



**AKIS and Advisory services in Luxembourg:
A Report for the AKIS inventory (WP3) of the PRO AKIS
project**

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Executive summary

This report aims at providing a description of the Agricultural Knowledge and Information System (AKIS) in Luxembourg with a particular focus on agricultural advisory services. The description includes history, policy, funding, advisory methods and a section on how the Farm Advisory System (FAS) was implemented.

It is an output of the PRO AKIS project (Prospects for Farmers' Support: Advisory Services in the European Agricultural Knowledge and Information Systems'). Reporting on the case of Luxembourg, it is one of 27 country reports that were produced in 2013 by project partners and subcontractors for compiling an inventory of Agricultural Knowledge and Information Systems. AKIS describe the exchange of knowledge and supporting services between many diverse actors in rural areas. AKIS provide farmers with relevant knowledge and networks around innovations in agriculture. Findings from the 27 country reports were presented at three regional workshops across Europe in February and March 2014, discussed with stakeholders and experts, and feedback integrated in the reports.

Based on semi structured qualitative and expert interviews, Luxembourg's AKIS is described to be relatively pluralistic, consisting of public agricultural institutions, the agricultural chamber and several FBO (Farmer Based Organisations)-based advisory services. In addition, the private enterprises act as providers of product-related advisory services. Public funding of jointly selected advisory projects ensures that other organisations carry out advisory services according to special topics, which go beyond the advisory scope of public advisory organisations.

To some extent the country relies on external knowledge sources. While within the country, the creation of knowledge is intensely supported through the CRP's (Centre de Recherche Publique), it is also considered to be a knowledge importer – as the cross-border exchange on knowledge and cooperation with agricultural actors from the public, private and research sector is high.

Advisory services in Luxembourg are financed either from national budgets or through mixed funding with state contributions. The total number of advisors employed at the advisory organisations are 30 of which 20% are female. Frequent advisory methods in Luxembourg are direct bi-lateral contacts to farmers either on farm, outside the farm or via telephone, while internet sources, agricultural press releases or group advice are used less often during advisory work.

With regard to contents, a trend towards integrated farming supposedly replacing conventional farming in the future was mentioned. Nevertheless, increasing efficiency of agro-chemical input use, generally reducing inputs and safeguarding natural resources in Luxembourg were perceived as important challenges in the agricultural sector.

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Abbreviations

ASTA	Administration des Services techniques de l'Agriculture (Administration of Agricultural Technical Departments)
AWU	Annual work unit
BIOG	Bio-Bauere-Genossenschaft Lëtzebuerg (Organic farmer's association)
CAP	Common Agricultural Policy
CRP	Centre de Recherche Publique (Public Research Centre)
DLR	Dienstleistungszentrum Ländlicher Raum (Service Centre for the Rural Area)
FAS	Farm Advisory System
FBO	Farmer-based Organisation
FILL	Fördergemeinschaft Integrierte Landbewirtschaftung Luxembourg (Association to promote integrated agriculture in Luxembourg)
GAEC	Good Agricultural and Environmental Conditions
GDP	Gross Domestic Product
IBLA	Institut fir Biologesch Landwirtschaft an Agrarkultur Luxembourg (Institute for organic agriculture)
IVV	Institut Viti-Vinicole (National institute for viticulture)
LSU	Livestock unit
LTA	Lycée Technique Agricole (Technical College for Agriculture)
LWK	Landwirtschaftskammer (Chamber of Agriculture)
NGO	Non-governmental organisation
RDP	Rural Development Programme
SER	Service d'Economie Rurale (Department for rural economy)
SMR	Statutory Management Requirements
UAA	Utilised agricultural area

1. Main structural characteristics of the agricultural sector

The Grand Duchy of Luxembourg is located in central Europe. It shares its north-western borders with Belgium, south with France and east with Germany. With a surface area of 2,586 km² it is one of the smallest EU member states. Its average population has increased over the past years from a total of 502,066 inhabitants recorded in 2010 to 537,039 inhabitants in 2013 (Encyclopedia of the Nations 2013).

1.1 Farm characteristics and age composition of farmers

Overall, the country has a large percentage of rural areas compared to other EU countries with a total of 51% agricultural land area in 2009. Area under management practices potentially supporting biodiversity for the country has witnessed a slight increase from 2.4 % in 2005 to 2.8% in 2010 (European Environment Agency 2012).

In 2010, the **utilised agricultural area** (UAA) in Luxembourg stood at 131,100 ha (EUROSTAT2012a). The number of holdings by size of the holding in the year 2010 reveals an emphasis on the size category of 50-99.9ha with 640 holdings falling into this size category. 440 holdings feature a holding size larger than 100ha. 890 Holdings are characterised by a holding size of less than 30ha (EUROSTAT 2012a p 29). In 2010, 2.8% of total UAA was organically farmed (EUROSTAT 2012a p 126). In 2010, 2,200 agricultural **holdings** existed (EUROSTAT 2012a). Of those, 2.7% holdings were organic farms (Eurostat, 2012a p 54).

The number of **holdings according to the age of managers** is seen to be unevenly distributed. According to Encyclopedia of the Nations (2013) in 2010, 60% of all 2200 holdings belong to managers of the age group between 45 and 54 years (corresponding to 720 holdings; 33%) and 55 to 64years (600 holdings, 27%).

1.2 Agriculture and the economy

The country's **GDP per capita** has fluctuated over the past years. In 2010 for e.g., it was €78,600, increased to €82,100 in 2011 and declined again to €79,500 in 2012 (Worldbank 2013a). The contribution of the agricultural sector to the GDP compared with other EU countries is significantly low with a 0.3% contribution for 2010 (United Nations Economic Commission for Europe 2013) while overall employment in this sector has witnessed a decline in recent years with 1.3% for 2009 and 1.0% for 2010 (Worldbank 2013b).

With regards to **agricultural output** and the gross value added, this has shown a steady increase (€238 mln in 2000, €292 mln in 2005 and €352 mln in 2011). Nevertheless, the contribution of Luxembourg's agricultural output to the EU-27 remains low with 0.1% for 2000 and 2011 (EUROSTAT, 2012a p 68).

The agricultural **labour input** has remained constant over the past 11 years (2000-2011) with about 4,000 AWU (EUROSTAT 2012a p. 73). A closer look at the farm labour force (e.g. 2010) indicates that the majority of 4,100 persons (corresponding to 2800 AWU) stem from

family labour. 3,700 AWU corresponds to labour force directly employed by the holding. Regular non family labour force accords to 900 persons (EUROSTAT 2012a p 49).

1.3 Crop and livestock composition

The three most important **crop varieties** in terms of production and added value identified for 2011 include cereals (149,600t), common wheat (38,000t) and rape (15,600t) (EUROSTAT, 2012a p 84, 88). With regards to vegetables, the most important in terms of output for 2011 include apples (2,000t). The total vineyard area for 2011 covered 1,000ha (Eurostat, 2012g p 93, 95).

For **livestock**, total units for Luxembourg stand at 167,700 LSU (Livestock units) while the most important in terms of production units include: cattle (143,200 LSU), pigs (18,200 LSU) followed by poultry with 1,200 LSU (EUROSTAT, 2012a p 37). Dairy products from cow's milk production featured the highest production (295,000 t) in 2010 (EUROSTAT, 2012a p 102, 109, 110).

1.4 Use of chemicals for soil improvement

The use of **fertiliser** in Luxembourg is relatively high. In 2009 for instance, fertilizer consumption amounted to 301,77kg/ha of arable land (Worldbank 2013b). Data of pesticides use is unavailable. The quantity of ammonia (NH₃) emissions from agriculture has dropped slightly between 1990 and 2010 i.e. from 5 kt to 4 kt respectively with a percentage change of -9.4% (EUROSTAT 2013b). Lastly, the gross nitrogen balance for 2000-2008 has witnessed a fluctuation with a total of 244 kg N per ha agricultural land in 2001, 248 kg N in 2004 and further drop to 221 kg N in 2008 (EUROSTAT 2013b).

2. Characteristics of AKIS

In the following chapter, the agricultural knowledge and information system (AKIS) in Luxembourg is depicted. The description includes the most relevant AKIS actors and information on knowledge flows. Main sources for chapter 2.1 can be seen in the semi-structured interviews which were conducted with two experts from public and farmer-based advisory services. A review of grey literature and internet complements the text and forms the basis the design of the diagram of AKIS actors as presented in chapter 2.2.

2.1 AKIS description

2.1.1 AKIS actors and knowledge flows

In Luxembourg, the **public sector** plays a central role in the provision and financing of advisory services. The Ministry of Agriculture, rural development and viticulture¹ is the responsible administrative body which regulates advisory services.

Three public service institutions work on behalf of the Luxembourgian ministry of agriculture:

- ✦ Administration of Agricultural Technical Departments (ASTA²)
- .. Department for rural economy (SER³) and
- ✦ National institute for viticulture (IVV⁴)

All of these public authorities acquire and process information in their respective thematic field of competences. Similarities of these three public institutions can be seen in provision of advisory services for farmers free of charges as well as in the processing and dissemination of agricultural information and knowledge (ASTA 2010; SER 2006a; SER 2006b; LWK Luxembourg n.y. a).

ASTA focuses on advisory services on plant and animal production, plant protection, economic issues and sustainable agricultural practices in general. ASTA also produces data on agro-meteorology and conducts studies in the laboratory (ASTA 2010). In the expert interview at ASTA, cooperation with German public research institutions in the 2 neighbouring German states was mentioned for the case of specialised crops. E.g. ASTA cooperates with DLR⁵ – a public experimental research station in Rhineland-Palatine- and the University of Bonn in form of joint research projects. This cooperation is regarded as an important knowledge source for the agricultural sector in Luxembourg. Moreover, Luxembourgian fruit-growing farmers receive advisory services via the consortium for integrated fruit production (on their own cost), which is associated with DLR.

¹ Ministère de l'Agriculture, de la viticulture et du développement rural

² Administracion des Services Techniques de l'Agriculture

³ Service d'Economie Rurale

⁴ Institute Vini-Viticole

⁵ Dienstleistungszentrum Ländlicher Raum (DLR), Rheinland-Pfalz

Activities of **SER** range from advisory services on general advisory topics over investment, accounting and economic issues to processing agricultural information in general, e.g. agrarian statistics or reports on topical developments in Luxembourgian agricultural sector. SER is also responsible for implementing Cross Compliance according the regulation of the current funding period (2007-2013; SER 2007).

The role of the **IVV** is similar to those of SER and ASTA but focused on the sector of viticulture. In addition to providing advisory services to winegrowers free of charge, IVV conducts applied research on its own testing fields. The Institute regards itself as an “important interface between theory and practice, research, development, advisory services and training” (IVV 2011). According to their website, knowledge transfer of relevant and new topics in viticulture occurs via education and training of winegrowers (IVV 2011). IVV manages an up-to-date website where it publishes information e.g. on training courses, specific recommendations on wine cultivation or (public) funding.

2.2 Research and education

Public research in Luxembourg is conducted by 4 public research centres (CRP⁶), of which two conduct agricultural research: CRP Gabriel Lippmann and CRP Henri Tudor. Of the latter two, CRP Gabriel Lippmann is specialised on research on agricultural production topics, e.g. precision farming or sustainable agriculture while CRP Henri Tudor is involved in projects concerning technological developments (e.g. machinery, biogas plants). It was mentioned that a fusion of the two institutes to one public research institution (Luxembourg Institute for Science and Technology – LIST) is planned for the near future (end of 2014). Research projects at the CRP are funded by ASTA and IVV. Releasing research results to farmers on the ground e.g. by publishing new insights in the agricultural press is regarded as very relevant and is actively supported by the public institutions. It was mentioned in the expert interviews that scientific output is mandatorily transmitted to the agricultural chamber in a simplified language which then passes research results on to farmers.

Furthermore, the technical college for agriculture (LTA)⁷ in cooperation with ASTA is involved in field trials on plant varieties. In the viticulture and organic farming sector, the national institute for viticulture and the institute for organic agriculture IBLA⁸ both conduct field trials in addition to providing of specialised advisory service.

The **agricultural chamber** of Luxembourg can be regarded a **farmer-based organisation** (FBO) with a central role in the extension system of the Luxembourgian AKIS. It is legally mandated to coordinate agricultural advisory services of non-public origin on behalf of the ministry of agriculture (see Chapter 4.2). Therefore, the chamber possesses close linkages to other (partly private) farmer-based organisations (coloured in green in Figure 1).

The chamber is in close exchange with farmers and represents their interests. Membership in the chamber is obligatory for all farmers in Luxembourg. It was confirmed in the expert

⁶ Centre de Recherche Publique

⁷ Lycée Technique Agricole

⁸ Institut für fir Biologësch Landwirtschaft an Agrarkultur Luxemburg

interview that the chamber also acts increasingly as an intermediary between public interest and farmers in the field of water protection and nature conservation.

Furthermore, the chamber is also the body with the closest linkages to agricultural advisors. They are invited for meetings up to 5 times per year on relevant and practical advisory issues. The meetings were described as an important platform for information exchange among advisors as well as between chambers, public authorities and advisors and hence indirectly with farmers. These meetings are initiated and conducted by the chamber, however, experts e.g. from public advisory services are invited as speakers. It was mentioned that this platform is also relevant for information flow back to the chamber as advisors feed concerns and information on practical farming matters back to the chamber.

In addition to the public authorities with an advisory function plus the chamber, advisory services in Luxembourg are offered by several farmer-based organisations. Some noteworthy organisations and associations are:

- Convis: farming association specialised on plant and animal production, incl. nutrient management
- BIOG: FBO uniting organic farming associations (Demeter and Bioland)
- The Association to promote integrated agriculture in Luxembourg (FILL⁹), acting as an umbrella organisation uniting several FBO and agricultural up- and downstream organisations. Some of these projects are passed on to members of FILL in case of successful piloting (initially supported by FILL).

According to the interviews, **private advisory companies** generally play a minor role for farmers in Luxembourg. It was mentioned that in individual cases however, farmers or advisory circles may hire a (private) specialist advisor (e.g. from a private French or German advisory company), e.g. when a very specific problem is encountered by the farmer group. The company is privately reimbursed by the farmers in these cases.

Moreover, advisory organisations stemming from agricultural up- and downstream industries are known to offer agricultural advisory services. It was mentioned, that these services are strongly product-related¹⁰. From the interviews however, the extent of utilisation of product-related advisory services by Luxembourgian farmers could not be assessed.

NGO seem to play an inferior role in the AKIS in Luxembourg in general. In the interviews, only one initiative with an ecological focus was mentioned.

2.2.1 Coordination structures

An important formal committee initiated by the agricultural chamber can be seen in the *Comité consultatif de la Coordination*. It includes representatives from the ministry of

⁹ Fördergemeinschaft integrierte Landwirtschaft Luxembourg

¹⁰ Generally, the differentiation between “independent” and “product-related” advisory services in Luxembourgian terminology was observed in the interviews and during review of documents.

agriculture, chamber, public administration bodies, vocational school¹¹ and important advisory organisations (FBO and private companies). The committee evaluates project proposals submitted by FBO and decides on funding by the ministry for a maximum of 5 years¹² (LWK n.y. a, cf. chapter 4.1 and 4.2).

The regular meetings of agricultural advisors form another significant platform which is coordinated by the agricultural chamber.

Besides these formal coordination structures it was noted that communication and exchange often occurs in an informal and straightforward manner between actors of the relatively small institutional landscape in the agricultural sector of Luxembourg.

2.2.2 Policy framework

Agricultural policy in Luxembourg forms part of the law supporting rural development of April 18th 2008¹³ (Service Centrale de Legislation 2008b). The act of December 4th, 2008 (Service Centrale de Legislation 2008a) concreted the implementation of the agricultural law by defining measures eligible for public funding. The following articles deriving from agricultural law and act are relevant for the funding of advisory projects, training and knowledge transfer.

Article 17 of the agricultural law legally assigns the chamber to coordinate agricultural advisory projects funded by the agricultural ministry. The rules of implementation of the act of December 4th, 2008 specify training participants (farmers, managers, e.g. producer groups or socio-economic advisors), funding rates (up to 100% for farmers and 50% for advisors and members of producer groups). It also determines that training providers receive funding.

Article 18 of the agricultural law typically involves all projects on experimental field trials. 50% of the costs are eligible for reimbursement. In case of topics of national interest the funding rate is raised to 80%. Examples mentioned in the interview for projects funded within the scope of this article range from field trials on specialized crops (e.g. in nature parks) to so called coaching projects initiated by farmer cooperatives¹⁴ which invite a specialist advisor e.g. from a private German advisory company. The latter is eligible for 50% funding while the remaining 50% are reimbursed privately by farmers.

Article 19 regulates the process of funding of advisory projects which will be further described in chapter 4.2.

In addition to national regulation, Luxembourg offers funding opportunities within its **rural development programme** (Ministere de l'Agriculture, de la Viticulture et du Développement rural 2008) and the funding programme for environmentally-friendly production procedures (Ministere de l'Agriculture, de la Viticulture et du développement rural/ ASTA n.y.).

¹¹ Ackerbauschule

¹² After 2 years, advisory projects are evaluated by the committee. In case of a positive evaluation, project funding is prolonged for up to 5 years. After 5 years, projects can only be funded further if they include new thematic aspects.

¹³ *Loi du 18 avril 2008 concernant le renouvellement du soutien au développement rural*

¹⁴ *Maschinenring*

2.2.3 Knowledge needs

One interviewee observed that farmers increasingly have to produce in a more environmentally sustainable and innovative manner in the future, e.g. by more precise fertilisation, a decrease in use of herbicides or fungicides combined with an increase of efficiency of inputs in general. It was mentioned that field data e.g. deriving from field trials which are needed to enhance sustainable production are still lacking, particularly for the case of specialised crops.

In addition, coping strategies in the agricultural sector for dealing with the consequences of climate change were mentioned as a relevant knowledge need.

Furthermore, dealing with the bureaucratic requirements of compliance to legal rules in the agricultural sector was regarded as a future challenge and knowledge need for farmers and advisors likewise.

2.3 AKIS diagram

An overview of AKIS actors in Luxembourg as described in chapter 2.1 is presented in Figure 1. Despite being a small country, there are manifold actors stemming from FBO and up- and downstream associations which could not all be shown in the AKIS diagram (see Annex 1 for a detailed list). While knowledge flows between some of the actors have been described qualitatively in chapter 2.1 we refrain from marking knowledge flows in this graph due to the small amount of interviews (see chapter 7).

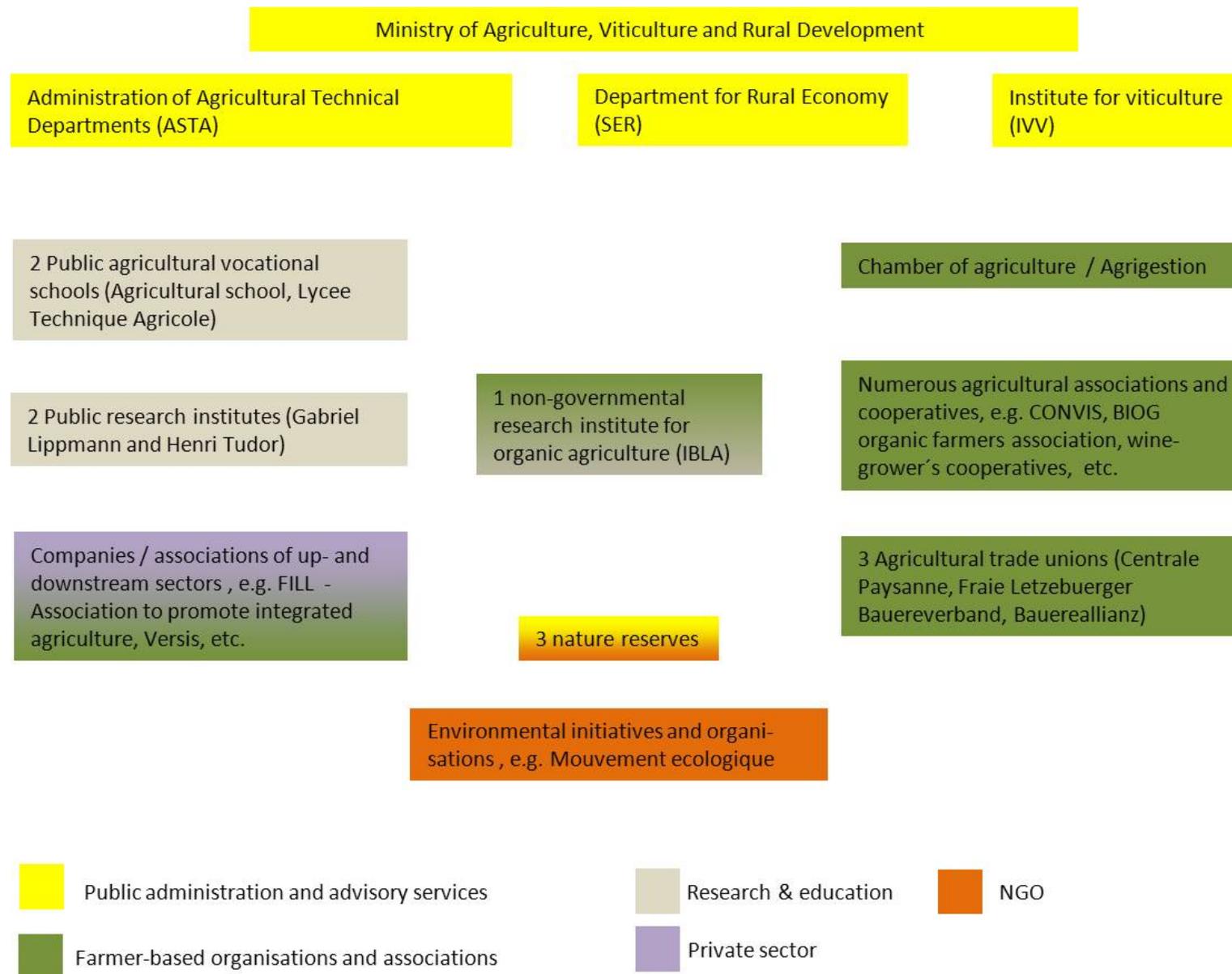


Figure 1: Diagram of AKIS actors in Luxembourg

Table 1: Overview of organisations creating the AKIS

Provision of service				Source of financing								
Status of the organisation	Type of organisation	Number of organisations	Number of advisors	Public funds			Farmers			Private	NGO	Other (specify)
				EU funds	National funds	Regional funds	Farmers' levies	Farmers' contribution	Billing services	Other products (inputs, outputs)	foundation	
Public sector	Advisory department of the Ministry of agriculture	X	-		X							
	Advisory service agencies on state level	3			X							
Research & Education	University (without agrl. faculty)	1	-		X							
	Public research institutes (also providing advisory services)	2	-		X							
	Non-public research institute with agricultural focus	1	3		X		x					
	Education/ vocational schools on national level	2	-		X							
Private sector	Upstream industries	n.a.								X		
	Downstream industries	n.a.										
	Independent consultant	n.a.										
	Private agricultural advice company	n.a.										
	Farmers' owned advice company	-										
	Other (specify)											
Farmer-based organisation	Chamber of agriculture	1	10		x			X				X
	Farmers' circles/groups	2	-									
	Other: Agricultural associations	Numerous	unknown		X			x				X (consultancies)
NGO	Nature Parks	3	2		X							X (unknown)

3. History of advisory services

Due to the absence of grey literature on the historic developments of advisory services in Luxembourg, only brief information is provided here which was mainly derived from the internet pages of the respective organisations. The data is complemented by recent developments of advisory services which were discussed in semi-structured interviews and information from the quantitative survey of advisory organisations.

Most of the public advisory bodies and the agricultural chamber have a long history record of providing advisory services to farmers. The establishment of the institute for viticulture and the agricultural chamber e.g. range back to the 1920s (LWK Luxembourg n.y. c, IVV 2011). SER in contrast was founded later in 1964 e.g. in order to provide relevant data on the situation of agriculture and viticulture in Luxembourg in a more efficient manner (SER 2005).

The specific responsibilities and areas of activities of the agricultural chamber and public advisory services are legally established by rules. E.g. responsibilities, organisational issues and the mission of the institute for viticulture were defined by the law of 1976. New tasks were incorporated stepwise according to new national and EU-requirements (IVV 2011).

It appears that a few more advisory players emerged in the Luxembourgian AKIS during the last 10-20 years. This is confirmed by the founding dates of the advisory organisations which participated in the online-survey. 4 of the 9 advisory organisations were founded between 1987 and 2005, among them being two nature parks and two FBO's (Association for young farmers and winegrowers and the Research Institute for Organic Agriculture IBLA). 3 nature parks currently exist in Luxembourg, amongst which 2 parks have installed agricultural advisory services for farmers by allocating one agricultural advisor per nature park. Here, advisory services are particularly aligned towards goals of environmental protection and nature conservation. It was mentioned in one expert interview that in the third nature park Müllerthal which is currently being founded, agricultural advisory services will be installed and play a major role as well. With its sandstone formations, the future nature park depicts an important area for drinking water abstraction, and thus keeping nutrient inputs from agricultural sources low is going to be a central topic of agricultural advisory services in the future.

4. The agricultural advisory services

Data for this chapter mainly derives from the quantitative online survey of advisory organisations and from the review of documents and homepages. The results were complemented with insights from the semi-structured interviews.

4.1 Overview of all service suppliers

Public extension services are available to every farmer in Luxembourg at no cost (SER 2006b; IVV 2011) or for a small fee (see chapter 5). According to the interviews it can be assumed that almost all farmers currently are or have been involved in advisory services in the past. However, precise data on the number of farmers involved in advisory services were unavailable.

Of the 14 agricultural advisory organisations which were contacted for the survey, 9 responded by filling out the online survey. Among those, 8 datasets are complete. Questionnaire respondents classified their organisations according to the following categorisation:

- 1 public organisation (nature park)
- 1 chamber
- 4 farmer-based organisations
- 1 research institute (non-public)
- 2 others (among those one nature park organised as an association between state and municipality)

It should be noted that despite one of the nature parks (categorized as a public organisation), none of the three main public advisory authorities (ASTA, IVV; SER) participated in the online survey. Therefore, Table 2 was prepared in order to present an excerpt of the most relevant responsibilities and activities in advisory and beyond, which was based on a review of documents and websites. The agricultural chamber as the coordinator of publically funded advisory projects and a provider of advisory service itself was included in the table.

Table 2: Overview of specialisations of main public advisory services plus chamber

	ASTA	IVV	SER	LWK
Advisory topics	funding aids (investments), plant & animal production, horticulture, pest management, accounting	All viticulture and winery issues	(socio-) economic issues, accounting services & investments	plant production, Agro-Check
Topics of public interest	landscape conservation aids, integrated plant production, agriculture in protected areas	sustainable production procedures in winegrowing	-	Protection of water bodies, nature conservation issues
Interface with EU-regulations	Regulation of priority 2 programmes	Implementation of EU-rules on national level	Implementation of CC regulation	Implementation of Agro-Check (CC-advisory tool)
Other relevant tasks and functions	Monitoring and processing meteorological data	Education and training of winegrowers,	Coordination of accounting services of 3 advisory bodies	training of advisors, agrl. education
Control functions	Control of microbiological parameters, CC-controls	Control of quality and compliance with laws	CC-controls	Monitoring of advisory project advances

Based on: ASTA 2010; SER 2006a; SER 2006b; SER 2007; SER 2009; LWK Luxembourg n.y. a

4.2 Public policy, funding schemes, financing mechanisms

The national agricultural law of April 18th, 2008 (Service Central de Legislation 2008b) has commissioned the chamber in article 17 to coordinate agricultural advisory services provided by non-public advisory bodies in form of state-funded advisory projects of up to 5 years duration. The agricultural chamber is responsible for the selection process of these projects. General objectives of publically funded advisory projects are to offer advice for individual farm holders in particular with respect to sustainable farming practices (LWK Luxembourg n.y a). Proposals are submitted by professional agricultural organisations (FBO), farmer groups or by the agricultural chamber itself. Funding rates amount to 50%, respectively 80% of project costs when topics of national interest and environmental issues in particular are concerned (Service Centrale de Legislation 2008a). Currently, 12 projects are funded under this scheme¹⁵.

¹⁵ Examples for projects which have been or currently are funded within this scheme are the constitution of a centre for advisory services on organic agriculture (IBLA) or the advisory programme of one of the nature park Our (Landwirtschaftskammer Luxmeburg n.y. a).

Being asked about the **funding source**, an emphasis on co-financing of advisory services through public money and other sources was indicated by the advisory organisations (n=8) in the quantitative survey. In two cases, national funding constituted 100% of the organization's financial source. Six other advisory organisations indicated mixed funding with a state contribution ranging between 70 and 80%. The remaining share in these cases is made up of farmer's contributions respectively fees and (private) consultancy services.

With regard to **billing services**, 2 organisations indicated hourly rates, 3 according to advisory packages, 2 according to specific advice (multiple answers were allowed). In addition, 4 organisations specified that advisory services were free of charge for farmers. However, it was mentioned in the interviews and on internet sources that advisory services from public advisory organisations and from the chamber are also available at no costs for farmers (IVV 2011, SER 2006b).

4.3 Methods and human resources

In the survey of advisory organisations respondents were asked to provide numbers on the total **staff number** per organisation, the **number of advisors** and the **share of women** each. The total staff number ranges from 1 to 82 with a median of 9 staff members per organisation¹⁶. 27% of the total staff of advisory organisations is made up by women. The total number of advisors employed at the advisory organisations amounts to 30. Of these 30 advisors, 20% are female. According to one expert interview, a total of 30-40 people were estimated to be active in advisory services either deriving from the three public advisory services or from public funded advisory projects in Luxembourg. The number of advisors per organisation ranges from 1 to 10, the median being 1 advisor per advisory organisation.

Staff numbers of advisors in the recent past have stagnated in 6 advisory organisations and rose in 2 advisory organisations.

Regarding **qualification of advisors** the survey revealed that in 5 organisations (n=8) all advisors possess an academic degree. In 6 advisory organisations all advisors have received professional training in 2012; in 2 organisations none of the advisors received training. A slight emphasis on training topics concerning cattle production, feeding, grassland management as well as plant production could be identified. Individual mentions in form of open entries further specified meat processing, soft skills, nature and water conservation as well as organic farming as relevant advisory topics in the eyes of the respondents.

More than half of the respondents confirmed that public authorities provided training to advisors. In 44% of the answers, training was conducted by FBO and public research institutes.

¹⁶ E.g. SER possesses 7 advisors which are in direct contact with farmers (SER 2009).

A qualitative indication of the amount of time spent on different **advisory methods** showed an emphasis of direct contact to farmers either on farm, outside the farm or via telephone. The latter was mentioned by more than half of the responding organisations. Internet sources, agricultural press releases or group advice is used less often during advisory of farmers. In addition, the public advisory body SER started to offer group advice (so called farmers’ field service) besides classical individual advice with farmers (SER 2006b).

4.4 Clients, topics and content

The average number of farmers making use of advisory services of the respective advisory organisations per year is 55 (n=6). One FBO noted to provide advice to more than 500 clients (not included in the calculation of the average). The average holding size of farms participating in agricultural advisory ranges from 7 to 110ha (n=6), while 7ha refers to holding sizes of winegrowers only. Thus, the average farm holding features an area of 77ha for agricultural production in our survey.

Respondents were asked about the **primary target group** to which their agricultural advisors provide advice to. Figure 2 shows that all of the respondents (n=7) provide advice to young farmers, followed by large farms (corresponding to gross margins larger than 48,000€¹⁷) with 6 mentions, medium farms (gross margins between 19,200 and 48,000€) with 5 mentions and so on.

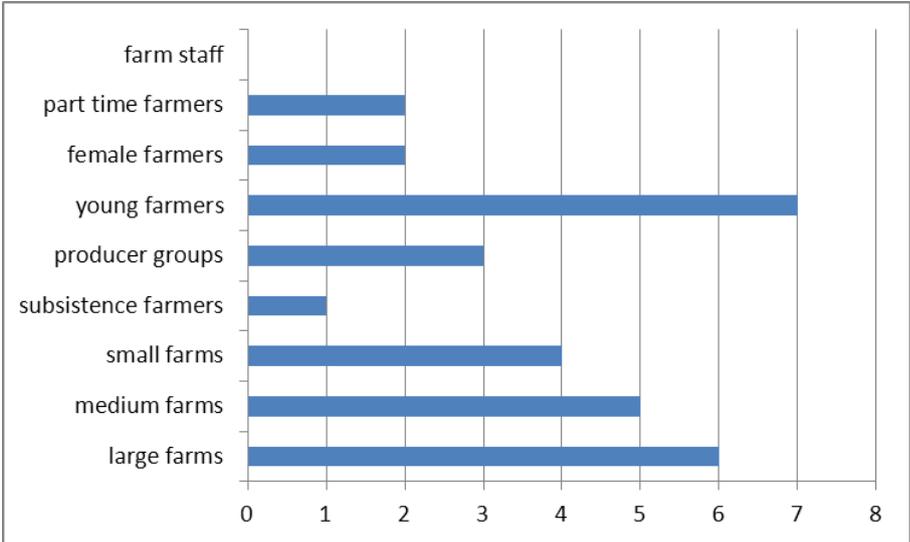


Figure 2: Primary target groups of advisory organisations

¹⁷ Farm size categories are based upon European Size Units (ESU) of gross margins according to EUROSTAT 2012a.

In the following figure, respondents were asked about the frequency of certain **advisory topics**, visualised in Figure 3. The figure shows an emphasis on plant and animal production, stable design and agro-environmental topics. In contrast, topics of machinery issues, renewable energies and energy efficiency, rural development and Cross-Compliance play a lesser role.

Additional mentions (open entries) not fitting into the predetermined categories of advisory topics were: administrative support on farms, advisory on water protection/ nature conservation (mentioned twice), mediation between farms and administration, marketing of regional product and conversion to organic farming.

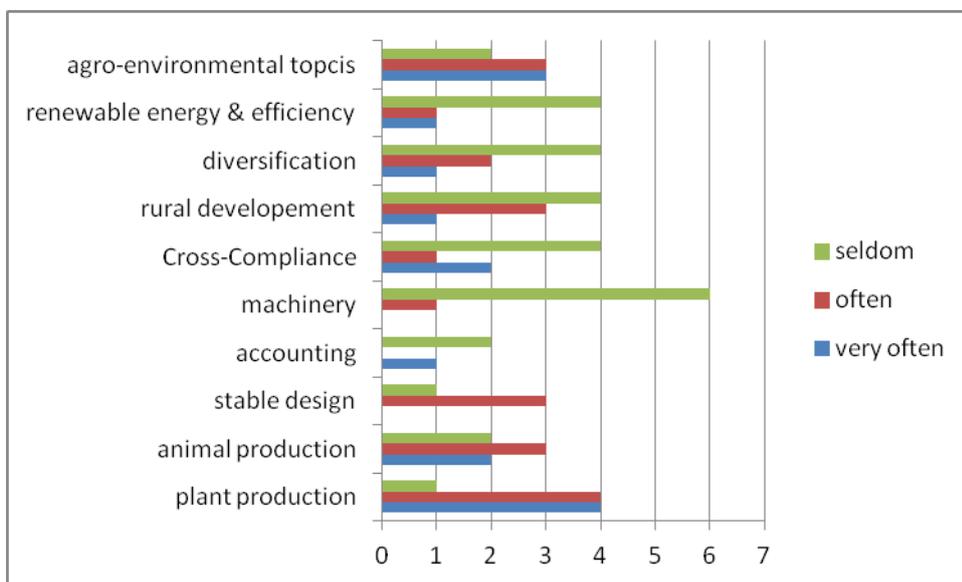


Figure 3: Frequency of advisory topics

4.5 Linkages with other AKIS actors and knowledge flows

Asked about linkages with other AKIS actors in terms of **cooperation**, the relevance of public institutions was generally confirmed in the survey. 5 of 8 respondents explained to have an intensive cooperation with public authorities. Another 5 respondents claimed cooperation with public research centres, while 4 respondents cooperate with companies from downstream industries.

In addition, being asked about the challenges of the Luxembourgian AKIS, two respondents suggested to improve cooperation between the public advisory services.

5 of 8 respondents regard universities, public research institutes and authorities as very important **sources of knowledge**. Moreover, 4 respondents perceive private companies as important sources of knowledge. One respondent added that the national and international exchange with colleagues was perceived as an important source of knowledge.

Several **knowledge needs** were identified by the responding organisations. With 63% (n=8) water management was perceived as the most important knowledge need, followed by climate change, biodiversity management, general (economic) farm management issues and rural development with 4 mentions (corresponding to 50% of all mentions) each.

Being asked about the **trends and challenges** of the Luxembourgian agricultural sector, one interview partner highlighted the necessity to enhance knowledge flows from research to farmers via advisory services. Particular (administrative) challenges were seen in the planning of instruments in a manner that knowledge transfer occurs faster and more efficient.

From the online survey qualitative assessments about challenges of the agricultural sector in Luxembourg and the AKIS in general included entries about:

- stronger collaboration between the advisory organisations (mentioned twice),
- more focus on practice-relevant research,
- knowledge transfer to increasingly larger holdings (in terms of holding size) and
- keeping up with the agrarian structural change in general (mentioned 3 times).

4.6 Programming and planning of advisory work

In the end of the online survey, advisory organisations were asked to indicate whether they work according to an **annual plan** and whether they provide **incentives** for advisory work. Of the responding organisations, 7 stated to work on the base of an annual plan. It was further explained that actors participating in the elaboration of the annual plan in 6 cases (of 8) include a management board (steering committee), in 4 cases representatives of the group of recipients of advisory services and in 3 cases staff members of the respective organisation.

None of the organisations provide incentives for advisory work.

5. Characteristics of Farm Advisory System

5.1 Organisations forming FAS

The agricultural chamber of Luxembourg is the main body responsible for the implementation of the Farm Advisory System (FAS). Luxembourg has already developed FAS-tools in 2005. A piloting project was implemented in 2007. Legally, FAS has become fully operational since 2009 (ADE, ADAS; AGROTEC; Evaluators. EU 2009a). The legal document which put FAS into place is “loi du 18 avril 2008 concernant le renouvellement du soutien au développement rural, Chapitre 5” - the system was officially installed through the law of April 18th, 2008 relating to the instalment of the RDP in Luxembourg (Service Centrale de Legislation 2008a; Ministère de l’Agriculture, de la Viticulture et du Développement rural 2008).

The FAS evaluation report (ADE, ADAS; AGROTEC; Evaluators. EU 2009a) states that Luxembourg is one of those few member states which has taken up FAS as an opportunity to go beyond “*at least SMR and GAEC*” by widening the scope to other regulatory aspects (national, regional) as well as quality insurance systems into their main farm advisory tool Agro-Check.

On the website of the agricultural chamber, Agro-Check is described as a “*comprehensive concept and practical working aid which facilitates the agricultural record keeping*” (LWK Luxembourg n.y b). Agro-Check is conducted independently by farmers and capacitates their compliance with legislation of EU-premiums. The tools of Agro-Check are similar to those of some German states. E.g. it includes 3 folders which support farmers to document farm processes independently. One interview partner further explained that farmers have to pay a fee for advisory services on Cross-Compliance topics by means of the Agro-Check. The advisory service then includes the documentation as well as a farm visit of an advisor from the chamber.

5.2 Evaluation of implementation of FAS

According to one interviewee, a relatively high number of farms (approximately 100) initially made use of the Agro-Check. However, within the years to follow the implementation phase, the number of farms making use of Agro-Check declined significantly. Reasons for this were derived from the fact that other (publically financed) advisors already provide advice on similar (sub-)topics like those of Agro-Check. It was observed that farmers and advisors from other advisory services increasingly made use of telephone advice from the chamber while requests for personal farm visits (which are eligible for compensation) from farmers within the scope of Agro-Check declined.

In addition to the challenges arising from the utilisation of Agro-Check, large efforts were addressed in keeping the documentation material up to date in one interview. Changing regulations and laws - both national legislation and from the EU – require a continuous updating of the documentation system of Agro-Check while at the same time staff for this particular task was reduced.

It was mentioned that the Agro-Check is currently under revision and that several ideas on how to continue the project are under discussion.

6. Summary and conclusions

6.1 Summary and conclusion on the AKIS

From the results from the document review, semi-structured interviews and the quantitative online-survey of advisory organisations, several conclusions with respect to Luxembourgian AKIS could be drawn:

- With its three public agricultural advisory institutions, the agricultural chamber and several FBO-based advisory services, a relatively pluralistic AKIS picture has evolved for a relatively small country like Luxembourg. Moreover, private enterprises (particularly up- and downstream industries) are known to play a role in product-related advisory services which could not be fully assessed in this report.
- Public funding of jointly selected advisory projects ensures that other advisory organisations can carry out advisory services according to special topics which go beyond the advisory scope of public advisory organisations. The selection and consulting process shall be highlighted as an interesting and fruitful form of joint decision-making – it is coordinated by the agricultural chamber and involves public, some private and farmer-based organisations likewise.
- Several advisory organisations seem to carry out advisory services with similar contents (e.g. accounting services, advisory on topics of public relevance) which may carry along the aspect of a doubling of structures, particularly in the public sector.
- Luxembourg is well connected and to some extent reliant on external knowledge sources. While within the country, the creation of knowledge is intensely supported through the CRP's, Luxembourg can be considered as a knowledge importer. In chapter 2 it was shown that cross-border exchange on knowledge and cooperation with agricultural actors from the public, private and research sector is high. It was noted that this connection (particularly to research institutes and advisory organisations in France and Germany) poses to be a vital linkage for accessing relevant knowledge.
- It was emphasised in one interview that the linking of knowledge-transfer from research to practice will be targeted in the future in order to ensure faster and more effective transfer of (new) knowledge and innovations into practice.
- Furthermore, a trend towards integrated farming supposedly replacing conventional farming in the future was mentioned. This refers to increasing efficiency of agro-chemical input use, generally reducing inputs and safeguarding natural resources which are perceived as important challenges in the agricultural sector.

6.2 Summary and conclusions on chapters 4 and 5

In both interviews and throughout the online-survey, it was mentioned that bureaucratic requirements complicate work of advisors and farmers. Administrative compliance with

national and EU requirements were highlighted as a particular burden for advisory organisations. The reduction of bureaucracy was therefore mentioned as a future challenge.

Results from the quantitative survey point to the perception that as of now, public advisory services do not cooperate sufficiently. The desire for an increased exchange between advisory organisations was noted.

With regard to advisory topics, a focus on plant and animal production could be determined. Moreover, advisory topics of public interest and water conservation in particular gain importance. In addition, water management, climate change and biodiversity management were mentioned as future knowledge needs by several experts from advisory organisations.

7. Acknowledgement and reflection

In this chapter the quality and comprehensiveness of the information is assessed and methodological issues and encountered limitations are reflected.

4 potential interview partners were contacted for the semi-structured interviews. Of those, 2 interview partners kindly accepted to take part, indicated in Table 3. Nevertheless it should be noted that this represents a minimum number of interviewees necessary for the survey.

Grey literature on specific topics (e.g. on FAS and the history of agricultural advisory services) was very limited. Therefore, chapter 3 provides an incomplete picture of the history while chapter 5 mainly bases on the qualitative statements of one semi-structured interview.

Table 3: List of interview partners in semi-structured interviews

Interview partner	Agricultural Organisation	Date of interview
Jemp Schmitz	Agricultural chamber	Explorative telephone interview 14.08.2013
Léon Wietor	Administracion des Services Techniques de l'Agriculture; Ministry of Agriculture	Personal interview 18.09.2013
Jemp Schmitz	Agricultural chamber	Personal interview 19.09.2013

14 agricultural advisory service organizations were identified as addressees for the online survey by means of a preliminary telephone interview with explorative character. Of those 14 organisations providing agricultural advisory services, 9 participated in the survey. This corresponds to a response rate of 64%. Despite the relatively high response rate it should be noted, that none of the public advisory bodies (ASTA, IVV; SER) participated in the online-survey of advisory organisations.

Nevertheless, comparing the total amount of advisors employed in Luxembourgian advisory organisations (estimated with 30-40 persons, cf. Chapter 4.3) with the cumulated mentions of the survey respondents (amounting to 30 advisors) it can be concluded that a fair representation of advisory organisations was achieved. Thus, despite the lack of participation of three public advisory bodies, the survey results can be considered to provide relevant insights about characteristics of the advisory organisation in Luxembourg as represented by farmer-based (advisory) organisations supported by public funding.

It needs to be kept in mind however, that private advisory companies could not be contacted to participate in the survey and hence are not represented in our analysis in chapter 4.

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9. Appendix

Annex 1: List and contact of organisations forming AKIS

English Name	Address	Website	Organisational status
Administration of Agricultural Technical Departments (ASTA)	Administration des Services techniques de l'Agriculture 16, route d'Esch, L-1470 Luxembourg; B.P. 1904, L-1019 Luxembourg	www.asta.etat.lu	Public
Department for Rural Economy (SER)	Service d'Economie Rurale 115, rue de Hollerich L-1471 Luxembourg	www.ser.public.lu	Public
Institute for viticulture (IVV)	Institut viti-vinicole, B.P. 50, L-5501 Remich, Luxembourg	www.ivv.public.lu	Public
State Laboratory of Veterinary Medicine	Laboratoire de Médecine Vétérinaire de l'Etat 54, avenue Gaston Diderich, L-1420 Luxembourg B.P. 2081, L-1020 Luxembourg	http://www.asv.public.lu	Public
Nature Park Öwersauer	Naturparkzentrum 15, route de Lultzhausen L-9650 Esch-sur-Sûre	www.naturpark-sure.lu	Public/NGO
Nature Park Our	Natur Park Our 12, Parc L-9836 Hosingen	www.naturpark-our.lu	Public/NGO
Lycée Technique Agricole (LTA Ettelbruck)	Lycée Technique Agricole B.P. 76 L-9001 Ettelbruck	www.lta.lu	Research and Education
IBLA Research Institute for organic agriculture	IBLA Luxembourg 13, rue Gabriel Lippmann L-5365 Munsbach	www.ibla.lu	Research and Education
CRP Gabriel Lippmann	CRP Gabriel Lippmann 41, rue du Brill L-4422 Belvaux	www.crppl.lu	Research and Education
CRP Henri Tudor	CRP Henri Tudor 29, avenue J.F. Kennedy L-1855 Luxembourg	www.tudor.lu	Research and Education
Chamber of agriculture	Landwirtschaftskammer 261, route d'Arlon L-8011 Luxembourg; B.P. 81, L-8001 Strassen (Luxembourg)	www.lwk.lu	FBO
Agrigestion	Agrigestion , 4-6, rue du Fort Bourbon L-1249 Luxembourg	www.agrigestion.lu	FBO
Centrale Paysanne Luxembourgeoise	Centrale Paysanne Luxembourgeoise 44, rue de la Gare B.P. 48, L-7501 Luxembourg	www.centralepaysanne.lu	FBO (agrl. trade union)

Independent Farmer's Association	Fraie Letzebuenger Bauerverband (F.L.B.) 27 Rue des Tisserands L-6792 Grevenmacher	No website	FBO (agrl. trade union)
Farmer's Alliance	Bauereallianz Address not found	No website	FBO (agrl. trade union)
Centrale Paysanne/ Delpa	Centrale Paysanne Luxembourgeoise DELPA Soc.coop. 44, rue de la Gare B.P. 48, L-7501 Luxembourg	http://centralepaysanne.lu/	FBO
CONVIS	CONVIS s.c. 4, Zone Artisanale et Commerciale L-9085 Ettelbruck Luxembourg	www.convis.lu	FBO (Agrl. association)
Independent winegrower's association	O.P.V.I. 115, route du vin L-5416 EHLEN	www.privatwenzer.lu	FBO
Vinsmoselle	Domaines Vinsmoselle BP 40 L-5501 Remich 12 route du vin L-5450 Stadtbredimus	www.vinsmoselle.lu	FBO
Young farmers and young winegrowers association	Jungbauern und Jungwinzer sowie Oekozenner Pafendall rue vauban 4, 2663 Luxembourg	www.jongbaueren.lu	FBO
Potatoe farmer's association SYNPLANTS	E'slecker Setzgromperegenossenschaft 4, route de Bastogne L-9706 Clervaux	www.synplants.lu	FBO
Machinery and labour rings (MBR-Services)	MBR Lëtzebuerg B.P. 19 L-7701 Colmar-Berg	www.mbr.lu	FBO
Machinery and labour rings Nordspetz	MBR-Nordspetz (Maschinen- und Betriebshilfsring) Haus 38 L-9759 Knaphoscheid	No website	FBO
Association for the promotion of information technology in agriculture	APIA Association pour la Promotion de l'Informatique en Agriculture B.P. 76 L-9001 Ettelbruck	www.apia.lu	FBO
Association for the promotion of rural tourism	APTTR Association pour la Promotion du Tourisme Rural L-2980 Luxembourg	www.gites.lu	FBO
Federation of winegrower's associations	Fédération des Associations Viticoles du G.-D. de Luxembourg 23, route de Trèves, L-6793	http://www.ivv.public.lu/anbauggebiet/winzerverband	FBO

	Grevenmacher B.P. 57, L-6701 Grevenmacher	/index.html	
Organic farmer´s association BIOG	OIKOPOLIS (BIOG) 13, rue Gabriel Lippmann Parc d'Activité Syrdall L-5365 Munsbach	www.biog.lu	FBO
Ecological Movement / Oeko-Zenter Letzeburg	Mouvement Ecologique asbl 4, rue Vauban L-2663 Luxembourg	www.oeko.lu www.oekozenner.lu	NGO
Association to promote integrated agriculture, FILL	Fördergemeinschaft Integrierter Landbau Luxembourg address not found	www.fill.lu (not available, status 09/2013)	Private/FBO