrița city, are recruited from surrounding rural areas. Commuting to larger urban centres outside the case study area is especially significant in the Chelmsford and Braintree TTWA and Thames Gateway South East (to London) and in Pazardjik AA (mainly to Plovdiv). In Hajdúszoboszló LLS approximately 24 per cent of those in employment commute out of the case study area, and in Karcag LLS around 13 per

cent (some of them long distances from this 'remote' case study area).

The RuralJobs case study area reports discuss the various reasons for commuting, which range from a desire to have a particularly highly-paid job (for example in London) or a job in a particular specialism to having any job at all (for example some long-distance commuters from Karcag LLS). There can be no suggestion that commuting could or should be completely eliminated and indeed in some RuralJobs case study areas better communications infrastructure could help to improve access to jobs. This may be especially appropriate to regions where employment in agriculture is declining rapidly. A report by the Foundation for the Development of Polish Agriculture (FDPA), cited by Weingarten and Baum (2005), stated that it is a 'fallacy to imagine that sufficient non-farm jobs can be created in rural areas to absorb those exiting the agricultural sector' (p.148), and the evidence from the case study areas supports this point. However, in areas like the Chelmsford and Braintree TTWA where around 12.6 per cent of those travelling to work from rural areas can be classed as long-distance commuters (i.e. a journey time of 45 minutes or more), the carbon footprint is incompatible with the aspiration of a low-carbon economy, quite apart from the negative consequences on work-life balance. Furthermore, commuting is only an option for those rural residents with means of mobility and/or where the financial cost of commuting can be afforded.

The RuralJobs data demonstrate, however, that commuting patterns are often complex (see also EEDA, 2008), including journeys within and between rural areas and also 'reverse-commuting' from urban centres to rural areas. The latter was noted in Hajdúszoboszló LLS, where company leaders and managers commute to work from Debrecen as the 'quality of life' is perceived to be better in the city. In the Chelmsford and Braintree TTWA it is frequently associated with businesses (particularly knowledge-based) that are newly established in rural areas. Availability of a skilled workforce can be an important component of the business strategy of an entrepreneur, and the lower population densities of rural areas make it much less likely that sufficient suitably-qualified people will be available. Thus, such businesses are often set up where urban-based staff can be recruited. This point is often picked up by those opposing economic development in rural areas who stress that such developments do not create local jobs for local people. In time, however, jobs can indeed be created in rural areas. Firstly, the entrepreneur (if he/she does not already live there) and at least some of the employees may eventually move to live in the rural area. Secondly, as the business grows it may recruit lower-skilled staff (office staff, cleaners etc.) from the locality.

In Pazardjik AA even the urban centre may not provide adequate numbers of jobs: 'The main urban centre (Pazardjik) currently may not bid high quality and attractive occupations for the workers from rural areas' is a Weakness there. However, it is in 'remote' case study areas that the lack of commuting opportunities really exposes the lack of rural jobs. 'Scarcity of job offers in very rural areas' and 'Low local incomes' are Weaknesses in Pays de Guéret. The worst case scenario is where this coincides with a complete lack of

local job creation potential, such as in Hajdúszovát, a mainly agricultural community in Hajdúszoboszló LLS. Here, RuralJobs research shows that ‘improvement in the labour market situation cannot be expected for several reasons’ such as geographical location and accessibility, and decline in the working age population can be expected to continue. In Bistrița-Năsăud county, according to the long-term demographic perspectives of the National Institute of Statistics, in 2050, the total population will decrease to 74.7 per cent of the 2007 level and the share of working age population (15-64 years) will decrease from 69.4 per cent to 55.7 per cent. This means that over the next 40 years the working age population will decline by about 40 per cent. Weingarten and Baum (2005) assessed the ‘chances for remote, non diversified rural areas ... to be rather bad’ (p.149). Taken together with the ‘robust trends’ observation of Cedefop (2010), in some localities, in lieu of economic regeneration, a social policy designed to manage the consequences of rural economic decline (such as providing adequate levels of old age pensions and healthcare) may be the only appropriate option.

Temporary (including seasonal) out-migration to access work was significant in some eastern EU case study areas. In Pazardjik AA international emigrants (mainly to Spain, Greece and Italy) for the period 2000-2007 is estimated at about 7-8 per cent of the total population. In Feldru, a village in Bistrița-Năsăud county, the figure was thought to be as high as 30 per cent of the economically active population (mainly to Spain and Italy) and ‘High migration rate of the active population’ is a Weakness in the case study area. International migration can have social consequences and economic benefits. The relative macro stability, investment costs and income livelihood in Pazardjik AA are significantly enhanced by the remittances of the emigrants. In Bistrița-Năsăud county the community attachment of the labour migrants is strong as they do not leave the village for good but buy a house or some land, working in the same time abroad. In both case study areas international migration has significantly contributed to reducing local unemployment.

In the Essex case study areas the number of temporary in-migrants (mainly from Poland) has been relatively low but they have been recognised as important to the economy (Legrain, 2008). Free movement of labour, a fundamental right in the EU, has therefore led to more employment for those coming from rural areas, although the jobs themselves may not be rural jobs. The importance of international migration to rural economic prosperity confirms the need for flexibility, part of European Employment Guideline 7: Increasing labour market participation and reducing structural unemployment (EC, 2010). However, in Bistrița-Năsăud county, at least, it is not general that international migrants return home and establish a business and the potential Threat to the viability of rural communities (‘International labour migration of the young people can lead to the depopulation of the villages’) is recognised.

Enterprise and economic dynamism

‘Many potential entrepreneurs in the area’ is a Strength in the Chelmsford and Braintree TTWA. In Pays de Tulle, a Strength is the ‘Strong, solid fabric of very small, small, and

medium-sized companies’ but the ‘dynamic’ of the territory is sub-optimal, as ‘Economic fabric with low potential for fast development (not many ‘gazelles’)’ is a Weakness and there is little entrepreneurial spirit. The potential for innovative growth is low and some companies, such as in general mechanical engineering, are too dependent on single customers. In Pays de Guéret the ‘Dynamic fabric of SMEs and very small structures with a primarily local market’ is a Strength but there is also a ‘Lack of structuring of local stakeholders and of innovative spirit’. RuralJobs research in the UK and France noted concerns among actors about business succession in rural areas, especially amongst companies in ‘traditional’ sectors (such as manufacturing and construction as well as agriculture). ‘Non-takeover of companies and farms whose company director is old, without potential takeover managers, loss of know-how’ is a Threat in Pays de Tulle and Pays de Guéret. Regarding business support, ‘Businesses have inadequate access to knowledge’ and ‘Poor business support’ are Weaknesses in the Chelmsford and Braintree TTWA, reflecting a feeling amongst businesses that business support services do not understand their needs. ‘Existence of business support creation mechanisms’ is a Strength in Pays de Tulle but ‘Lack of forecasting tools to attract creators of businesses, to create a dynamic and import manpower’ and ‘Large number of territorial echelons’ are Weaknesses, while in Pays de Guéret there are ‘Numerous initiatives, infrastructures and schemes to attract businesses’. Indeed it is commented that there are perhaps too many schemes.

In Pazardjik AA entrepreneurship is ‘subdued’ but ‘High percentage of people with working experience in the EU, with entrepreneurial experience’ (who may set up a business on their return) is a Strength in Bistrița-Năsăud county. Lack of business support and cooperation is a general concern in the eastern EU case study areas, for example ‘Administrative barriers which encumber the evolution of entrepreneurship’ in Pazardjik AA, ‘Extreme bureaucracy further weakens the economy’ in Hajdúszoboszló LLS, ‘Unfavourable political environment and inconsistency’ in Karcag LLS (where ‘Strengthening multi-level regional cooperation’ is needed) and ‘Unfavourable taxes and legislation for the business environment’ in Bistrița-Năsăud county. In the latter, ‘Lack of development strategies and sustainable views in many communes’ along with ‘Incapacity of local actors to create partnerships in order to attract funds and implement joint projects’ are Weaknesses. This incapacity is considered to be, besides the effects of the economic recession, the most important menace in the evolution of rural employment in the case study area. ‘EU funding’ is an Opportunity for job creation and communes with a negative approach to cooperation will lag behind as more funding is channelled through the Leader programme and Local Action Groups. Many case study area reports, both from the western and eastern EU, note a lack of rural business development sites (incubators) in their case study areas.

Two consequences of the loss of young people which can reduce the ‘dynamic’ of rural areas have already been mentioned. Firstly, an ageing population (noted as a Weakness in Pays de Tulle) and secondly (most noticeable in high GDP case study areas) in a lack of skills to meet demand. In the Chelmsford and Braintree TTWA ‘High percentage

of the young people capable of going on to graduate education' is a Strength but 'Poor skills level of local workforce' is a Weakness. Skills mismatches are reported in other case study areas. 'Low skilled workforce' is a Weakness in Thames Gateway South Essex, as is 'Discrepancy between the job offers and the qualification of locally-available labour' in Pays de Tulle, while 'Skilled labour is scarce' (and difficult to attract to the area) in Pays de Guéret. Whilst the fact that 'Young people are keen to return to the area' is a recognised Opportunity in Pays de Guéret, there are very seldom positions available for their level of qualifications. Similarly, in Bistrița-Năsăud county there are 'Few jobs in the rural area for young people with higher education'. In Karcag LLS, the highly skilled workers cannot find jobs and therefore those who otherwise would be satisfied with lower wages are also forced to leave.

More generally, the 'Quality of the workforce' (reliable, locally trained, stable in the company etc.) is a Strength in Pays de Tulle and Pays de Guéret although 'Low workforce mobility' is a weakness. Pazardjik AA has a 'Relatively cheap and qualified workforce' but 'Stereotype of the people and faint social capital' is a Threat. In Hajdúszoboszló LLS and Karcag LLS a Weakness is the 'High rate of disadvantaged people dealing with employment difficulties' (young people, elderly workers, Roma etc.) Consequences of this are 'Generation growing up in a passive environment' in Hajdúszoboszló LLS and 'Situation of people living on the periphery becomes impossible' in Karcag LLS. In this situation young people tend to have low aspirations and, reinforced by negative peer pressure particularly among males, they may even lack basic literacy and numeracy. For those with a desire to work, relocation from an unfavourable settlement to places that have more job opportunities is prevented by the fact that in Hungary housing prices are higher in the economically more developed settlements.

Several concerns were expressed by interviewees about education and training, namely 'Delivery of, and access to, training are not properly adapted to rural needs' and 'Educational results poorer than in urban centres' in the Chelmsford and Braintree TTWA, 'Mismatch between the training available and the actual job market in the area; lack of local vocational training infrastructures' in Pays de Guéret, and 'Education is not corresponding to labour market demands' in both Hajdúszoboszló LLS and Karcag LLS (where 'Education, professional trainings suited to labour market needs' is an Opportunity). Frequently, the major problem is not the provision of training courses, but the fact that they are not in a form that rural people can conveniently access. Conversely, the low population densities in sparse rural areas inevitably make it difficult to create a 'critical mass' of demand.

The economic recession has been identified as a Threat to rural employment in many case study areas: 'Economic recession' in the Chelmsford and Braintree TTWA, 'Vulnerability of small rural enterprises' in Thames Gateway South Essex, 'Negative consequence of the economic crises' in Hajdúszoboszló LLS, 'Amplification of the negative effect of the international economic crises' in Karcag LLS and 'Many firms reduce their activity and release personnel because of the economic crises' in Bistrița-Năsăud county. However, in the Chelmsford and Braintree TTWA, Pays de Tulle and

Pays de Guéret there is evidence that rural businesses, owing to the fact that they tend to be smaller and often family operated, have been less likely than urban businesses to make staff redundant and indeed in the former case study area many small rural businesses are already considering expansion (see also CRC, 2010).

Conclusions: towards Rural Renaissance

Commuting and migration flows between rural and urban areas are complex and are affected by a number of different driving forces, such as young people seeking education and training, people seeking jobs, and people (including retirees) seeking a better 'quality of life' in rural areas. Thus demographic trends can be both a consequence of (via out-migration owing to lack of jobs), or a driver of (via in-migrants constituting new markets) rural job and employment trends. The potential for job creation in rural areas is strongly influenced by the levels of entrepreneurship, innovation, skills, business support and training in the territory.

Fieldsend (2011) proposed that a rural job creation policy should mobilise opportunities provided by 'natural capital' (a stock of natural resources - such as land, water, and minerals - used for production) as a component of a wider regional development strategy. In most instances this will mean promoting a broad mix of sectors within rural areas. While different types of rural areas will follow different routes to economic prosperity depending on their local circumstances, and the 'production' roles of rural areas (e.g. agriculture, forestry and mining) will remain a significant part of the rural economy, the 'consumption dynamic' associated with multifunctionality (characterised by tourism and leisure, and people choosing to relocate to rural areas to start a business, see e.g. Johnson and Rasker (1995) and Bosworth (2010)) is becoming increasingly important to rural job creation in many areas.

This latter trend, called 'commercial counter-urbanisation' by Bosworth (2010), is part of a wider process of 'Rural Renaissance' and is fundamentally different from 'counter-urbanisation' (which is associated with commuting) in that the rural area is the place of both residence and economic activity. Job creation arising from Rural Renaissance can take several forms, sometimes following on from counter-urbanisation. For example, many businesses and local authorities are encouraging employees to work from home, thus cutting both their corporate accommodation costs and CO₂ emissions from commuting. The economic activity may therefore *de facto* be transferred to a rural area. Home-based working remote from the office (teleworking) can help to keep more money from salaries earned in urban areas in the rural community as the incidence of 'trip-chaining' (Champion *et al.*, 2009), i.e. linking commuting with shopping, leisure activities etc. is reduced.

Regional resilience can be considered as an ongoing process rather than a recovery to a (pre-existing or new) stable equilibrium state (Simmie and Martin, 2010). This shifts the theoretical analysis from questions about how a system such

as an economy is *resilient* to how it *adapts* through time to various kinds of stress. As providers of farm produce and other raw materials such as coal, of open space for recreation, and of 'ecosystem services' such as biodiversity and climate change mitigation, rural areas are an indispensable component of regions. They can have a 'multifunctional' role in regional sustainability over and above their economic activity, for example in the form of open space for recreation. Rural areas cannot be disregarded when a strategy for regional resilience is being formulated. The long-term decline in employment in traditional 'rural' sectors represents a significant stress to which rural areas must adapt. If they can successfully do so, through job creation in a broad mix of industry sectors, they can strengthen the 'adaptive ability' of the region as a whole.

Rural Renaissance, a territorial approach that addresses issues such as the quality of life in rural areas and encourages rural enterprise and economic dynamism, can help to stimulate rural job creation and in turn strengthen regional economic resilience. Through this process, rural areas can be part of a smart, sustainable, inclusive - and resilient - regional economy, delivering high levels of employment, productivity and social cohesion.

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Patrick KÜPPER* and Winfried EBERHARDT*

Village shops: outdated or revived model? Relevance for local supply, social functions and economic viability

An increasing number of villages in many countries do not have any local supplier at all. In the retail sector of Germany, the large supermarket companies require at least 5,000 inhabitants in the catchment area to run a shop. The aim of this paper is to describe the contribution of village shops to local supply and social life as well as to assess their economic viability. Therefore, findings from a telephone survey of approximately 100 shop operators in Germany are presented. The results show the limited supply and social function of the shops as well as their precarious economic situation. Many shops only offer a small range of goods so that the coverage of basic needs is difficult and they are mostly visited for supplementary purchases. Most village shops provide a snack area as a meeting place, but these are relatively seldom used. The findings indicate that permanent public and civic support is required to sustain many small shops in small villages. Because of the market conditions, however, public initiatives cannot halt the trend towards increasing numbers of 'food deserts'; at best they can slow down the process. Where village shops cannot be sustained economically, home delivery services, mobile supermarkets or improved mobility services are feasible options for assuring local supply for less mobile people.

Keywords: grocery stores, local supply, social life, profitability, rural retailing, community retail enterprises

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Introduction

Local suppliers, and here in particular food stores, are increasingly withdrawing from villages and small towns in rural areas of many countries (Vias, 2004; Meixner *et al.*, 2007; Adamowitz *et al.*, 2009; Clarke and Banga, 2010; Brändle *et al.*, 2011; FTGA, 2011; Wood, 2011). On the demand side, over a long period consumers have spent less and less of their purchasing power on location, since mobility has increased and the demands of the consumers with regard to price, selection and combination possibilities have increased.

It must also be considered that food stores, especially in Germany, face an oligopolistic market structure, intensive competition and stagnating total revenue. According to data from EHI (2011), the five largest companies generated 74 per cent of the total revenue in the food retail market in 2010. In 2009 the Herfindahl-Hirschman Index was 1,890 (Lademann, 2010), which implies a critical concentration. The average profit-turnover ratio in the food retail sector illustrates the increased competition: in 2003 it was approximately 1 per cent and in 2006 it had dropped to around 0.6 per cent (Lademann, 2010). Another important figure is the increasing sales area in Germany for food outlets, from 33.7 million m² in 2006 to 34.9 million m² in 2010 (EHI, 2011). But in 2009 the total revenue in food retail outlets without specialisation amounted to EUR 148 billion while in 2010 it accounted for just EUR 147 billion in nominal terms (DESTATIS, 2012a). Against this background, the entry into the market and success of small stores would appear to be particularly difficult.

On the supply side, in accordance with the changing demands, a trend towards larger stores can be observed. In Germany the average sales area of food stores has increased from 768 m² in 2006 to 888 m² in 2010 (EHI, 2011). Also the competitive pressure is increasing due to the expansion strategies of larger suppliers. Here, the need for larger trading areas and lower turnover ratios by sales area are linked, as well as a concentration of several providers and formats

in rural centres. Steinführer *et al.* (2012) illustrated this situation for two rural districts (Harz and Osterode) in a German middle range mountain area. Especially in villages and smaller towns of under 5,000 inhabitants, discounters with few staff and thus less personal contact remain, as well as small supermarkets that have problems surviving economically. In Germany, the number of food retail outlets has decreased from 43,867 shops in 2006 to 39,305 in 2010 (-10.4 per cent) while the number of small grocery stores which are particularly located in villages fell by 35.6 per cent during the same period (EHI, 2011). In some countries an increasing number of settlements have no local supplier at all (e.g. Solard, 2010; Calderwood and Davies, 2012). As a result, the accessibility to shops has deteriorated and this is especially a problem for less mobile groups such as the elderly, handicapped persons, children and youth, but their purchasing power is hardly relevant for the location decisions of store companies.

As in other European countries (EC, 2010), these trends have led to a loss of market share by grocery stores and the closing down of village shops for at least five decades in western Germany and, since the unification 1990, in eastern Germany (Adamovicz *et al.*, 2009; Eglitis, 1999; Kuhlicke *et al.*, 2005). In contrast, in regional planning and development an important part of sustainability is that all people should be able to reach shopping facilities of goods for short-term demand within walking distance, mostly defined as less than 1,000 m. Therefore, attempts have been made to develop new, local supply concepts using public support in the framework of different programmes that not only offer the goods for daily needs but also other services including postal, lottery or healthcare services. Rural development policy plays a special role in fostering accessibility to basic services and infrastructure due to its spatial focus. In the current programming period of the European Agricultural Fund for Rural Development (EAFRD) (i.e. 2007-2013), in addition to the Leader Programme, Measure 321 'Essential services to the population and economy in rural areas' is particularly used to support investments in local amenity facilities. The funding

conditions differ greatly between individual German *Länder*. Up to 75 per cent of the costs of public investments in village facilities are supported. Recently, the local supply seems to have attracted more attention because state ministries have published handbooks and created support structures (e.g. in Brandenburg, Baden-Württemberg, Rhineland-Pfalz and Schleswig-Holstein), mayors have placed the topic on the agenda and citizens have established initiatives securing local offerings.

Against this background, the article presents empirical findings from Germany. Our aim is to answer the following two research questions: (a) to what extent do village shops contribute to local supply and social life; and (b) what is the status of the economic viability of village shops? The first question addresses the benefits of village shops. The local availability of goods is not only considered in terms of material supply, but increasingly also in terms of the social meaning of local stores as a meeting place, a source of identification and a crystallisation point for civic involvement (Clarke and Banga, 2010). The economic benefits for related sectors such as tourism or local food producers are not addressed in this paper. The second question focuses on the hypothesis that village shops are not profitable because of the above mentioned difficult market conditions. Public and civic support is thus needed or the shops will close a few years after their foundation.

The focus of our study is villages and small towns with fewer than 5,000 inhabitants. This quantitative threshold conforms to the number of people the large food retail companies require to run a supermarket or a discounter (Adamovicz *et al.*, 2009; Kuhlike *et al.*, 2005). Village shops, here, are stationary facilities with a sales area of less than about 400 m² providing basic foods as well as, where applicable, other goods and services for daily use. The core of the offering is provided by a grocery store with a broad product range. Bread or butcher shops, direct sales of agricultural products as well as fruit and vegetable dealers can be integrated in the offering, but do not alone suffice.

Methodology

A cross-sectional analysis was used to answer the research questions. Based on a literature review, relevant characteristics were identified and a questionnaire designed. The 39 questions covered the following topics: form of organisation, offering, location, economic data, community and public support. An Internet search produced contact information for 244 village shops across Germany that fitted the definition given above. In order to guarantee a similar

distribution across the country, a proportionally stratified random sample was taken, selecting 65 per cent of the shops in each of the 13 non-city states (i.e. excluding Berlin, Bremen and Hamburg), giving 159 shops in total. From March to May 2012, shop operators were interviewed by telephone using a standardised questionnaire (Dillman, 1978). The sample was cleaned of stores not fitting the definition or no longer existing and therefore not contactable. A response rate of 70.5 per cent yielded 103 analysable questionnaires. The data collected were analysed using descriptive statistical methods such as frequency analysis and measures of dispersion (Field, 2009).

Results

The findings are presented in two sections according to the research questions. Firstly, the contribution to local supply and the social function of village shops are described. Secondly, results are presented regarding the economic viability of the shops. Additional information about the German retail sector is used to help to interpret the empirical findings.

Contributions to supply and social life

An attractive offering is important if people are able to do their main shopping in the village. A wide range of goods is required to provide, for instance, goods of different price segments, organic food or several packaging sizes. The average number of goods per shop is 2,851 with a median of 2,000 (Table 1). Village shops provide many fewer goods than an average supermarket (which stocks around 10,000 goods) but a comparable number to a discounter (approximately 2,000 goods) (EHI, 2010). In addition to 2,273 food products, on average 578 non-food products such as pharmacy products are offered. A quarter of the surveyed shops supply less than 1,000 goods, making it difficult to cover basic needs.

On average, around 1,000 customers per week purchase goods at the shops (Table 1), which approximates to the number a supermarket achieves on an average day (1,250 clients) (EHI, 2010). The mean purchase value in the village shops is EUR 8.8 which equates to the average figure for small grocery stores but is much less than in discounters (EUR 10.8) and supermarkets (EUR 12.2) (EHI, 2010). This suggests that village shops are mostly visited for supplementary purchases.

In addition to goods, all of the village shops, except one, offer a range of supplemental services as multi-purpose

Table 1: The approximate number of goods available in a sample of village shops in Germany and the use of this provision as estimated by the shop operators.

	Available number of goods	Food products	Non-food products	Customers per week	Purchase value (EUR)
Mean	2,851	2,273	578	1,052	8.8
First quartile	1,000	938	200	500	6.5
Median	2,000	1,725	373	950	8.4
Third quartile	4,000	3,000	800	1,335	10.0
n	86	86	86	96	92

Source: own survey data

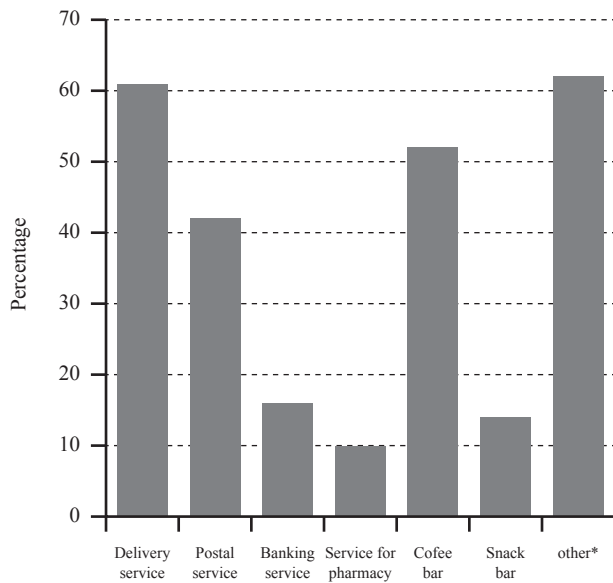


Figure 1: The proportion of a sample of village shops in Germany offering supplemental services.

n=103, except *n=102
Source: own survey data

stores (Figure 1). More than 60 per cent of the shops have a home delivery service which helps to expand their catchment area and to supply immobile people such as the very elderly as well. Many stores also provide a coffee bar or postal services. Amongst the other services offered are catering, lottery, taking in laundry and fancy goods. Along with the shopping, especially coffee and snack bars provide opportunities for the village residents to meet and to foster social life. While more than 1,000 customers visit the shops on average per week and have the possibility to chat with other clients or the staff, only 77 visitors patronise the coffee or snack bar in a week. In almost half of the 50 village shops which have a respective offer and of which the operator answered this question, less than 50 persons per week use the offer.

Another social function of village shops is the provision of local jobs because villages and small towns often have few job opportunities and many residents have to commute long distances to work. On average, the shops in the survey engage six working persons (Table 2). However, 70 per cent of the staff members work part-time and 36 per cent only have minor jobs¹. The gross wages for qualified as well as for unqualified employees are very low: 70.8 per cent of the former and 94.8 per cent of the latter are in the low wage sec-

¹ A minor job or marginal employment is according to § 8 of the Social Security Code of Germany a job with a monthly salary of less than EUR 450 (until 2012: EUR 400). These jobs have some advantages for tax and social security payments. For the survey in 2012, the existing wage level indicates that most minor jobs have a maximum labour time of about ten hours a week.

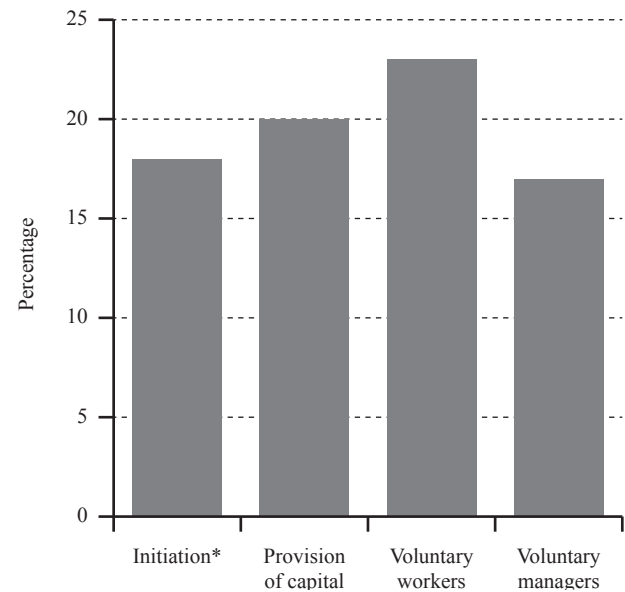


Figure 2: The proportion of a sample of village shops in Germany with different forms of civic participation and volunteerism.

n=101, except *n=103
Source: own survey data

tor². Even though two thirds of employees in the food retail sector earn low wages (DESTATIS, 2012b), the percentage is significantly higher in village shops.

A further contribution to social life is that village shops serve as crystallisation points of civic participation and volunteerism. In 43 of the 103 cases, citizens support the shop. Most important is the provision of capital and the engagement as voluntary workers in about 20 per cent of the researched shops (Figure 2). The citizens help to establish small shops if they are engaged in the initiation process and raise the starting capital. The volunteerism in the service and management saves costs and allows shops to trade at locations with low economic potential. This leads to the second research question about the sustainable profitability.

Economic viability

The net sales are central for the economic success of a shop. In the German food retail sector, annual sales of in the range EUR 750,000 to 1,440,000 are required to run a small grocery store (BBE, 2010; Steinführer *et al.*, 2012). Fewer sales make it difficult to cover all of the operating costs and too many perishable goods remain unsold and disposable. Compared to the minimum turnover figures cited in the liter-

² According to the OECD definition, workers belong to the low-wage sector if their gross wage is less than two thirds of the median wage. In Germany in 2010 the low wage sector started at EUR 10.36 per hour (DESTATIS, 2012b).

Table 2: The number of persons working in a sample of village shops in Germany and their rates of pay.

	Total number of working persons	Number of full-time employees	Rate of pay for qualified staff (EUR hour ⁻¹)	Rate of pay for unqualified staff (EUR hour ⁻¹)
Mean	6.1	1.6	9.4	7.5
First quartile	3.0	1.0	7.6	6.5
Median	5.0	1.0	9.0	7.3
Third quartile	8.0	2.0	10.9	8.3
n	103	103	72	77

Source: own survey data

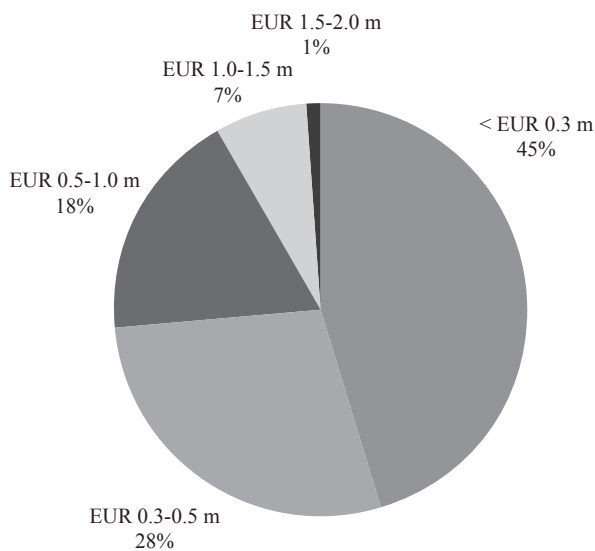


Figure 3: The distribution of a sample of village shops in Germany in terms of net sales in 2011 (n=88).

Source: own survey data

Table 3: The expected direction of business development according to the operators of a sample of village shops in Germany in the five years from 2012.

Future development	Closure %	Declining %	Unchanged %	Increasing %	n
Net sales	11	1	47	41	100
Profit	12	1	48	39	94

Source: own survey data

ature, the interviewed shop operators report much lower net sales for their village shops (Figure 3). Almost three quarters of the stores in the survey sold less than EUR 0.5 million of goods and services in 2011. As a result, 20 of the 71 village shops which answered the relevant question closed their accounts in 2011 with a loss. Most of the other stores only reached a ‘black zero’ so that no owner could live from the profits alone. In order to interpret the data, it is important to consider that more than one third of the shops were established after 2010 and more than half since 2008. These shops are thus in their start-up phase and they still have to establish their position in the market.

Asked about future development, most shop operators are rather confident that the development will continue or even improve in terms of net sales and company results (Table 3). In contrast, eleven of the village shops will probably not exist in five years time. The estimated cessation of business was reasoned by a lack of commercial viability. Causes in practice include a declining population in the catchment area, rising operational costs as well as competition with food discounters located within a short distance. Together with the ten small stores where we could not interview the operator because of their recent closure, this underlines the precarious financial situation of a significant proportion of village shops.

Against this background, many village shops seem to be able to exist in spite of their low turnover. A reason could be that public and civic actors support the small stores in order to safeguard local supply, particularly for less mobile groups, and their function as a meeting place. Figure 4 depicts the

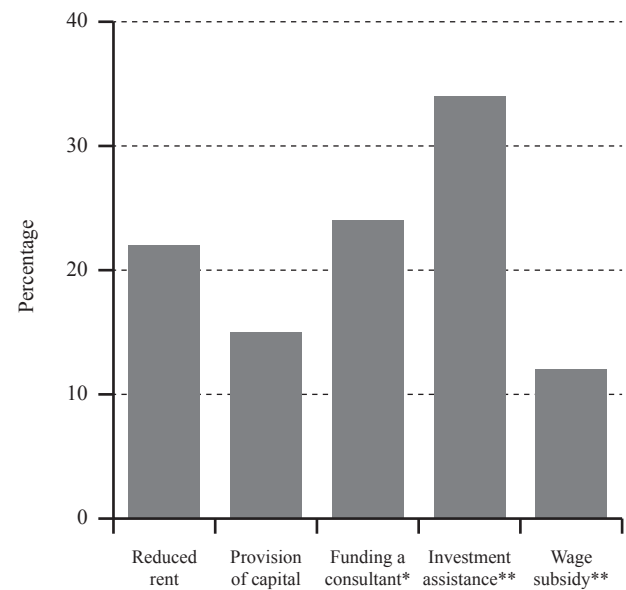


Figure 4: The proportion of a sample of village shops in Germany receiving a specific type of public support.

n=101, except *n=98, **n=100
Source: own survey data

relevance of municipal and state support for village shops. In 22 per cent of the cases the municipality owns the building and offers it to the shop operator for a reduced rent. For 15 per cent of the researched shops, the municipality contributed some of the initial capital. Almost one quarter of the small shops have benefited from the services of a retail consultant who was (co-)financed by the municipality and/or state. The state grants investment assistance in more than one third of the cases using the EAFRD or other funding instruments. Finally, 12 per cent of the village shops receive wage subsidies. These so-called ‘integration stores’ are supported because they enable the participation of disadvantaged groups, such as disabled or permanently unemployed people, in the labour market. The state gives these stores tax benefits in addition to salary supplements. While the provision of capital, investment assistance and usually the funding of a consultant represent public support that is limited to the starting phase of the business, reduced rents and wage subsidies represent a permanent subvention of village shops indicating a lack of profitability.

The importance of volunteerism has already been mentioned. In order to assess the economic success of this often reported strategy (e.g. Calderwood and Davies, 2012), we compared village shops supported by citizens with stores without volunteerism using the Mann-Whitney test because of ordinal or non-normal data (Field, 2009). The results show no significant differences ($p < 0.05$) between the two groups with regard to the year of foundation, the number of goods, the number of food products, profits, and the expected development of net sales in the next five years. For the net sales in 2011, civic involvement in shops (median class = EUR 200,000-300,000) differs significantly from non-involvement (median class = EUR 400,000-500,000), $p < 0.01$, $r = -0.36$, $N = 88$. Accordingly, village shops supported by community initiatives have significantly fewer customers a week (median = 600) than those without support (median =

1,000), $p < 0.001$, $r = -0.36$, $N = 96$. In addition, shop operators supported by citizens are significantly less confident concerning the development of profits in the next five years. They expect on average a stable development compared to a median between stable and increasing profits for stores without volunteerism, $p < 0.05$, $r = 0.21$, $N = 94$. The results do not indicate that village shops supported by citizens are economically more successful. Instead, some significant differences suggest the opposite.

Discussion

Firstly our findings confirm the limited extent to which village shops contribute to local supply and social life. Many stores only offer a small range of goods so that the coverage of basic needs is difficult and the stores are visited mostly for supplementary purchases. The number of customers is thus relatively low even though home delivery services and additional offerings such as post office and banking services emphasise the service orientation of the village shops. With regard to social functions, most stores provide a snack area as a meeting place, but these are relatively seldom used. The local stores also provide local jobs, although most positions are part time and have low salaries. As a crystallisation point for civic involvement, in many of the cases citizens get involved with the stores and help to initiate and run the shops.

Surprisingly the shop operators continue to provide a coffee or snack bar even though it hardly seems to be profitable given the low level of use. At least three possible explanations for this behaviour can be hypothesised: (a) the offer is part of a service-oriented business strategy in order to foster lasting customer loyalty; (b) supplying meeting places was a requirement to receive public funding; and (c) several village shops are run by citizen initiatives or non-profit organisations that focus on such social goals.

Secondly, the economic situation of the shops seems precarious due to low profits and low turnover, accompanied by many businesses being in their starting phase, and expected or realised closures. Many operators are hopeful of improvement, which stands in contrast to the more intense competition with the discounters and increasing operating costs. The findings indicate that permanent public and civic support is required to sustain small shops in many villages. Non-parametric tests have shown that stores supported by citizens were economically less successful in terms of net sales in 2011, customers per week and expectations for profit development in the next five years. This result corroborates the hypothesis that civic support is needed where the economic potential for running and maintaining a store is particularly low.

Ultimately, the question that forms the title of the paper, whether a village shop is an outdated or revived model, is difficult to answer. On the one hand, our findings have shown that most of the village shops were established only a few years ago. This could indicate a trend towards a revival of small shops in rural areas, but another reason for this result could be our method of Internet research for identifying the surveyed shops which made it more likely to select

new shops that have recently been reported on because of their opening.

On the other hand, the low number of clients and purchase value demonstrate the weak demand for local supply and for this kind of offering with few selection possibilities, high prices and limited opening hours. In contrast to convenience stores located in urban centres, railway and petrol stations that are sometimes open 24 hours, seven days a week, village shops usually have relatively short opening hours since the number of potential customers and the frequency of their custom is very much lower. The surveyed small stores are open for on average for about 52 hours per week. Problems of economic sustainability draw attention to the preconditions of this supply concept. If too few people live in the catchment area to assure a profitable business (which in small villages is often the case), citizens have to volunteer in the shop, public actors must permanently provide subsidies and the staff and owner cannot earn enough money for a reasonable standard of living. There is a high risk that citizens will lose their commitment after an enthusiastic initial phase. Citizens and public actors can mis-invest their money because only a few customers really use and support the village shop after its foundation. And finally, the staff can be demotivated by the poor conditions of employment. In addition, small shops particularly with volunteer management can be mismanaged.

Above all, the challenges facing village shops seem to outweigh the opportunities. As Calderwood and Davies (2012) have noted in the UK, the trend to small stores in rural areas is driven by political actors who have installed respective funding instruments and focus more and more on local supply as an indicator for sound rural communities. Nevertheless, the market conditions remain the same on the demand as well as on the supply side. Public initiatives, therefore, cannot stop the trend to increasing numbers of so-called 'food deserts'; at best, they can slow down the process. In places with financially well endowed municipalities and strong community commitment, such initiatives can also be successful in smaller villages but the customer always decides with his/her purchasing behaviour whether small shops will survive. Where village shops cannot be sustained economically, home delivery services, mobile supermarkets or improved mobility services including public transport, subsidised taxis or arranged lifts are feasible options for action to assure the local supply of people who are unable to use a car. Furthermore, other social gathering places, such as youth or senior clubs, associations, citizen centres or pubs can fulfil the social functions attached to village shops as well.

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Tanja TRAVNIKAR* and Luka JUVANČIČ*

Application of spatial econometric approach in the evaluation of rural development policy: the case of measure Modernisation of agricultural holdings

The paper analyses targeting and spatial impacts of investment support on agricultural holdings in Slovenia within the national Rural Development Plan for the period 2007-2013. The measure *Modernisation of agricultural holdings* primarily tackles the problem of low labour productivity in Slovenian agriculture. Achievement of the stated objective of productivity enhancement in agriculture is monitored by the relevant Common Monitoring and Evaluation Framework indicator, standard output (i.e. approximated revenue) per annual work unit SO/AWU. Municipalities (LAU2) are the territorial units of the analysis. Non-spatial and spatial econometric models are developed in order to determine to what extent the estimated labour productivity is affected by intensity of investment support and other factors (measure-specific variables, agricultural structures, socio-economic conditions and geographical conditions). Effectiveness of spatial targeting has been analysed by testing the assumption of a positive relationship between the intensity of implementation of the analysed measure and the productivity. The presence of spatial effects (spatial autocorrelation and spatial heterogeneity) has been examined by including the spatial weight matrix to the ordinary least squares regression. The results confirm a positive relationship between farm investment support and agricultural labour productivity and spatial spillovers in agricultural labour productivity.

Keywords: Rural development policy 2007-2013, farm investment support, modernisation of agricultural holdings, agricultural productivity, spatial econometrics.

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Introduction

The rural development policy (RDP) of the European Union (EU) is designed to promote and guide economic restructuring of rural areas, to promote sustainable management of natural resources and to help rural areas to meet future economic and environmental challenges (Klug and Jenewein, 2010). A common legal basis and financial framework is established to achieve these objectives. EU Member States and regions carry out this policy through their rural development programmes. Owing to the large range of attributed tasks on the one hand and increasing budgetary restrictions on the other, it is important that the limited budgetary resources are effectively used. In a spatial context, this means effective targeting of supported activities and positive spatial spillovers of impacts.

Regarding the effectiveness of public expenditure on rural development, RDP should demonstrate a clear connection between supported activities and their impacts in rural areas. Cause-effect relationship between the choice of measures, the way they are implemented and their effects are complex. Within the common policy framework, a system of evaluation and monitoring has been established to address

these questions. Designation of the Common Monitoring and Evaluation Framework (CMEF) for the EU programming period 2007-2013 (CMEF, 2006) is often regarded as a major step towards a more effective RDP planning for the future. The establishment of the CMEF is an important step towards the unification of the monitoring of RDP. On the other hand, the methodological framework of evaluation resulting from the CMEF (EENRD, 2009) is much less defined. One of the concerns is the implied assumption of the CMEF of a simple linear relationship between the funds invested and result achieved (Figure 1).

Evaluators follow a formal evaluation procedure that usually leads to the display of time-series data and its interpretation. Therefore, the analytical potential of the CMEF remains largely untapped, and this represents a challenge for applied research of rural development measures. The paper accepts this challenge by utilising the CMEF data framework for analysing investment support on agricultural holdings in Slovenia. The measure (code 121), formally called *Modernisation of agricultural holdings* (EC, 2005), is designed to help agricultural holdings to improve their economic performance through better use of the production factors including the introduction of new technologies and innovations as well as improving the protection of the environment (RDP, 2007). The measure offers the potential for improvement of agricultural production in Slovenia, which is characterised by low productivity and a weak competitive position (Erjavec *et al.*, 1999; Juvančič *et al.*, 2004; Juvančič and Erjavec, 2005). The measure is financially strongly represented in the current national rural development programme (EUR 103.006 million planned in the period 2007-2013 or 8.7 per cent of the overall planned budget). The interest for investment support from this measure is high; 2,230 applications were approved up to the end of the first half of 2011.

A relevant CMEF impact indicator for this measure is *labour productivity in agriculture*. From the abovementioned

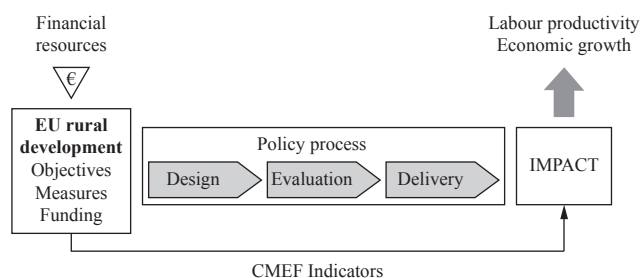


Figure 1: The concept of a simple linear relationship between the funds invested and result achieved through European Union Rural Development Policy (adapted from RuDI, 2010).

tioned logic of the CMEF, the indicator implies a linear causal relationship in terms 'money in, productivity up'. The paper aims to verify this assumption. In addition, it investigates spatial aspects of this measure. By doing so, the paper analyses the spatial distribution of the measure and analyses spatial interactions in agricultural labour productivity. It analyses whether productivity level is affected by farm investment support and other relevant factors.

The paper is organised as follows. In the following section, we present the description of the study area and the organisation of data. Spatial econometrics techniques used for the empirical applications are described in the third section. In section four, we apply spatial econometrics models to determine which factors influence labour productivity (SO/AWU). The final section concludes with a discussion and policy implications of the key findings.

Study area and data

With a total area of 20,273 km², Slovenia is one of the smallest EU Member States (Anon., 2007). In a territorial sense, the municipality (LAU2) is the basic unit of the local self-government, while rural development (RD) programming, consultation and implementation takes place only at the national level (Juvančič and Jaklič, 2008). Municipalities are also the basic geographical units of observation in our analysis; the analysed area consists of 193 (out of 210) Slovenian municipalities with approved applications for the measure *Modernisation of agricultural holdings* in the period 2008-2011. Therefore, the analysis covers 95.7 per cent of the surface of Slovenia.

According to CMEF (2006), *labour productivity in agriculture* (an impact indicator) is expressed in Gross Value Added at basic prices per annual work unit (GVA/AWU). Unfortunately, this indicator is monitored only at the national level. We looked for possible alternatives in the secondary statistics at LAU2 level where we found labour productivity proxy expressed as economic size (in SO¹) per annual working unit (AWU²). This indicator has been calculated from the Agricultural Census 2010 data.

The core of the analysis deals with the non-spatial and spatial econometric methods. The explanatory data entering in the econometric models have been merged into four meaningful groups (equation 1) and organised at municipality level.

$$\begin{aligned} \text{Labour productivity (SO/AWU)} = & \\ & b_0 + b_1 X_1 \text{ (Measure 121 specific data)} \\ & + b_2 X_2 \text{ (Agricultural structural data)} \\ & + b_3 X_3 \text{ (Socio-economic conditions)} \\ & + b_4 X_4 \text{ (Geographical conditions)} + e \end{aligned} \quad (1)$$

¹ The standard output (SO) of an agricultural product (crop or livestock) is the average monetary value of the agricultural output at farm-gate price, in EUR per hectare or per head of livestock. There is a regional SO coefficient for each product, as an average value over a reference period (five years). The sum of all SO per ha of crop and per head of livestock in a farm is a measure of its overall economic size, expressed in EUR.

² AWU is based on the relationship between the number of hours worked on an agricultural holding in a year and the extent of work done by one fully employed person in one year (1,800 hours). The calculation of AWU takes into account the total annual labour input on the farm. In addition to work done by the holder, other family members and people regularly employed on the farm, hired labour is also covered.

The main database for the analysis (Measure 121 monitoring table) was collected from the approved applications for the measure *Modernisation of agricultural holdings*. These data were provided by the Agency for Agricultural Markets and Rural Development of Slovenia. The database contains information on all supported agricultural households, which means that the data are arranged on individual farm level. We have aggregated the individual applications at municipality level and over time – the data are from 2008, 2009, 2010 and first half of 2011. In total we have 2,230 approved applications, of which 2,160 are from the period 2008-2010. The database contains a large number of variables (47; e.g. RDP support, farms engaged in integrated production, market orientation of farms etc.) and has been augmented by three other groups of secondary data: Agricultural census 2010³ (with 22 variables), general socio-economic data⁴ (with 12 variables) and geographical data (with 3 variables). These three groups of secondary data were already collected at municipality level.

As a starting point in the selection of explanatory variables, we have excluded the variables that do not correlate to the dependent variable. To determine the most suitable explanatory variables, we checked each of them individually. Selection was based on various criteria. We checked the theoretical relevance of included variables, the significance of variables and the regression equation that explains the most variance (highest R²). Once we had chosen all the relevant explanatory variables, we estimated the econometric models using standard ordinary least square (OLS) procedure. Multicollinearity, which increases the standard errors of the coefficients and leads to misleading results, was checked using the test Variance inflation factors (VIF). To investigate the role of space, spatial models were developed. Based on the large number of data included in the analysis, summary statistic is reported for the dependent and significant explanatory variables in the model (Table 1).

Methodology

To develop a productivity model, we first used a non-spatial, classical linear model with ordinary least squares (OLS) method. The next step of the analysis consisted of spatial exploration. The Exploratory Spatial Data Analysis (ESDA) approach was our main tool to check whether spatial patterns exist. With the principles of ESDA we performed LISA⁵ significant map, LISA cluster map and Moran's I statistic (for more details see Anselin, 1995; Anselin *et al.*, 1996; Florax *et al.*, 2002). The value of Moran's I ranges from -1 and +1, where 0 represents a random spatial pattern (high and low value are randomly distributed in space). The two extremes indicate two types of spatial clustering, if the value approaches +1 we have strong positive spatial autocorrelation (a clusters of similar values, high-high or low-low), but if it goes down to -1 we have strong negative

³ Source: Statistical office of the Republic of Slovenia, Agricultural Census 2010 Database: http://pxweb.stat.si/pxweb/Database/Agriculture_2010/Agriculture_2010.asp

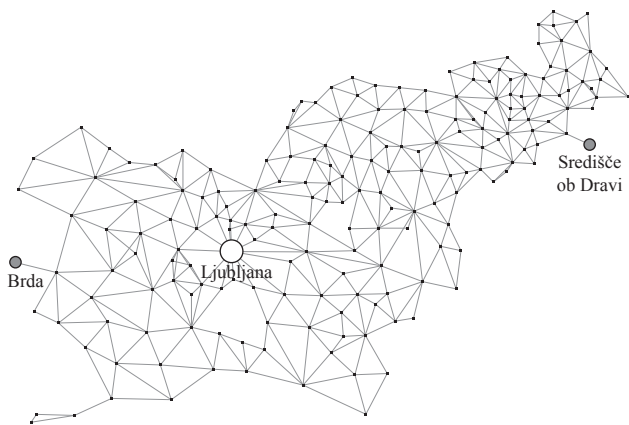
⁴ Source: Statistical office of the Republic of Slovenia, Statistical Yearbook 2011: <http://www.stat.si/letopis/LetopisPrvaStran.aspx?lang=en>

⁵ LISA – Local Indicators of Spatial Association

Table 1: Summary statistics for significant variables in the models using data from Slovenia.

	Mean	Min	Max	Standard deviation
Labour productivity (SO* in EUR 1000 / AWU**) (EUR/AWU)	12.2	4.9	30.7	4.7
RDP expenditure per farm - from measure 121 (EUR/farm)	1,277	35	19,903	2,282
Participation in agr. pension & disability insurance (num.)	11.6	0	91.0	14.8
LFA***, % of hilly areas	25.6	0	100.0	36.6
Type of production, % of integrated	22.1	0	100.0	28.3
Average LSU†, only on farms with livestock breeding	7.55	0.56	30.38	3.96
Purpose of agricultural production, % of sale	41.6	14.1	86.0	13.3
Average UAA†† per farm (ha)	6.72	1.78	26.54	2.51
UAA, % of medium farms (5 < 10 ha)	33.3	0	63.6	7.3
UAA, % of large farms (> 10 ha)	23.8	0	47.3	8.1

* Standard Output; ** Annual Work Unit; *** Less Favoured Areas; † Livestock Unit; †† Utilised Agricultural Area

**Figure 2:** The structure of queen weight matrix among LAU2 municipalities in Slovenia.

spatial autocorrelation. This approach allows us to see how the spatial patterns among municipalities interact (positive spatial correlation could be defined as high-high or low-low interactions). The ESDA revealed spatial patterns in our data, which give rise to the decision to re-estimate the non-spatial models by including spatial weight matrix into standard OLS model, and thus estimating spatial econometrics models.

Spatial analysis of the data, as well as estimation in the case of spatial models, involves a formal definition of the spatial patterns. This pattern is usually represented by a matrix of spatial interactions – weight matrix (W). The matrix defines the relationship among different locations, or in other words it defines the spatial neighbourhood for every location – the elements take the value of 1 if two municipalities share a common boundary, otherwise 0 (Kelejian and Robinson, 1995). There are several choices of spatial matrices, depending on the neighbouring criterion (Anselin, 2002). In the classic example of a regular square, there are three options, only common boundaries (rook matrix), only common vertices (bishop matrix), and both boundaries and vertices (queen matrix). There are also other criteria, especially in the case of islands (Greece, Italy etc.). Here are frequently used the k -nearest neighbour and the distance matrix. Slovenia has many small municipalities, without isolated regions. For this reason, in our study we selected as weight matrix a queen contiguity, which was row standardised so that the sum of each row is equal to one. The philosophy of queen matrix is simple, two municipi-

palities are neighbours if they share a common border (no matter where). With 193 municipalities, our matrix has the dimension 193 by 193 (in total 37,249 weights), with 2.65 per cent of nonzero links. There are two least connected municipalities (Brda and Središče ob Dravi) with one neighbour and the most connected municipality (Ljubljana) has 14 neighbours (Figure 2). The average number of neighbours is 5.11.

According to Anselin (1988a), spatial econometrics deals with two spatial effects, characterised as spatial autocorrelation and spatial heterogeneity, and these spatial effects were included in the empirical research of productivity in Slovenian agriculture. In regression models where analysis is based on spatial data, the two most popular are (equation 2) the mixed regressive spatial autoregressive model, often called the spatial lag model, and (equation 3) the linear regression with a spatial autoregressive error, often called the spatial error model (Anselin, 1988a; Getis, 2010).

$$y = \rho W\hat{y} + X\beta + \varepsilon \quad (2)$$

$$y = X\beta + (I - \lambda W)^{-1}\mu \quad (3)$$

where ρ is the spatial parameter that indicates the spatial extent of interactions between observations and λ is also the spatial parameter expressing the intensity of spatial correlation between regression residuals. If ρ and λ are zero, there are no spatial effects. When this condition is met, then the error terms ε and μ are randomly distributed in space. W is n by n spatial weight matrix (usually row standardised), the n by 1 vector Wy is the spatial lag that captures spatial effects through dependent variable and I is n by n identical matrix.

Based on the following assumptions, three different scenarios are possible:

- $\rho = 0, \lambda = 0$: The spatial econometric approach is not suitable because there is no spatial dependence in the data. The labour productivity level is randomly distributed across the space;
- $\lambda = 0$: In this case, it makes sense to upgrade the standard regression model with the spatial lag model. In this model, the dependent variable is affected by the values of the dependent variable in the neighbouring regions. Stated another way, the labour productivity level in one municipality both affects and is affected by the labour productivity level in the neighbouring municipalities;

- $\rho = 0$: In this scenario, the spatial error model should be applied. The interpretation in this case is that the labour productivity level in one municipality is affected by unknown spatial effect. There is spatial correlation between regression residuals.

In comparison to the standard regression approach, the spatial models include (among other factors) the effect of space – in our case, the spatial spillovers of labour productivity. If spatial spillovers are captured in ESDA and confirmed by spatial parameters (ρ , λ), it is reasonable to develop the spatial models. The Lagrange Multiplier (LM) test (for more details see Anselin, 1988b; Florax *et al.*, 2002; Anselin, 2005) have been applied to determine which spatial models fit our data better (spatial lag or spatial error). As a final step, we compared standard OLS models with spatial models and interpreted the results.

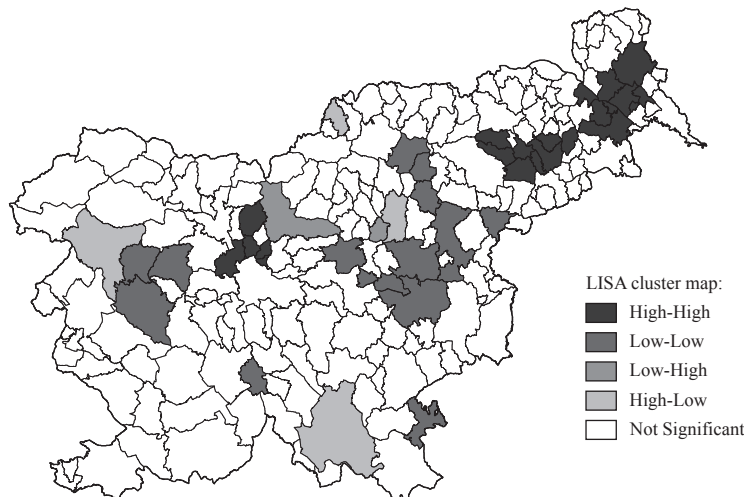


Figure 3: LISA cluster map and Moran's I for labour productivity in Slovenia.

Results

The LISA cluster map of labour productivity and the Moran scatter plot indicate a low level of spatial autocorrelation (Figure 3). The exception is a (stronger) high-high cluster in north eastern Slovenia.

Given the insight on the spatial dependencies, we first checked the OLS results for spatial dependence using the standard Moran's I test and LM tests (Table 2). The LM test for lag is insignificant (0.0806), while the LM test for error is significant (0.0186). In this case, the labour productivity level in one municipality is affected by unknown spatial effect and we cannot confirm the neighbouring labour productivity effect. We therefore re-estimated the OLS model and considered only a spatial error model. The results from Table 2 attempt to identify factors affecting labour productivity.

The model results revealed a positive relationship between the RDP support for measure 121 and the agricultural labour productivity. Furthermore, the results suggest that labour productivity is higher in areas with higher representation of full-time farms and lower in areas with aggravated produc-

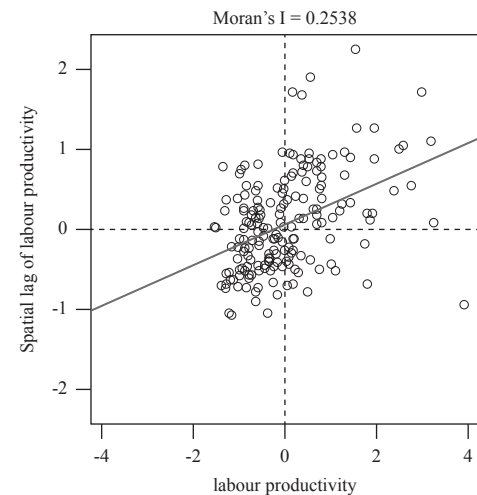


Table 2: The results of the labour productivity model using data from Slovenia.

Economic size (as SO* in EUR 1000) / AWU** (EUR/AWU)	OLS model		Spatial error model	
	coefficient	p-value	coefficient	p-value
RDP expenditure per farm - from measure 121 (EUR/farm)	0.0002	0.0306	0.0002	0.0561
Inclusion in agr. pension & disability insurance (num.)	0.0398	0.0034	0.0427	0.0008
LFA***, % of hilly areas	-0.0144	0.0044	-0.0127	0.0184
Type of production, % of integrated	0.0204	0.0080	0.0209	0.0049
Average LSU†, only on farms with livestock breeding	0.5132	0.0000	0.5290	0.0000
Purpose of agricultural production, % of sale	0.0693	0.0003	0.0700	0.0004
Average UAA†† per farm (ha)	0.5760	0.0000	0.5491	0.0000
UAA, % of medium farms (5<10 ha)	-0.1447	0.0000	-0.1424	0.0000
UAA, % of large farms (>10 ha)	0.0329	0.0184	-0.0751	0.0233
Intercept	5.9002	0.0000	5.7200	0.0000
Number of observations	193		193	
Weight matrix			Queen contiguity	
R ² (%)	75.65		76.68	
Lambda (λ)			0.2575	0.0085
Moran's I (error)			2.8647	0.0042
Lagrange Multiplier (lag)			3.0520	0.0806
Lagrange Multiplier (error)			2.6018	0.0186

* Standard Output; ** Annual Work Unit; *** Less Favoured Areas; † Livestock Unit; †† Utilised Agricultural Area

tion conditions (LFA). To illustrate, in Slovenia more than three-quarters of the surface belongs to less favoured areas (LFA). Only 10 per cent of municipalities have no LFA within their boundaries (Anon., 2007). The farms engaged in integrated production seem to have higher labour productivity, as do farms that are more market oriented. The latter are farms with predominant market production, which are usually larger and more specialised. The labour productivity is also higher on the farms with higher stocking density. The positive coefficient for average farm size suggests that labour productivity increases with the average farm size. This is also confirmed by the positive coefficient for large farms (owning more than 10 ha).

In comparison to the spatial error model, the RDP expenditure on labour productivity becomes marginally statistically significant (0.0561). Other results are very similar. We also have a small improvement in R^2 (from 75.65 to 76.68 per cent). The data are spatially connected, but we cannot confirm that labour productivity level in one municipality is affected by labour productivity of neighbouring municipalities.

Discussion

The EU Member States must ensure that investment measures included in their rural development programmes are targeted on clearly defined objectives reflecting identified structural and territorial needs. The analytical potential of the CMEF indicator *labour productivity in agriculture* for the measure *Modernisation of agricultural holdings*, which is the key baseline and impact indicator of the analysed measure, was verified. This CMEF indicator is monitored only at the national level, and as such does not allow for spatial analysis at lower geographical levels. With regard to the need for a more evidence-based evaluation of RDP in the coming programming period, it would be worthwhile to consider improving the analytical potential of the monitoring data by establishing a more geographically disaggregated system of data collection.

The results of the econometric models suggest that RDP farm investment support contributes towards the stated objectives in terms of higher labour productivity in agriculture (i.e. the CMEF impact indicator). In this sense, the model results give an indication that public support for farm investments yields positive impacts in terms of labour productivity. The model also reveals a positive relationship between market orientation of farms and agricultural productivity. Furthermore, the results confirm higher labour productivity of farms oriented to agricultural production with higher environmental standards (e.g. integrated production). The results have also confirmed the presence of spatial spillover effects. Spatial aspects have impacts on productivity and should therefore not be neglected. Nevertheless, owing to data limitations, the above-described aspects (agricultural productivity, spatial spillovers) could not be explored in a dynamic setting. Impacts of investment support on agricultural productivity growth therefore remain inconclusive. This remains a challenge for future research, when datasets will allow the dynamic of policy impacts in time to be captured.

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Social capital and governance for sustainable rural development

Though policy openings for support from the 'new rural paradigm' look promising, market access through sustainability-led economic organisations in fragmented rural areas is not easy. This paper analyses the implications of the interactive embedded governance model framed by the structural, cognitive and relational dimensions of social capital and hence the firms' ability to engage with networked stakeholders in bottom-up knowledge-sharing for innovation. We show how, in the case of three marginal rural villages in the province of Trentino, Italy, this approach was used to raise stakeholders' awareness that the local identity and heritage resources represent assets that given appropriate knowledge sharing could be converted into 'authentic' tourism products. The study illustrates the critical importance of such non-economic factors for achieving sustainable rural development.

Keywords: social capital, embedded governance, stakeholders' engagement, knowledge sharing, market failures, sustainable rural tourism

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Introduction

The theme of this paper lies in the overlap between different narratives which have so far developed largely independently from each other. Firstly, the paradigm of maximisation assumes that economic growth is the only way forward; thereby ignoring the underlying complexity of socio-ecological systems. Secondly, the paradigm of sufficiency assumes an increasing natural resource scarcity and diversity to be a better source of resilience for the variety of systems. However, economic, social and cultural barriers to a transition towards sufficiency are typically not explicitly dealt with. Thirdly, the 'new rural paradigm' (OECD, 2006) looks at a shift from a sectoral to a territorial policy approach, creating openings for the integration of the various sectoral policies at local, regional and (supra-) national levels. This suggests that four external drivers impact rural development particularly: globalisation and structural shifts in the economy, the transition towards an experience economy, the knowledge-based society and climate change. Global forces have created the regional specialisation manifest in economic clusters, leading to inequalities with national rural areas. This relegates the role of national governments to the passive provision of infrastructures and causes rural areas to suffer from fragmentation in multiple ways: socially, economically, environmentally and politically. And they resemble a quasi-market, where multi-stakeholder interests and agendas display different backgrounds, aims, roles, competences and unevenly distributed power relations (Keller, 1998).

The 'progression of economic value' (Pine and Gilmore, 1998) – from the extraction of commodities, the production of goods and the delivery of services to creating experiences – can be understood as the adding of experiences to existing goods and services. However, a holistic approach to tourism development should ensure that realising tourist experiences takes into account the demands from other sectors. It is essential to draw on local 'cultural' production (Rifkin, 2000) to ensure that tourist experiential offerings coincide with the needs of the locality. The application of this principle would contribute sustainable patterns of production and

consumption and the positioning of a specific rural area in a distinct way in comparison to competitors.

The issue of climate change has resulted in heated debates about responses seen to foster short-term economic disparity, undermine long-term sustainability and increase the risk of regional imbalances for the peripheral areas. We assume that the environmental context represents an important variable in sustainability processes and therefore refer to a more specific definition. Sustainability integrates natural systems with human patterns and celebrates continuity, uniqueness and place making (Early, 1993). In the sustainability context three overlapping social, cognitive and structural dimensions appear. With them are potential tensions which impede the leveraging of rural economic and environmental assets for tourism production (Inskeep, 1991).

In today's knowledge-based economy no rural area can be an island. Each is locked into a complex and dynamic network of multi-stakeholder relationships, including tourists, suppliers, business partners and government. Cultural resources and heritage fit modern demands, many of which are associated with rural tourism. The countryside holds significance for many urban dwellers. While this varies from one society to the next, the meaning of the countryside may be captured in the scarcity of the natural resource. Agriculture, forest production, wildlife habitat and catchment of water, settlement and recreation are indispensable for many essential human activities. We assume that both the intrinsic qualities of rural areas and the opportunity to engage in rural recreational activities motivate and will lead to an increase in urban dwellers' demand for rural tourism. Rural areas can lever rural experiences as a label for attracting tourists to learn more about rural life through destinations and events featuring nature and culture: past, present and future.

Hence there exists an urgent need to improve the coordination of sectoral policies at both the central government level and the local level.

The defining shift in market structure from top-down driven demand manipulation to dynamic networks justifies the consideration of the knowledge infrastructure's role in the socio-economic regeneration of rural regions. Specifically, of how to improve efficient decision making and trans-

form knowledge into capabilities for integrating cognitive, social and infrastructural planning to serve sustainable tourism and rural development.

Towards this end, we construct a theoretical model for the embedded governance of knowledge sharing processes that borrows insights from two conceptual realms. These are, firstly, behaviour location theory (Simon, 1957; Pred, 1967), which postulates that entrepreneurs make decisions based on a number of limited options and recognises the potential significance of non-economic reasons in location behaviour, including emotional, cultural, historical ties with a particular region; and secondly, institutional theory and the concept of the 'industrial district' (Amin, 1999), which on the foundations of informal norms and networked interaction make a community's stakeholders productive (Evans, 1996).

Though policy openings for support from the 'new rural paradigm' look promising, market access through knowledge sharing is not easy owing to characteristics of knowledge from practice based epistemology. Knowledge is multidimensional as illustrated for example by the interconnectedness of 'agricultural knowledge and information systems' (AKIS). Knowledge is embodied in people, many of whom have limited understanding of the feedback loops, in particular the links and interactions between a set of rural stakeholders. Knowledge is contestable, which implies that stakeholders may engage in knowledge sharing, but are ill-prepared or unwilling to deal with the complexity of interconnected and highly dynamic issues. Knowledge is culturally embedded. Di Iacovo and O'Connor (2009; cited in EU SCAR, 2012) found that rural entrepreneurship culture suffers from the weakness of limited links 'with the official AKIS'. Tacit and explicit knowledge are inseparable. For example, EU SCAR (2012) makes just seven brief references to rural tourism. This suggests that the knowledge of rural tourism continues to be governed largely independently from the agricultural knowledge domain. In turn, this might hamper the effective use of tourism as a tool for stimulating the agricultural economy.

Traditionally, national, top-down approaches to knowledge sharing impeded stakeholders' ability to apply tacit and explicit knowledge to establish a critical mass for effective local private-public partnership processes (Perkmann, 2002). Today, stakeholders must identify the limitations of their knowledge and comprehend the world not only on the local, but also the regional, national and international level, involving multiple layers of rule-making institutions and power (Hess and Ostrom, 2001).

Towards this end the paper draws on social capital theory (Inkpen and Tsang, 2005) and the embedded governance model (Go and Trunfio, 2011a) as a mechanism to overcome market failures. It then applies these concepts to a case study, funded by the European Regional Development Fund (2007-2013), as part of the Project *Listen to the Voice of Villages*, aimed at enhancing the competitiveness and attractiveness of three of Trentino's mountain villages situated in a region of northeast Italy.

Modelling governance

The term 'government' implies the exercise of political authority over the actions and affairs of people. Instead, our study refers to 'governance', namely the way rules are set and implemented for the process of decision making and implementation (UNESCAP, 2009), involving government, the private sector and the civil society. UNESCAP (2009) refers to 'good governance', the characteristics of which are: accountable; transparent; responsive; equitable and inclusive; effective and efficient; follows the rule of law; participatory; and consensus oriented. This implies the inclusion of the voices of the vulnerable in society in the decision making process, being responsive to the 'present and future needs of society'.

Modelling governance in rural areas is relevant for numerous reasons. Firstly, in many parts of Europe there has been a historical tendency to develop rural regions using a top-down-approach based on established relationships between national, regional and local government. However, this top-down version has failed to coordinate complex stakeholder interdependences of modern society (Caalders, 2003). Secondly, under conditions of global competition rural areas are increasingly among the vulnerable stakeholders in society whose voice may be excluded in favour of other pressing government challenges. However, consequent to decentralisation such classic forms of government based on clear-cut arrangements between administrative levels, policy sectors and the public, and the private domain have proven increasingly *inefficient and ineffective* for knowledge sharing. Simultaneously, decentralisation shifts power from the national to the supranational (EU) and regional scales (Anderson, 1996) and opens the door to actors who wish to *participate in making decisions* that matter to them so as to more effectively meet emerging challenges (Dwyer *et al.*, 2009).

Tensions and conflicts in decision making and implementation usually arise from known dichotomies and differing objectives that are often closely linked to *accountability structures*. The decision making process involves, increasingly, foreign interests (e.g. investors) and local actors and requires the levering of an interactive governance system (Kooiman *et al.*, 2008) which coheres with reference to the governance concept understood as 'the self-organising, inter-organisational network characterised by interdependence, resource exchange, rules of game and autonomy from the state' (Rhodes, 1997, p.15).

Rural communities can be understood as multi-layer territorial systems (of innovation) that bring together knowledge-intensive activities, institutions for knowledge sharing to enhance their capability for social change and institutionalised learning metrics (Murphy, 2012). To be *responsive* to the present and future needs of society, multi-stakeholder interests must come together in a 'common agenda' and the practice of 'organisational self-disclosure' (*transparency and risk*) and 'organisational/stakeholder engagement' (*dialogue and access*) (Pralhad and Ramaswamy, 2004).

Public calls for more transparency have contributed to the emergence of more flexible forms of governance (Go and Trunfio, 2011b). These allow an interactive-non-linear

model of knowledge sharing and preserving the bottom-up democracy and mobilising *consensus-oriented* decision making. They also serve as an ‘information filter’ to identify both the process and areas of tensions and coordinate the multi-stakeholder innovation transfer process (Leeuwis and van den Ban, 2004). The latter represent a variety of collective and individual roles, with public and private backgrounds and often contradicting agendas which can impede knowledge transfer (Prytherch and Huntoon, 2005).

Therefore, understanding that the production of rural space is a search for the reconciliation between mental space and physical space (Lefebvre, 1991) is a prerequisite to remodelling governance. This should encourage knowledge sharing processes designed to enhance sustainable rural development. Go and Trunfio (2011a) introduced the concept of embedded governance; a form of interactive governance system, which combines top-down approaches based on the political-institutional power following *the rule of law* and the bottom-up perspective based on local stakeholder interactions, *including the voices* of the vulnerable in society in decision making to perform in an *equitable* way. In particular, embedded governance can serve as a mechanism (Go and Trunfio, 2011c), firstly, to help stakeholders cope with their limited knowledge by mapping the opportunities in networks to identify the most viable partners and their role in value-creating networks. Secondly, to determine the potential pros and cons of increased networked integration, based on the rural policy regime, and the roles private sector partners can play to transform micro-specialised competences into ‘value-in-context’ (Vargo and Lush, 2008) for creating attitude and behavioural change among stakeholders. Thirdly, to assess the supporting interconnectedness relative to partnership knowledge sharing and innovation (Ward and Brown, 2009) for sustainable rural development.

Under conditions of global competitiveness, knowledge sharing plays a critical role for promoting sustainable rural development (Cooke *et al.*, 2006; EC, 2006; OECD, 2006). Behavioural science reminds us that knowledge sharing is about people. Research has generated evidence that social capital and trustworthy relationships are essential to create the conditions which motivate stakeholders to coordinate knowledge sharing processes.

Comprehending social capital as a change conditioner

The participation of stakeholders is necessary for sustainable rural development to succeed. In the post-Fordist era social capital plays a critical role in mediating knowledge transfer aimed at sustainable rural development (Morgan, 1997). Top-down approaches to knowledge sharing have proven relatively ineffective. Therefore, social capital depends on the specific conditions that govern knowledge transfer interaction within diverse types of networks. These can simultaneously enable and restrict its stakeholders. Inkpen and Tsang (2005) distinguish conditions of social capital, including three network types in a matrix format: *intra-corporate network*, *strategic alliance* and *industrial*

district, and three key social capital dimensions. These are the *structural social capital* dilemma involving networked actors’ relationship patterns, including network ties, configuration and stability; *cognitive social capital*, e.g. shared goals and culture; and *relational social capital*, which exists when reciprocity norms and trusting interactions occur. In the next section we test the social capital theory in relation to the embedded governance and rural tourism development of Trentino’s mountain villages.

Case study: Rural tourism development of Trentino’s mountain villages

The autonomous province of Trentino (Italy) is mountainous, known for the Dolomites, which are part of the Northeast Italian Alps. The province covers an area of 6,214 km², has a population of 524,826 (2010) and is composed of 217 municipalities. While agriculture remains important, tourism is the mainstay of the provincial economy contributing to the wellbeing and quality of life. Five million tourists (about 1.6 million of whom are foreign) annually visit the province of Trentino’s main urban centres and well-known tourism destinations. Tourism provides more than 7 per cent of the area’s added value, generating opportunities for growth and innovation in numerous sectors.

Three small and well circumscribed villages of Trentino – Tesino Vanoi, Valle dei Mocheni and Valle del Chiese – comprise our case study. In contrast with the province, their rural tourism potential derived from their natural, cultural and historical assets remains unexploited so far. This is mainly due to the severity of the market failures which characterise rural areas and which cannot be overcome by for-profit firms without the intervention of third sector organisations (TSOs) (Valentinov and Baum, 2008). In this case these are, firstly, social and economic marginalisation, unemployment, geographical dispersion, population sparsity and outmigration. Secondly, due in part to an economy fragmented by micro, small- or medium-size enterprises that operate in traditional sectors such as forestry, agriculture, zoo-technics, wood art and crafts; and thirdly, rural traditions, values and behaviours that remain at the core of the local identity and everyday life. These three villages represent an emerging destination which has not entered the early stages of Butler’s (1980) product life cycle. The same is evident, for example, in their limited receptive capacity which attracts mainly domestic, family-oriented and elderly tourists to engage in nature, cultural and outdoor sport activities. In turn, this prohibits the exploitation of local heritage as a source for economic development by specialised local entrepreneurs who mobilise existing knowledge for profit, thereby contributing to employment growth. Tourism has remained a marginal activity, leading to an exodus of young and dynamic community members.

Simultaneously, shifts brought about by ICT and transportation infrastructure have altered production and consumption patterns, contributing to the increasing fragmentation of Central European rural areas at multiple scales: economically, socially, environmentally and politically. The need for innovation and economic development on the one

hand and the desire by insiders to maintain their rural traditions on the other has flagged the issue of how to establish a balance between preserving natural and cultural heritage for wellbeing while presenting these resources to satisfy modern tourist demands. This argument reveals not only the institutional economics rationale behind rural TSOs, but also lends theoretical support to policies promoting TSOs intervention in rural development (Valentinov and Baum, 2008) through, for example, ‘good’ governance in support of local sustainable rural development policies as envisioned in the three-year-European Project *Listen to the Voice of Villages* (LVV, www.listen-to-the-voice-of-villages.org) (Della Lucia and Martini, 2012).

The role of network organisations in the rural context has received attention both from governments and researchers. Policy openings for support as reflected in the ‘new rural paradigm’ seem promising, but the change process has proven difficult owing to: (a) market failures which are particularly severe in rural areas; (b) a lack of insight into the main characteristics of social capital dimensions (structural, cognitive and relational) in relation to the related network type found in this case; and (c) limitations of rural knowledge to understand the conditions of the surrounding world and how to capitalise on the embedded governance model to support stakeholders in service provisioning in an integrated, sustainable manner.

The LVV project, which was co-financed by the European Regional Development Fund (around EUR 1.9 billion out of around EUR 2.4 billion of total budget), was developed in 2008 within the ‘cultural heritage and creative resources’ theme and involved rural areas in six central European countries (Northern Italy, Austria, Germany, Czech Republic, Poland and Slovenia). It focused on helping the stakeholders of the three villages by enhancing the region’s competitiveness and attractiveness through the coordination of public-private cooperation for sustainable tourism. The research methodology was divided into two steps. The first applies Inkpen and Tsang’s (2005) framework to identify the main characteristics of both the social capital dimensions (structural, cognitive and relational) relative to the case study area’s related network type. Building on social capital theory and knowledge sharing, the second aims to verify how the embedded governance model developed by the European project supported integrated, sustainable rural tourism development. The research combined multiple sources of evidence: desk analysis, archival records, both unpublished and published studies on the related *Listen European* project (Della Lucia and Martini, 2012; Martini and Buffa, 2012) and primary data collected from critical stakeholders involved in rural sustainable development.

Three dimensional outcomes

The case study outcomes centre on the characteristics assumed by three social capital dimensions (Inkpen and Tsang, 2005). These are reflected in the rural activities, traditional society structures and lifestyle, and result in the assimilation of the so called *industrial district* network type. Industrial districts are defined as networks comprising

independent small and medium-size firms operating in the same or related market segment. Institutional economics in industrial districts result not only from spatial agglomeration and productive specialisation, but particularly consider the relevance of the interaction between institutions and social capital formation (Granovetter, 1985; Putnam, 1993; Fukuyama, 1994). But interactions to derive benefits from external economies of scale and are complex, because firms which share a geographical locality are defined both by environmental and historical conditions scope (Brown and Hendry, 1998; Storper, 1993).

Before examining the modelling of social capital in networks it is necessary to clarify some ideas that will affect the governance of local development. Based on the assumption that a vertical division of labour among the members may or may not be present and their roles and relationships to achieve specified goals are unclearly defined and not well organised, we can outline the analytical outcomes along three dimensions as follows.

The analysis of the *structural dimension* of social capital (network ties, configuration and stability) shows that nonhierarchical and dense ties exist among the local community members. The spatial proximity results in interpersonal interactions among community members developed through direct, informal and long-term relationships which also could facilitate inter-firm interactions and knowledge exchange. The social structural dimension is stronger than the economic dimension, however some cliques of firms with strong ties are presently represented by professional associations (e.g. hotel/restaurant owners, agricultural cooperatives, and associations that promote accommodation in mountain/rural estates). The local economic development level however results in the continuous exodus of host community members, who take with them not only personal contacts but also knowledge. So, at the structural level there is ample room for improvement.

The *cognitive dimension* of social capital suffers from the fragmentation inherent in the heterogeneity of local stakeholders and the sectoral diversification, manifest in diverse aims, interests and competences. The same implies that stakeholders do not share a cooperative logic for local development. A corollary of this is that contradictions are present which impede destination management organisations (DMOs) from taking effective actions to prove the benefits of cooperation particularly with regard to strengthening the position of other local stakeholders. For example, in Tesino Vanoi, comprised of two contiguous territories, there exist two DMOs divided by their different tourism development governance approaches. In turn, such a gap creates challenges for the way joint projects are coordinated and controlled.

At the cognitive scale, information and education could help to increase the awareness that networked knowledge sharing and shared goals can bring about a virtuous cycle of value adding processes. However, the governance of rural development necessitates a more integrated capacity (Go and Govers, 2000) to bring stakeholders, both local and non-local, together.

The area’s traditional social structures and shared cultural lifestyle manifest a strong ‘sense of belonging to the

identity of place', tacit knowledge, shared values and norms represent potential for exploitation. These can be levered for trust building among stakeholders in a variety of roles to serve as a process-based driver for generating and enhancing the *relational dimension* of social capital which is critical for informal knowledge and skill sharing encompassing various styles and models among networked firms. Governed processes require a common agenda, which not only reflects objectives and interests but also specifies the roles and tasks of the different local network members. In this case study we analyse whether the relational dimension is embedded within trustworthy relationships and reciprocal behaviour, which bring about the institutional conditions for firms to participate in knowledge transfer. The area reveals weaknesses in social capital formation, particularly at the cognitive dimension. In turn, the latter affects the potential of the relational and structural dimensions to contribute towards improving the institutional conditions. These enact the behavioural change that would enable the three villages to jointly create value, and contribute to arresting the cycle of socio-economic marginalisation, unemployment and depopulation.

The strength of social capital is particularly manifest in the shared culture, tacit knowledge heritage, and the value of trust as collective and individual capital. However, it remains largely confined within the social dimension of interpersonal interactions of the case stakeholders who take their own resources into account while neglecting to consider their limited discretion (Ford *et al.*, 2003), thereby acting independently. Instead, capacity building within the historically and bounded institutions of the area involves interdependent processes between firms and TSOs (e.g. the EU) to overcome market failures. This, arguably, increases the importance of inter-organisational knowledge sharing processes. The next section examines governance as a mechanism to enable the coordination of multi-level networked stakeholders' relationships and to reduce incidence of free-ridership.

Governance tools

Prompted by the observation that top-down governance approaches failed local stakeholders' participation in the decision making process, the embedded governance model (Go and Trunfio, 2011b) draws on behavioural location theory and institutional theory. These assume, respectively, that decision makers have limited access to knowledge and that economic activities are embedded in ongoing social institutions (Granovetter, 1985), respectively. Furthermore, the embedded governance model combines a top-down and a bottom-up perspective, providing the inputs and the consultation and coordination needed to address the developmental process and create the conditions which contribute to endogenous, self-sufficient and successful processes.

In the project, governance model was applied to create Task Forces. These 'round tables' comprised small groups of stakeholders (10/12 actors) representing the project partners – the Autonomous Province of Trentino, University of Trento and Trentino School of Management and the local DMOs. These 'meta-management bodies' are charged to use

an institutional economic approach for engaging participatory decision making to overcome socio-economic obstacles and coordinate a variety of roles designed to govern the promotion of sustainable rural tourism development. The project partners and local DMOs represent the top-down forces to drive local development and were instrumental in:

- generating the scientific approach and knowledge to define a good governance model;
- providing education and training to local stakeholders on sustainable tourism development, tourism planning and marketing;
- raising awareness of the significant role of local identity, culture, traditions and collective memory, in addition the former;
- organising and promoting transnational workshops among stakeholders of the networked central European rural areas to enable the comparison of challenges, opportunities and limitations of knowledge sharing and 'good practice' exchange identified in the composition and actions of the Task Forces.

In addition to project partners and local DMOs, Task Forces were joined also by Local Guide Groups, i.e., representatives of selected local private or public stakeholders and community members. The Local Guide Groups served as a voluntary force which complemented the Task Forces by their participation in bottom-up decision making and actions aimed at the development of sustainable tourism at the local scale. The Local Guide Groups were selected in accordance with their perceived resources and competences of each mountain area to develop tourism products for selected tourist market profiles. The Board of Mayors, or the municipal government, supervised the local stakeholders neither represented in the Local Guide Groups nor by the Task Forces' activities.

The situation of each pilot project proved place-specific in that it relies on place identity, local resources for transformation into experiential tourism products. Accordingly, the Task Force composition was configured differently according to, firstly, the strategic players that were linked to the three mountain areas: Tesino Vanoi, Valle dei Mocheni and Valle del Chiese; and, secondly, the potential role they could play in supporting the formulation and implementation of sustainable tourism pilot project (Della Lucia and Martini, 2012; Martini and Buffa, 2012).

For example, the Tesino Vanoi pilot project focused on the First World War cultural heritage to develop *Mountain Storytelling*, a tourism product based on different thematic trekking and cultural events to experience episodes of this historical event. While the Valle dei Mocheni pilot project focused on the richness of water resources of these wilderness areas to develop *Vision H₂O*, a tourism product of water-based special events and educational workshops to experience traditional activities based on local resources. Finally, the Valle del Chiese pilot project immersed tourists in a *Rural Experience*, through rural estate accommodation, participation in traditional activities and educational workshops.

Discussion

The challenge of sustainable business is at the core of today's rural development initiatives and projects. Sustainable rural development entails a transition in the traditional role of both the private and public sector toward a good governance model. The present study has applied an institutional economic approach because the market failures of marginal rural areas cannot be overcome by for-profit firms without the aid of TSOs. Therefore, the three main stakeholders of Europe's rural areas operate in an increasingly more complex context. A comparison of the dominant paradigms reveals that the three realms of private sector, public sector and TSOs stand a better chance to overcome the economic, social and environmental constraints by joining forces in partnership. This, in turn, places increasing emphasis on, firstly, the capability for leveraging social capital to create the embedded governance conditions under which stakeholder engagement in knowledge sharing processes for integrated decision making can occur; and, secondly, for facilitating the promotion of cohesive socio-economic development. Both of these factors play a critical role in (a) establishing a critical mass to pull together resources derived from social, informational, material and cognitive contexts; (b) developing a knowledge infrastructure supported by scientific and empirical evidence to underpin the embedded governance approach; and (c) stimulating a shift in the market structure from centralised hierarchical power to networks of stakeholders who share knowledge for the joint creation of value through social innovation.

This paper cites the case of three Trentino villages, particularly the challenges these must address to deal with the conditions of the 'new rural paradigm' (OECD, 2006) if they want to become competitive while preserving their identity. To the extent possible this case study provides evidence that embedded governance, which builds on social capital, guided by institutional policy, enabled the three villages to pull together their resources within the frame of one networked destination formation. Secondly, it allows for the *socialisation* and the *externalisation* of tacit knowledge (Nonaka and Takeuchi, 1995) transfer and its *internalisation* for generating a new 'layer' for 'common practice' embodiment. The latter depends on existing tourist destination knowledge assets for new product development, for example. Thirdly, the symbolic representation of the destination's identity and its incorporation into brand name products can be projected through the media to raise tourist awareness of the experiential holiday potential.

Our investigation showed that the case study area's competitiveness is relevant and dependent on social capital. The embedded governance model framed the bottom-up stakeholder perspective to help overcome the weaknesses of the top-down stakeholder perspective and vice versa. In this case, the top-down driving forces played a critical role in connecting the supra-national and provincial political-institutional level. Meanwhile the bottom-up driving forces played a critical role in fostering the hybridisation of social capital and engaging stakeholders' participation in decision making and implementation through a common partnership platform structure designed to underpin sustainable rural

tourism development projects.

This raised stakeholders' awareness that the local identity and heritage resources represent assets that given appropriate knowledge sharing could be converted into sustainable tourism products. The multi-levels involved in decision making implied the need to develop better institutions for knowledge sharing within the embedded governance model. To this end we distinguished three social capital dimensions and their role in connecting local and external stakeholders. From the *cognitive perspective*, the social capital present in the destination is the local stakeholders' possession of fine-grained understanding of local opportunities and weaknesses. And the stakeholders' main *benefit*, if appropriately leveraged for knowledge transfer and innovation across borders contributing to sustainable rural tourism development.

From a *structural perspective*, local stakeholders may interpret the strength in their social network ties as an organisational capability and main *benefit*. However, such a narrow intra-organisational relationship viewpoint can also be seen as a danger to understanding rural areas as integrated, bounded territorial units. This runs counter to institutional economic theory which positions rural areas into an interdependent network including socio-spatial relationships with 'outsiders' who have complementary knowledge; for re-configuring the multiple dimensions of innovation.

Embedded governance knowledge from a *relational perspective* makes possible the formation of a destination decision support system. Local stakeholders are rooted in a cultural environment involving dialogues and transactions to do with identity, aspirations and position with the local social network. New spatial interactions at new scales along: material space, information space, social space and cognitive space (Go and van Fenema, 2006) result in fuzzy boundaries and demand innovative approaches for consultation and more flexible forms of governance and agenda setting. The study illustrates the critical importance of such non-economic factors for achieving sustainable rural development.

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Rural Development experiences in Germany: opportunities and obstacles in fostering smart places through LEADER

To discuss the impact of LEADER on improving 'smart places', the findings of the evaluation of Rural Development Programmes in Germany are presented. A survey of Local Action Group (LAG) members shows positive results about the quality of cooperation and communication within the LAG. Although there are obstacles for innovation, LEADER shows what is already possible in very different fields such as youth projects for qualifications, concepts for sustainable use of energy or innovative ways to organise social infrastructure. Relevant obstacles are bureaucratic restrictions. To use the opportunities, it is advisable not to set narrow limits for the size of the regions; the regions should decide on this themselves. Also, for the selection of projects no narrow administrative restrictions should apply to the kinds of projects that are eligible. To benefit from the original strengths of the LEADER approach, greater freedom for locally managed actions would be required.

Keywords: rural development, innovation, LEADER, funding, networking, smart

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Introduction

Rural change is a complex and nuanced phenomenon. The more that policy makers understand the local experience, and the more the intervention strategy can accommodate the full range of regional differences, the more effective it will be (Copus *et al.*, 2011). The Europe 2020 Strategy (EC, 2010) is designed to generate smart, sustainable and inclusive growth in the European Union (EU). The 'New Rural Paradigm' (OECD, 2006) puts forward the concept of territorial dynamics to denote a set of specific regional and local factors, structures and tendencies. These include entrepreneurial traditions, public and private networks, work ethics, regional identity, participation and attractiveness of the cultural and natural environment. In the light of the growing importance of territorial (rather than sectoral) approaches, in the EU fostering 'smart places' is a crucial aim for rural areas.

The challenges and problem situations in rural areas are very different. On the one hand, possibilities for attractive employment opportunities are few in disadvantaged regions and inhabitants might feel less connected to their area. Also, their willingness to invest time and capital to improve the 'liveability' of their habitat deteriorates. Highly educated persons are often the first to leave, causing a so-called 'brain-drain' which leads to rural areas with low potential (Stockdale, 2006; Wellbrock *et al.*, 2012). On the other hand, there are rural regions which are successful in seizing the opportunities arising from globalisation and thus are referred as 'hot-spots' of development (Wiskerke, 2007, quoted by Wellbrock *et al.*, 2012; BBR 2008). Faced with the complexity and variety of rural development paths it is common to stress the uniqueness of each individual rural area (Copus *et al.*, 2011).

There is a hypothesis that the factors behind the different economic performances of rural regions are related to the interplay of local and global forces, in which territorial dynamics, population dynamics and the globalisation process are the main determinants (Terluin, 2003; Agarwal *et al.*, 2009). By analysing differences in the economic performance of rural regions, Terluin (2003) proposes a general guideline for their economic development strategies that

recommends improving the capacity (knowledge, skills and attitude) of local actors to establish and sustain development within the region as one of the key issues. Successful development approaches therefore include human skills, capacity building and innovation as crucial elements (Pollermann, 2006; Tomaney, 2010). Thereby knowledge processes and innovation take place within specific social and cultural contexts and networks of social relations, and innovation is essential for fostering smart places in rural areas (Bruckmeyer and Tovey, 2008; Neumeier, 2011; Bock, 2012).

It has become apparent that in the context of innovation an insight into the driving forces behind the economic performance of rural regions is not only of scientific interest, but also of high political relevance (Terluin, 2003). This matches with the Europe 2020 Strategy's priority of smart growth (EC, 2010) and leads to the question, how could the creation of smart places be supported by state-driven opportunity structures? Such a policy must be able to address very different problem situations, because the support required for innovation in rural areas is highly context dependent and problem specific (Tovey, 2008; Wellbrock *et al.*, 2012). The success of the support depends on the establishment of effective, co-operative and operational partnerships between different actors (Wellbrock *et al.*, 2012). The support for fostering the 'smartness' of rural areas is connected with the concept of social innovation, which was born from the ongoing debate and critique on traditional innovation theory with its focus on material and technological inventions, scientific knowledge and the economic rationale of innovation (Bock, 2012).

The Rural Development Programmes (RDP) funded by the EU support a wide range of activities. Thereby an integrated approach to rural development seems to contribute more to this highly complex task than sectoral approaches. Thus rural development must deal with multifunctionality (Gallent *et al.*, 2008) and the accordant planning processes should work with 'integrated development strategies' (Brodda, 2007) as a comprehensive territorial development approach that is based on the strengths, weaknesses, opportunities for, and threats to, a region (Terluin, 2003). The LEADER approach is one part of this, and employs a bottom-up, participatory approach in which stakeholders from

different institutions together form a Local Action Group (LAG) as a kind of a public-private partnership that makes decisions about the financial support for projects. Those projects must contribute to the objectives of Local Development Strategies (LDS) formulated by the LAG members.

LEADER focuses on local resources and recognises different cultural and institutional contexts. It is linked to concepts such as citizenship, participation, governance and endogenous development (High and Nemes, 2007). In this context participation and networking are crucial. LEADER is also able to enhance regional identity as a common 'sense of place' (Williams and Stewart, 1998; Fürst *et al.*, 2005) and to mobilise both the commitment of local actors and endogenous resources. Accordingly the LEADER approach has a high potential to foster 'smart places'.

In Germany, LAGs mainly focus on tourism, rural economic diversification, agriculture, environmental matters, demographic change and the quality of life. Innovation is thereby an important aim. LEADER is an opportunity for rural policy actors to learn from one another and to improve their qualifications (High and Nemes, 2007; Falkowski, 2011). A general assumption in the context of LEADER is that the networking and cooperation of stakeholders from different sectors play an important role in creating new ideas and advancing innovations (Dargan and Shucksmith, 2008). Thereby LEADER could be a source of funding for innovative projects. However, as LEADER is currently (2007-2013) subject to the mainstream regulations of the European Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) (EC, 2005) there are concerns about the LEADER axis losing its innovative character as innovation is not explicitly mentioned as an eligibility criterion for project funding (ENRD, 2010; Schnaut *et al.*, 2012).

The details of the EU's Common Agricultural Policy for the period 2014-2020 and the future framework for LEADER will be finalised in the coming months. The lessons learned from the three previous phases (i.e. LEADER 1, LEADER II and LEADER+), together with experience from the current programming period, should be used to facilitate further improvements in the effectiveness of the LEADER approach (Nardone *et al.*, 2010; ECA, 2010; Kantona-Kovács *et al.*, 2011; Marquardt *et al.*, 2012; Schnaut *et al.*, 2012). This paper draws on the findings of evaluations in seven German *Länder* to assess the impact of current LEADER funding on improving 'smart places' through networking and innovative projects. Our evaluation includes the analysis of different forms of networking, outcomes of projects and the impacts on rural development.

Methodology

The findings presented in this paper are part of the ongoing evaluation of the RDPs in the seven German *Länder* (Hamburg, Hessen, Mecklenburg-Vorpommern, Niedersachsen including Bremen, Nordrhein-Westfalen and Schleswig-Holstein) which began in 2007 and accompanies programme implementation during the whole funding period. Reports of the mid-term evaluations (in German, with English sum-

maries) are downloadable at www.eler-evaluierung.de. In line with EU guidelines the evaluation looks at the results, impacts and implementation procedures and ultimately the efficiency of funding. The seven *Länder* incorporate 98 LEADER areas and 23 other regions with LDSs. A mixture of qualitative and quantitative methods is used and the main instruments for data collection have been:

- More than 100 face-to-face qualitative interviews with project initiators, LAG managers, LAG members, government employees at different levels and responsibilities (using interview guidelines);
- Two surveys using written questionnaires:
 - (a) for members of the LAG's decision-making bodies (N=2310, n=1430, response rate: 62 per cent). In the questionnaire the respondents were asked about decision processes and impacts of their work. To classify personal estimations of the LAG members, a six point Likert scale was usually used (in some cases, when a middle/neutral rating seems likely, a five point Likert scale). Open questions were used to get information without suggested answers. In addition there were general questions to categorise the respondents as a basis for comparisons. Distinctions were made between different types of actors, such as private/public, and thematic origins to allow a triangulation of different views.
 - (b) for LAG managers of LEADER areas and other areas with local development plans (N=121, n=114, response rate 94 per cent) with a mixture of general questions about the situation in the region, open questions to grasp more detailed assessments about specific problems and further questions again using Likert scales;
- Standardised annual requests of activities and organisational structures in the areas (prepared as tables in Microsoft Excel™, which the LAG managers filled in and returned);
- Analysis of funding documents, especially the regulations and guidelines from the EU and the *Länder* and funding data about the projects.

This paper focuses on improving 'smart places' through networking and innovative projects as one part of the evaluation of LEADER. In this context, four major questions are addressed:

- *Which size of region is best suited for networking in rural development?* EC (2005) fixes the upper and lower size limits for LEADER areas. In the regions examined in this study the size is between 30,000 and 150,000 inhabitants, allowing the advantages and disadvantages of these different settings to be discussed;
- *What role can a funding structure such as LEADER play in improving networking?* One objective of LEADER is to bring together public, private and civil organisations to create knowledge for cooperation to achieve common goals. Thereby it is possible to see whether there are improvements in different networking matters such as 'cooperation beyond administrative borders' (respectively village boundaries),

in ‘improved understanding of the views of other stakeholder groups’ and in the ‘cooperation between different stakeholder groups’;

- *What kinds of projects support the ‘smartness’ of places in LEADER practice?* To foster smart places, projects are beneficial especially in the fields of (a) education, (b) research and innovation, and (c) digital society. These are the three fields of ‘smart growth’ in the Europe 2020 Strategy (EC, 2010). But administrative limitations could be obstacles, so the real possibilities to fund innovative projects via LEADER are examined;
- *What are the advantages and disadvantages of the LEADER approach?* For summarising the positive and negative aspects of the current framework of LEADER in comparison with standard funding, the assessments of LAG members of the advantages and disadvantages of the LEADER approach are studied.

Results

Which size of region is suitable for networking?

The population of each LAG area must as a general rule be not less than 5,000 and not more than 150,000 inhabitants (EC, 2005), although these limits are flexible in properly justified cases. Regarding the size a general assumption is that on the one hand a critical mass should exist, but on the other hand, regions that are too large could hinder the involvement of local actors. For the vast majority of the LAG members surveyed the size and space of their regions was deemed appropriate for promoting rural development (Figure 1). In most regions the average rating exceeded 2 on a 1 (very

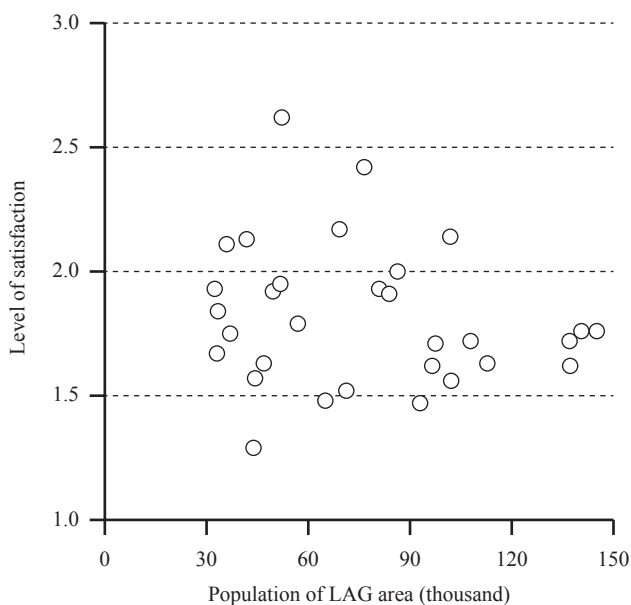


Figure 1: Level of satisfaction amongst surveyed LAG members in Germany with the population size of their LAG area in terms of its suitability for rural development. Each point represents the average level of satisfaction in one LAG area of one *Land*.

1=very good, 6=not suitable at all
Source: own data

good) to 6 (very poor) scale, but, as Figure 1 also shows, there is no clear relationship between the suitability (as perceived by the LAG members) and the size of the region. It can be concluded that in the observed population range the specific local conditions are probably more important for good networking than the number of inhabitants. The survey of LAG managers underpinned these findings: there was a high level of satisfaction with the opportunities to define the borders of their regions. In one *Land*, where the satisfaction was a little lower, some LAG managers identified the upper limit (determined by the *Land*) of 100,000 inhabitants as a disadvantageous restriction.

Thus there is no need to set narrow limits for the size of the regions, the actors in the regions should decide this for themselves. To discourage the definition of regions that are too small, the regional budget should be differentiated per inhabitant and maybe also per space (in the sense of square kilometres). This already happens in Mecklenburg-Vorpommern where LEADER regions with a higher population and bigger areas are given a larger budget than smaller ones.

What role can a funding structure such as LEADER play in improving networking?

Stronger networking and consequently better cooperation can lead to improvements in the exchange of knowledge (also in the sense of creating higher qualifications to foster smart places), as well as in the development of new ideas and new ways of sharing information. To achieve this, it is necessary to fulfil ‘prerequisites of innovation’ such as a good functionality of networking and heterogeneity between the involved actors (Wenger 1998).

On average the examined LAGs appear to be heterogeneous mixtures of people, but closer scrutiny finds big differences between the individual LAGs. Some LAGs’ decision making bodies have only seven members; some have no women at all and some have only three different institutions represented. Furthermore, the analysis reveals a high proportion of members with an academic degree (in general around two thirds) and almost 90% of the LAG members are more than 40 years old, while people under 25 are only occasionally represented.

Regarding the functionality of networking, the survey of LAG members shows positive results (Figure 2): there are LEADER-induced improvements in comparison to the situation before the start of the LEADER process in the ‘cooperation beyond administrative borders’ (respectively village boundaries), in ‘improved understanding of the views of other stakeholder groups’ and in the ‘cooperation between different groups’. The satisfaction with ‘projects are well known’ is slightly lower, so there is often a need to improve public relations activities. Thus altogether LEADER is an example of how an external programme can connect actors from different interest groups who would not otherwise have met. But furthermore, it should be noted that the understanding of the process of social capital formation, its determinants, and the effects of its impacts go beyond its measurement (Nardone *et al.*, 2010).

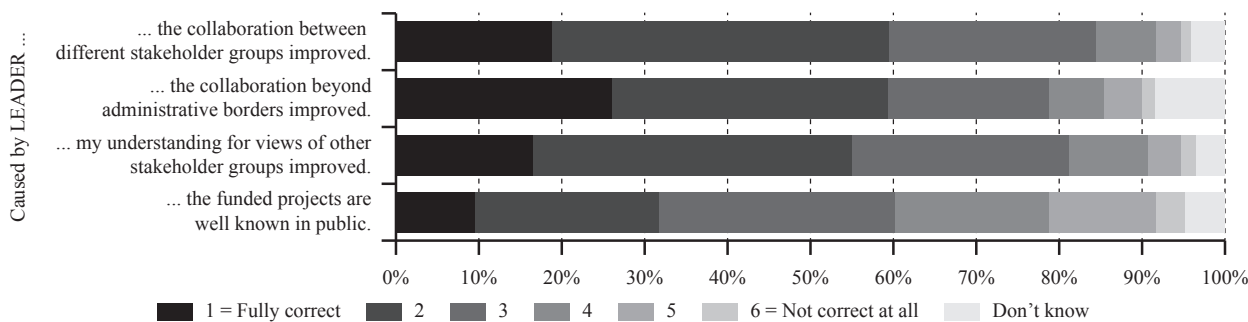


Figure 2: Estimations by surveyed LAG members in Germany of the impacts of the LEADER programme (n=1428).

Source: own data

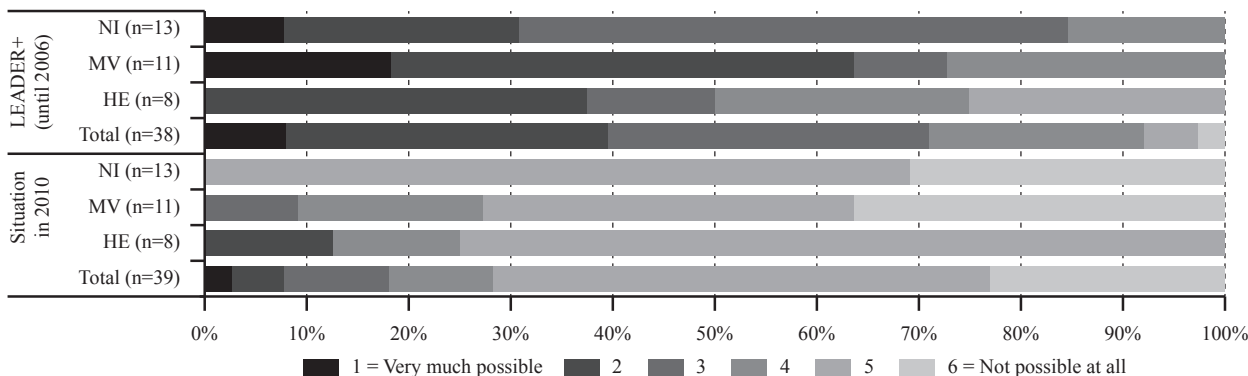


Figure 3: Estimations by surveyed LAG members in Germany of the possibility of funding innovative projects (a) in LEADER+ and (b) currently (2010).

NI: Niedersachsen including Bremen; MV: Mecklenburg-Vorpommern; HE: Hessen.

Data for Nordrhein-Westfalen and Schleswig-Holstein are included in the total but are not shown separately because of the small size of the subgroups.

Source: own data

Which kinds of projects support the ‘smartness’ of places in LEADER practice?

An open question in the survey of LAG managers asked them to name fields of action from the development strategies where the project implementation was especially good. Differences regarding the success of implementation in the varied fields of action were clear: especially successful was ‘tourism’ and, with far fewer nominations, some aspects of ‘quality of life’. In most LAGs the level of success of project implementation in ‘agriculture’, ‘economy’ and ‘environmental matters’ was rather low. It was also evident that in some spheres of activity (defined in the strategies by the regions themselves) there were no implementations at all. One reason for the various statuses of implementation in the fields of action was that the projects have to overcome two hurdles: firstly they have to fit to the strategy and secondly fit to funding conditions. In some fields, such as ‘tourism’, both are straightforward, but especially for innovative projects it is not always possible to overcome the second hurdle.

As the regions have access to their ‘own’ funding budget to implement their ideas, LEADER offers the possibility of trying out new approaches. The kick-off-meetings, working groups and process of elaboration of the LDS have led to a number of new ideas at the beginning of the process for the specific regional development. These ideas are documented in the LDS. In addition the various face-to-face interviews confirmed the functionality of these working processes and creation of ideas.

The problems in funding innovative projects are underpinned by the results of the survey of LAG managers (Figure 3). For the survey, innovative projects were defined as ‘projects with new approaches within the region, which do not necessarily have to fit in the existing measure regulations’. The LAG managers’ assessments show that the possibilities for implementing innovative projects are limited, particularly compared with the previous funding period. In 2000-2006 LEADER+ was financed from EU Structural Funds, where the funding procedures were more suitable for manifold and complex projects. The current LEADER approach is funded by the EAFRD, where the procedures are strongly influenced by the requirements of agricultural funding schemes and leave little room for flexibility (ENRD, 2010; Raue, 2010). The restrictive rules of the EAFRD lead to limited, but at the same time, especially in the beginning, vague conditions and to administrative obstacles such as time lags in approval procedures, no advance payments to the beneficiaries, and demanding documentation requirements. These obstacles were featured in the results of all empirical examinations: surveys with LAG members and LAG managers, interviews with beneficiaries and with the administration staff responsible for project approvals as well. Naming administrative obstacles was also a common answer in open questions (for an example see Figure 4). Because of the problems with funding innovation altogether some *Länder* have already made improvements within this funding period (for example see Reimann and Kleinfeld, 2012).

Not all of the *Länder* offered the measure ‘innovative

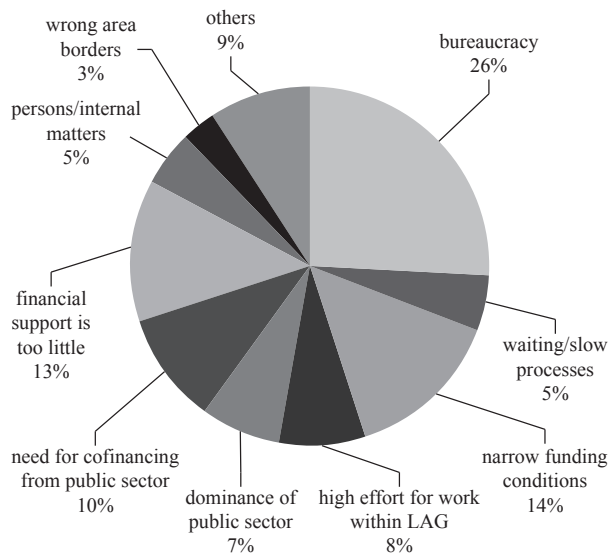


Figure 4: The most important disadvantages of the LEADER approach (as a percentage of the total) as assessed by LAG members in Germany (n=699 nominations of 1492 respondents).

Source: own data

projects', which partly explains the poor results. So the rating was clearly better in the one *Land* which offered the innovative measure from the start of the funding period (Nordrhein-Westfalen; average of 3.3 on the six-point scale) than in those that did not offer this measure at all (Hessen, Niedersachsen; average 4.6).

Amongst the implemented projects in the current funding period, it is clear that tourism-related activities are the most common (more than one third of all funded projects on the basis of funding data) and some relevant topics for rural development are underrepresented, such as qualifications, higher value farm products or handicrafts. But although there are limitations, in practice LEADER brings forward projects on very different topics. To foster smart places/growth, projects which support the fields of education, research and digital society are especially relevant. Project examples funded by LEADER include:

- Education: youth projects for qualifications (also in innovative ways such as doing school in a circus environment), environmental education, improving of open spaces in schools and nursery schools;
- Research/innovation: telemedicine, agricultural research for more sustainable plant protection, concepts for the sustainable use of energy/creating sources of renewable energy such as using solar heat for an open air swimming pool or using waste energy for the heating of buildings;
- Digital society: Internet platforms for youth qualifications (especially for apprenticeships or training positions) or support for finding suitable rooms for training and education in rural areas.

But these special kinds of projects are limited in number (less than a tenth of all funded projects). In terms of smart places, projects should also be mentioned which in general support the quality of life of the inhabitants in the fields of recreation, cultural offerings, basic services and social

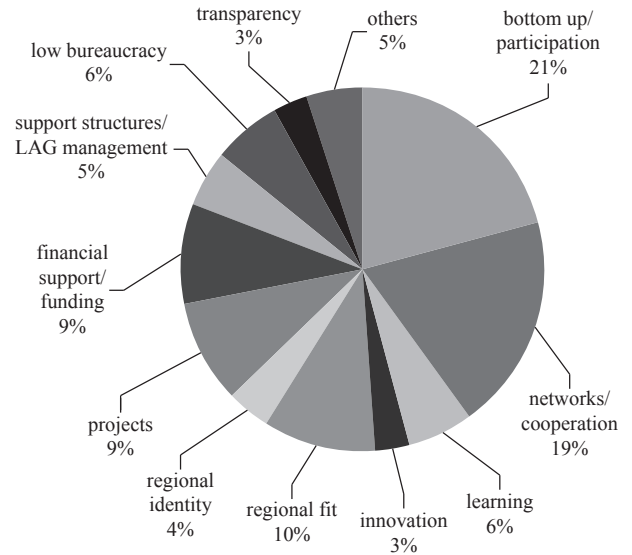


Figure 5: The most important advantages of the LEADER approach (as a percentage of the total) as assessed by LAG members in Germany (n=858 nominations of 1492 respondents).

Source: own data

infrastructure (altogether more than half of the projects). In this context it is remarkable that the participative LEADER approach enables inhabitants to take part in projects that support the 'smartness' of their own places and which promote their sense of place (the survey of LAG members produced positive estimations about this).

What are the advantages and disadvantages of the LEADER approach?

The summarised answers to this question in the LAG member survey illustrate the perception of local actors about the current LEADER framework. The named disadvantages are mainly about bureaucratic obstacles and narrow funding conditions, but especially in economically weaker *Länder* there are also problems with co-financing rules which can promote a dominance of the public sector (Figure 4). Not only the lack of possibilities to implement innovative projects but also other obstacles at the beginning of this funding period led partly to a loss of confidence and de-motivation of some actors.

The summarised answers about advantages (Figure 5) highlight the bottom-up approach and cooperation. The circumstances for innovation (networking/cooperation) are more important than the aspects associated with innovation themselves (innovation, learning). In addition, other characteristics of LEADER, such as regional identity and regional suitability, are identified by the LAG members. Altogether the 'soft' aspects have been cited much more often than direct impacts such as money or funded projects.

Discussion

To use the potentials for fostering smart places our results enable a discussion of several issues for shaping LEADER in the next EU funding period. Against the background of a

further extension of the principles of the LEADER approach to other funds to facilitate what is termed Community-Led Local Development or CLLD (EC, 2012), some general conclusions can be drawn. In doing so it should be recalled that there is a long history of LEADER programming with different institutional settings and regulations (for example as a kind of multi-fund approach in LEADER II, ÖIR 2003).

To be successful, firstly, the local actors have to cooperate in a suitable way to develop appropriate solutions and, secondly, the administrative framework should facilitate the implementation.

Regarding the cooperation of local actors our results paint a positive picture, but also show that there is a risk of dominance by the public sector. Thus a balanced composition of the members of the decision making body should be more strongly safeguarded. The EU implementing guidelines should set a minimum number (possibly ten persons) for decision making bodies and if a participation on an equal footing is intended it is essential to maintain a minimum of 50 per cent for the non public sector actors, because results from similar processes show that without such a rule there are sometimes only public sector members.

Regarding the administrative framework the results provide evidence that many ideas apparently stall before being implemented (source: LAG managers, analysis of 'not implemented projects'). Two of the various determining reasons are: (a) the possibilities of funding experimental or innovative projects via LEADER depend very much on the extent to which the RDPs are able to provide a suitable framework to fund projects outside the standard menu of measures, and (b) with the mainstreaming of LEADER; compared to the former funding periods the beneficiaries face many administrative obstacles. Thus a crucial point is the restricted choice of projects owing to the directives of the *Länder* in terms of the restrictions to axis measures, as well as the narrow framework of EAFRD and the resulting administrative obstacles.

In theory innovation plays an important part in LEADER, but in fact its role is limited. Nevertheless in practice LEADER brings forward projects in very different topics. LEADER already provides opportunities to realise innovative projects to try out new solutions and meet the specific needs in the region. In Germany the fundamental aspects of the LEADER approach, such as creating projects and common actions fitting to the specific region, exchange of knowledge and cooperation are verifiable in practice. But to prove the dimension of added value there is a need for better methods of measurement and documentation (ELARD, 2012). Altogether LEADER focuses on establishing preconditions for innovation and not on implementing innovations themselves.

To use the original and intended strengths of the LEADER approach, greater freedom for locally devised and managed, place-based forms of intervention as foreseen with the CLLD approach would be required (Copus *et al.*, 2011). The new CLLD framework could provide good opportunities to compile broader and more integrative local strategies by involving the fields of actions of all the European structural and investment funds. But that type of follow-up at the local level is only reasonable if the higher political

and administrative levels of each fund will set their funding framework correspondingly. At the moment it does not seem likely that in Germany an appropriate multi-fund framework will be established in practice.

Regarding LEADER the improvements made in some *Länder* during the current funding period are a good sign. These experiences must be taken into account at the start of the next funding period and it seems that the forthcoming Council Regulation for the EAFRD will make this easier than in the current funding period (EC, 2011). As LEADER depends on the willingness and high level of engagement of the local actors it would be beneficial if already the initial phase gives motivation for creative and smart actions.

In summary, some general recommendations can be derived for a smart design of the administrative framework for participative approaches such as LEADER:

- To safeguard participation and transparency in decision making, general rules should be set by the funding authorities, but the feeling of a general climate of mistrust should be strongly avoided;
- For the development of creative solutions and new ideas it is beneficial if there are no narrow administrative limitations to the kinds of projects, as long as they fit to the aims of their strategy;
- Regulations and funding conditions should be clear at an early stage and reliability is an important precondition.

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Abstracts of AKI publications

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BÍRÓ Szabolcs and SZÉKELY Erika

Opportunities to increase employment in agriculture in the rural areas of Hungary

Agroeconomic Book, published 2012

In Hungarian agriculture, which plays an important role in rural employment, the signs of gradual restructuring can be seen. In the last decade the rural areas of Hungary – apart from showing significant regional and sectoral divergences – could be characterised by high unemployment levels and long-term structural unemployment, low levels of qualifications, wages below the national average, an increasing number of people applying for social benefits and also by ‘invisible incomes’ linked with tax evasion and black and grey employment. By analysing the labour market of rural areas and the agricultural sector as well as the opportunities and the ways of increasing employment in agriculture we concluded that regarding from the view of the national economy. Most importantly, the

market-based employment can be made economically more viable, but an increase in the economic and social activity of the population in a disadvantageous position is also needed to encourage their integration into the labour market, and this can be achieved through socially-based employment creation. Increased employment in rural areas cannot be based exclusively on primary agricultural activities. Constant growth can be ensured only by developments that are better adjusted to the demands of the economic environment and by stabilising the entire food chain. In rural areas that are in the most disadvantageous situation in terms of social and economic conditions, the emphasis should be placed on the self-supply and subsistence functions of agriculture.

VÁGÓ Szabolcs (ed.)

Hungarian Food and Agricultural Statistics 2011

Agroeconomic Information, published 2012

The publication provides information on the results achieved in 2011 in agriculture, forestry and food industry. We assured the comparability of time-series in connection with the pocketbooks published in the recent years. Besides the national and branch indicators and data, the principal agricultural data are also given in details by counties. The

international data are suitable to demonstrate the main trends. The published data are compiled on the basis of the publications of the Central Statistical Office, EUROSTAT, the Food and Agricultural Organization (FAO) and the Research Institute of Agricultural Economics.

MÁCSAI Éva, KUJÁNI Katalin, JUHÁSZ Anikó, HAMZA Eszter and GYÖRE Dániel

The current performance and opportunities of farm-direct sales in the food supply chain in Hungary

Agroeconomic Study, published 2012

The study examined alternative, direct to consumers sales channels of farmers in the fruits and vegetables, wine and dairy sectors. Our study showed that the new Hungarian legislation relating to farmers' direct sales from 2010 improved the farmers' opportunities. The main benefits of direct selling were: daily income (cash flow); increased profitability; a direct trust relationship with consumers; and reduced dependence on the buying power of retailers. The main limiting factors of direct sales were: geographical and social limitations on demand; demand fluctuates so it is dif-

icult to plan; increasing competition in this form of sales; the legal requirements and economic conditions of direct sales are investment-intensive; the administrative burdens are numerous and costly; it is a time consuming and labour-intensive activity; and farmers were mistrustful of co-operation. Our analysis showed that farmers direct sales in different sectors had common advantages and disadvantages, thus it is possible to work out a comprehensive programme to support the development of short food supply chains within the framework of the Common Agricultural Policy.

ISÉPY Anett, MÁNDI-NAGY Dániel, NÉMETH Noémi and STUMMER Ildikó

Experiences of the EU school milk and school fruit schemes in Hungary

Agroeconomic Book, published 2012

The goals of the school milk and school fruit schemes in Hungary are to stabilise the market and to provide children with healthy products, so encouraging healthy dietary habits and to improve their health and quality of life. The purpose of our study was to describe and to evaluate the school milk and school fruit schemes, to introduce the reader to the legislative background and to describe developments in actual payments in Hungary and in the European Union. We intended to answer the following questions: firstly, why do the schools participate in the scheme and, secondly, what is the experience gained. We can conclude that the preliminary expectations of the schools participating in the school milk and school fruit schemes and covered by the survey were not

met. The reason is that the goals of the schemes can only be reached in the longer term since the effects of the school milk and school fruit on the dietary habits and consumption can only be seen later. On the basis of our analysis we can make the following recommendations: the school fruit scheme should be expanded, consumption of school milk should be encouraged, the accompanying measures should be enlarged and extended also to the school milk scheme, the parents should be included in the accompanying measures, the schemes should be disseminated in disadvantaged regions, the efficiency of transportation should be increased and the administrative burden should be reduced. Finally, we have also determined the possible directions of further research.

FEKETE Géza and KISS György (eds)

Production data for the major Hungarian food products, 2011

Agroeconomic Information, published 2013

This publication presents data, for a wide selection of products, on the production costs and sales income of the food processing industry in 2011 compared to the previous year. Firstly, the price changes for the major food product groups are briefly summarised and, secondly, tabulated data for individual food products are presented. These data show that in 2011 the production costs of meat products generally increased. This is true for all products as the manufacturers aimed to compensate for their growing production costs with some increases in sales prices. For a number of meat industry products the increase in the sales price did not compensate

for the increase in the production cost in 2011, so the profits were lower. In the poultry, dairy, milling and baking industries, as well as in the production of pasta products, increases compared to the previous period in raw material costs, and more or less in total production costs too, can be observed. The results usually varied between products within sectors, with the exception of the milling industry, for example, where improved results were associated with all of the products for which data are presented. A positive example is pasta production, where all of the presented products again generated a profit, as in the previous year.

TANÍTÓ Dezső, LÁMFALUSI Ibolya, TÓTH Kristóf, PÉTER Krisztina, FELKAI Beáta Olga and VARGA Tibor

The effects of changing the value added tax on agricultural and food products in Hungary

Agroeconomic Book, published 2013

According to agricultural associations, fair market players and professional assessments the black market has increased greatly in the Hungarian agri-food sector, causing huge moral and financial losses for the honest players in the economy and for the state budget. The dominant opinion is that one of the main drivers of the spread of the black market in the sector is the high rates of value added tax (VAT) applied to agri-food products, which damage the competitive position of the sector and destroy market relationships and social moral. To overcome these negative implications a considerable reduction in the VAT rates is needed, at least in the case of the basic food products. The analysis of the Hungarian situation as well as the review of practices across

the European Union (EU) shows that VAT rates are too high in Hungary in comparison to VAT rates in other EU Member States and the domestic economic conditions. Consequently this study examines the possibilities and effects of a reduction in VAT rates for food products in the light of international experiences and national possibilities. Our conclusion is that in the case of basic food, which accounts for 50 per cent of total food consumption, the government should reduce the VAT rate. Taking into account EU VAT regulations, internal budgetary constraints and favourable economic effects, we consider a reduction of the preferential VAT rate to 9-14 per cent to be feasible, assuming that the standard VAT rate remains unchanged at 27 per cent.

RADÓCZNÉ KOCSIS Terézia

The market prospects for some promising fruit species (walnut, pear, apricot, cherry)

Agroeconomic Study, published 2012

This study begins by presenting an overview of the problems, risks, employment, and cost and income ratios of walnut, apricot, pear and cherry production in Hungary. It describes the trends in the uses of these products, especially the potential for fresh consumption in Hungary and for Hungarian exports. It also reviews global and European Union production and trade, and the main import markets of these species. The potential for the development of production in these sectors, based on the market demand, conditions and commercial organisations, was assessed. The Hungarian market is small and price sensitive, and the solvent demand is low because of the indebtedness of the population. Therefore more attention should be given to the European market. The export of almost all products is presently concentrated in only

2-3 foreign markets. The external market situation of walnut is more favourable than that of the other three species. Hungarian washed walnuts with shells is a special premium product and exports account for 7-10 per cent of Hungarian production. Part of the production is exported to retail stores abroad and this category is promising because the store sales are continuously growing. The main market for Hungarian pears is Finland but, additionally, Hungary should penetrate the eastern European market. For Hungarian exports to be more competitive, storage capacity should be further developed and winter varieties should be planted. World production of sweet cherries has grown continuously in the past ten years. Exports of Hungarian cherries are also increasing and the main markets are Russia, Germany and Austria.

KEMÉNY Gábor, VARGA Tibor and FELKAI Beáta

The effects of weather risks on micro-regional insurance costs and yields in Hungarian agriculture

Agroeconomic Book, published 2012

The research examined the territorial differentiation of damage to wheat, maize, barley, sunflower seed, rapeseed, grape and apple production caused by drought, heavy rain and spring frost. The investigation evaluated the territorial differences in the effects of weather on agricultural production and found that there are extremely high differences in the probabilities of damage in different micro-regions. Therefore the design of agricultural insurance products should be based

on different absolute deductibles and different insurance premiums for micro-regions. Furthermore, it was found that within a micro-region individual producers face a very high diversity of risks which implies that in the long term only a *bonus-malus* system developed for individual agricultural producers can mitigate different risks, and that this can be the basis of a well performing risk management system that is suitable for a wide risk community.

JUHÁSZ Anikó and WAGNER Hartmut

An analysis of Hungarian agri-food export competitiveness

Agroeconomic Study, published 2012

The main purpose of our study was to provide an overview of the export growth trends in the Hungarian agri-food sector over the last decade and to identify the obstacles hindering the sector's development. We used constant market share (CMS) analysis to break down the changes in export growth into components. Almost without exception, the increasing market size accounted for most of the export growth. The commodity (composition) and competitiveness effect aspects produced varied results and were not so positive. This showed that the Hungarian export structure was less adaptive to changes in demand in the target export markets. Our results also showed that for western European Union (EU) member states the national technical regulations

density rankings (calculated from the TRIS database) were nearly the opposite of the trade logistics efficiency (cost, duration and document number) rankings. In other words the 'old' EU member states have developed a competitively operating service sector of foreign trade logistics and at the same time created an efficient safety net of regulations controlling the import of products that could harm the interests of society (mainly addressing public health, sanitary and phytosanitary risks). Confirming the recommendations of the study, a similar analysis for the Eastern EU member states showed that in both areas (logistics efficiency and the effective use of legal protection) there is still a lot that can be learned from the 'old' member states.

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