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**The evolution of the Hungarian agricultural knowledge system (AKS)
since the EU enlargement**

Gusztáv Nemes*

MTA KRTK KTI

Nemes23@gmail.com

Ágnes Varga

ELTE Dpt. Of Geography

varga.agi14@gmail.com

Chris High

Open University UK

c.high@open.ac.uk



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Abstract

This presentation aims to explore and analyse the evolution of the Hungarian institutional system for the creation and the transfer of knowledge in the field of agriculture and rural development since EU accession. In other words, we focus on the Agricultural Knowledge System (AKS) that has failed to fulfil the needs of sustainable agriculture concerning the creation and the flow of knowledge. We offer an analysis of Hungarian AKS institutions, their co-ordination, co-operation and communication with each-other and with Hungarian rurality, and briefly explore characteristics of emerging bottom-up structures, called LINSAS (learning and innovation networks for sustainable agriculture).

Keywords: sustainable agriculture, LINSAS, Hungary, rural development

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 current 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. 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 E., 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 authorities) 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 (*járási 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 was 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, 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, Villany: 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, channelling 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 organizations, 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 the 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 LINSAs, 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) 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 would be needed into a complex, methodologically thorough direction that at the same time provides for more qualitative analysis (High and Nemes, 2007). This could offer legitimacy for changing the currently prevailing focus on spending the money on 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 6 country studies (including the Hungarian) and an overall European policy review was produced to describe AKS in Europe. Based on these reports, an in-depth comparative analysis was produced, arriving to some overall conclusions concerning the European AKS (Hermans *et.al.* 2011).

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 became 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 the 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.

With regard to the position of agricultural education and its role amongst traditional AKS actors of research and extension, many countries reported difficulties. These result 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 perhaps cooperation between these two types of organisations is 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 difficulties are related to differences in organisational culture that make the collaborative process itself problematic, while other problems 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 the 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 traditions, 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 thus slow to react to new challenges and needs. Nevertheless, there are many alternative networks, processes experimenting with new directions, building up various a net 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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