AKIS and advisory services in *Latvia*

Report for the AKIS inventory (Task 1.2) of the i2connect project

Date: January 2021

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Project funded under the Horizon 2020 Research and Innovation Programme under Grant Agreement number 863039.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 863039

Executive summary

The aim of the report is to provide a description of the Agricultural Knowledge and Information System (AKIS) in Latvia and brief outlook of Forestry AKIS (FKIS). This report represents an output of the i2connect project. It is one of 30 country reports compiling an inventory of AKIS. AKIS describes the exchange of knowledge and supporting services between many diverse actors.

The report will give an overview of the AKIS infrastructures and on the predominant agricultural advisory services on national level. The term 'agriculture' is used in its comprehensive form to also include forestry, fisheries and horticulture. The intention is that through these reports, essential features of the institutional and infrastructural environment in which advisors in the green sector operate, will be revealed (Knierim et al. 2020:32-34).

Agriculture has a strategic position in economy of Latvia and rural development trough employment. Agriculture is dominated by a small scale agricultural produce producers and a growing number of large scale farms.

AKIS includes traditional service providers consisting of research, advisory and educational organizations that are structured and managed by agriculture, science and education policy. There are different formal and non-formal learning areas and innovation networks that often connect knowledge actors with different organizational and industry experience.

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Abbreviations

AKIS	Agricultural knowledge and information services
CC	Cross compliance
CCAO	Consultative Council of Agricultural Organisations
EIP	European Innovation Partnership
ESU	European Size Units
EU	European Union
FADN	Farm Accountancy Data Network
FAS	Farm advisory system
FKIS	Forestry knowledge and information services
GDP	Gross domestic product
LACA	Latvian Association of Agricultural Cooperatives
LFFE	Latvian Federation of Food Enterprises
LIAA	Investment and Development Agency of Latvia
LRATC	Latvian Rural Advisory and Training Centre
LLU	Latvia University Life Sciences and Technologies
MoA	Ministry of Agriculture
NGO	Non-Governmental Organisation
NRN	National Rural Network
RDP	Rural Development programme
UAA	Utilized agricultural area

1. Main structural characteristics of the agricultural and forestry sector

The total area of Latvia is 64.6 thousand km2, of which 96% is land and 4% is inland waters. In 2019, GDP at current prices was 30.5 billion euros, but in 2015 at constant prices - 27.5 billion euros, the economic growth rate compared to the previous year was 2.2%.

The population of Latvia continues to decline. Since the beginning of 2010, it has decreased by 200 thousand, and at the beginning of 2020, the preliminary population of Latvia is 1 million 908 thousand. During 2019, it decreased by 0.6% (in 2018 - by 0.7%). [1]

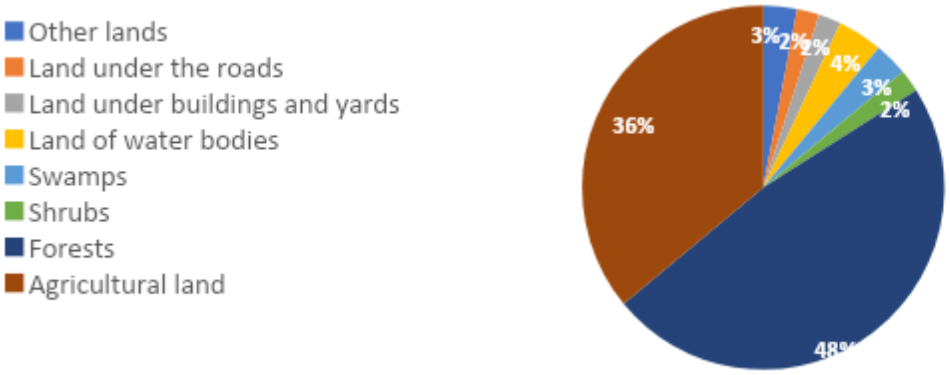


Figure 1 Land use in Latvia in 2019

In 2019, 36% or 2.32 million of all land uses in Latvia were agricultural land. ha (2.33 million ha in 2016).

Agriculture

In 2019, the average number of employees in agriculture, forestry and fishing combined in the age group from 15 to 74 years was 66.3 thousand. The share of employees in crop production, animal husbandry and hunting from the total number of employees in the country in 2019 was 5.0%. In agriculture, the average gross salary in 2019 reached 1,035 euros.

Agriculture, hunting, forestry and fisheries represent approximately 4% of the Latvian economy, 16% of trade and 7% of employment; the share of all these

areas is higher than average in the EU. Agriculture plays an even greater role in rural areas, employing around 20% of population.

The total value added of agriculture, forestry and fishing in 2019 has increased by 9.2% compared to 2018, while its share in the total GDP added values reach 4.3% of the total value added of GDP []

At the end of 2019, in Latvia there were 75.8 thousand agricultural holdings the average size whereof constituted 38.3 ha – 8.8 ha or 30 % more than in 2010. Agricultural area on average per holding increased from 19.6 ha in 2010 to 26.0 ha in 2019. Over the period, the total utilised agricultural area in the country grew by 153.9 thousand ha or 8.5 %, reaching 1959.4 thousand ha in 2019.

In 2019 compared to the year before, arable land increased by 23.8 thousand ha or 1.8 %. On average in the country arable land takes up 67 % of agricultural area. In 2019, areas of meadows and pastures dropped by 2.9 thousand ha or 0.5 %. []

In 2019, compared to 2018, the average rent of agricultural land has risen by 3.3 %, reaching 63.89 EUR/ha. Compared to 2011, it has grown by 35.25 EUR/ha or more than twice (from 28.64 EUR). Compared to 2017, in 2018 the average purchase price of agricultural land has risen by 357 EUR/ha or 12.6 %, reaching 3 188.08 EUR/ha. Over the past eight years, it has grown 3.7 times (from 869.66 EUR/ha in 2011). Amongst other price increases, in 2018, compared to the year before, price of arable land grew by 880 EUR/ha or 29.6 %, reaching on average 3 855.93 EUR/ha, which is 3.3 times higher price than recorded in 2011.

Livestock

At the end of 2019, agricultural holdings were breeding 395.3 thousand cattle (similar to the number recorded in 2018). The number of dairy cows dropped by 6.1 thousand or 4.2 %, whereas the number of other cows rose by 4.7 thousand or 9.2 %. In 2019, compared to 2018, number of exported live cattle decreased by 3.6 thousand heads or 6.0 %. Young stock aged under 1 year constituted 27.3 % of the total number of cattle exported (32.1 % in 2018). Number of imported cattle fell by 2.8 thousand or 2.7 times.

Compared to the previous year, the number of pigs increased by 9.3 thousand or 3.1 %. Compared to 2018, exports of live pigs increased by 4.7 thousand or 3.5 %.

Out of the total number of pigs exported, piglets for fattening constituted 56.3 % (34.0 % in 2018). Number of imported pigs rose by 16.5 thousand or 71.1 %.

The number of sheep and goats fell by 7.5 thousand and 0.5 thousand or 7.0 % and or 4.5 %, respectively. The number of horses in Latvia keeps declining – at the end of 2019, compared to the year before, it dropped by 0.1 thousand or 1.5 %. At the end of 2019, the number of poultry increased by 287.3 thousand or 5.3 %, of which number of laying hens by 211.5 thousand or 7.1 %.

Production

In 2019, compared to 2018, agricultural output at constant prices rose by 20.2 %. The rise was due to the increase in output of crop products (of 42.7 %) caused by the upturn in harvested production of grain (of 53.8 %). Output of livestock products, in turn, reduced by 1.4 %.

The results of 2019 in the agricultural sector show a record increase in income compared to the previous year, which in turn showed a significant decline. The most significant factor that increased income has been the increase in crop production (by 44.6%) due to significantly higher yields of main crops. On the other hand, the volume of animal husbandry has slightly decreased - by 0.6%. The impact of price and subsidy changes has been slightly negative this year, especially given the 9% reduction in subsidies. However, as income from production increased significantly, it did not prevent an unprecedented increase in income per full-time employee in the last 10 years - by 34.5%.

The share of winter crops in the structure of grains has significantly increased, which was lower in 2018 due to unfavorable conditions during their sowing. The share of winter crops in the total yield in 2019 is 70% (-49% in 2018). The main grain crops are wheat, the value of which in 2019 reached 70% of the value of grain production. Other important products also have a significant increase in total yield: vegetables - by 24%, potatoes - by 17%, and fodder crops - by 16%. There is a slight decrease in the total yield of legumes - by 2%, as well as fruits and berries - by 15% due to spring frosts. In the livestock sector, the total has hardly changed in the last two years. In 2019 as a whole, the volume has even slightly decreased (by 0.6%). Trends of change are different for individual livestock products. The production of the most important product - milk - has not changed significantly (the volume of final production has increased by 0.5%), but

a significant increase has been observed in egg production - by 11.4%. The production of honey (by 7.4%), pork (by 2.2%) and poultry meat (by 0.3%) has slightly increased. The production of other major livestock products has decreased: for beef - by 8.2%, for sheep - by 3.7%, but the sharpest decline is in fur production - by 53%.

Price changes tend to have the opposite tendency to volume changes, which also explains the small decrease in the average producer price of agricultural products in 2019. This was due to a 1.7% drop in crop prices. This factor has slightly hampered income growth in this sector. At the same time, average prices of livestock products have increased by 3.6%. This was facilitated by an increase in the average purchase price for milk by 3.6%, as well as a significant increase in the price for pork (by 13.9%) and poultry (by 6.6%). On the other hand, for some other livestock products the average price has decreased, including for sheep meat and eggs by 4%, for fur by 9% and for honey by 11%. There is a significant price increase for potatoes - by 16% and vegetables - by 12%. The price has also risen slightly for rapeseed (by 4%) and legumes (by 3%). In contrast, the price of grains has fallen by an average of 7%, including 14% for rye and oats. The large share of cereals in the structure of crop products also contributed to the decrease in the average price in crop production.[3]

Forestry

On January 1, 2020, forests in Latvia occupy 3,292 thousand ha, of which 1,521 thousand ha are managed and administered by the state (46.2% of the total forest area), while the forest area of other owners was 1771 thousand ha (53.8% of the total forest area).

Both coniferous and deciduous trees grow in Latvian forests. Birch, pine and spruce stands together cover 72.5% of the total forest area. The rest of the forest is covered with white alder, aspen, black alder, ash and oak stands and other hard deciduous trees.

Due to animals, pests, diseases, wind and snowbreaks, forest fires, excessive humidity and other damage, in 2019 damaged and lost forest stands in the amount of 2,218 hectares, which is 71% more than in 2018 (1,298 ha). In 2019, the most significant cause of forest area damage was pest damage (spruce eight-toothed bark beetle) - 40%. Damage caused by wind and snowbreaks

accounted for 27% of dead stands. Diseases, animals and fires in 2019 caused less damage to forest stands.

In 2019, 5,323 ha of forest stands were planted on non-agricultural lands, or by 9% more than in 2018. The planted areas in 2019 consisted of the following main tree species: birch (33%), spruce (43%), pine (7%), white alder (9%) and other tree species (aspen, black alder, oak, etc. - 8%).

2,589 micro-reserves have been established in the forest lands of the territory of Latvia. In terms of the number and area of micro-reserves, the largest number of micro-reserves has been established for capercailzies, black storks, small eagles and sea eagles, accounting for 88% of the total area of forest micro-reserves and 60% of the number of forest micro-reserves. In terms of area, 91% of micro-reserves are located in state forests, 7% - in private forests and 2% - in municipal forests.

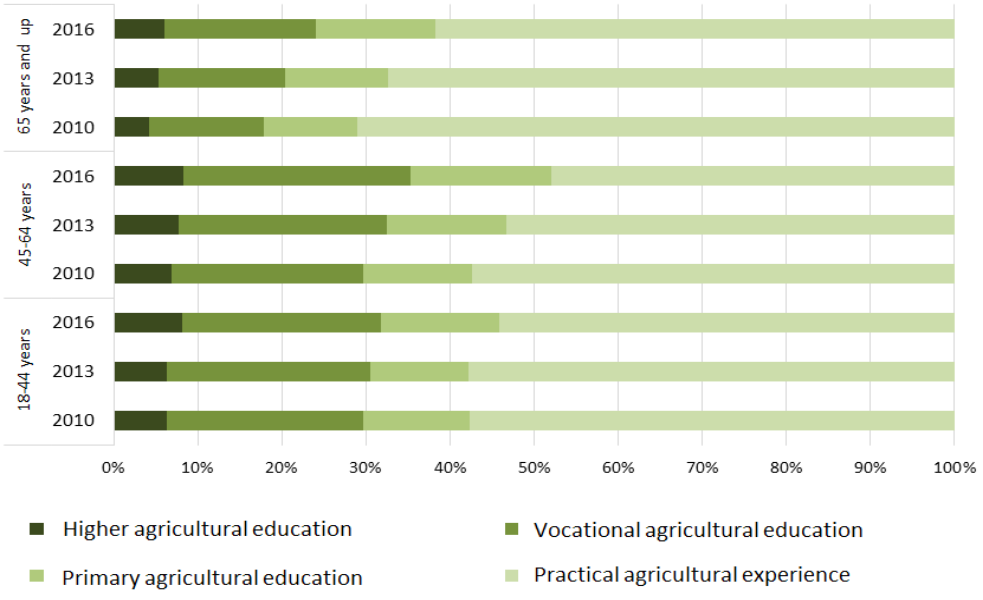
In 2019, a total of 13.3 million cubic meters of timber was felled in Latvia - of which 6.6 million cubic meters of timber were harvested in state forests, but 6.7 million cubic meters of timber were harvested in the forests of private forest owners, municipalities and other forest owners. In 2019, compared to the previous year, the total amount of felled wood increased by 4%. The amount of timber felled in the state forest has increased by 687 thousand cubic meters of wood, but in the rest of the forest decreased by 206 thousand cubic meters of wood.

In 2019, the volumes of reforestation (44,681 ha), compared to the previous year, have increased by 9%. 38% (17,035 ha) of forests were artificially restored, but 62% (27,646 ha) were naturally restored. In 2019, 16,829 ha or 38% of the total restored area was restored with conifers, but 27,852 ha or 62% of the total restored area with deciduous trees. The forest is regenerated with five main commercially available tree species - birch, pine, spruce, aspen and white alder. Of conifers, spruce (9,539 ha) was planted the most - 12% of the restored total area, but of deciduous trees birch (12,817 ha) - 29% of the restored total area.[4]

Farmers and Forest owners' education

Comparing 2016 data with 2010 data, it can be concluded that the share of farm managers with acquired basic, vocational or higher agricultural education has

increased by 8% pp., which may have been driven by linking rural development support measures to acquired higher, secondary vocational agricultural education or the acquisition of basic agricultural knowledge for at least 160 hours in volume. However, the overall level of education and knowledge of farm managers remains to be described as insufficient. The representatives of farmers' organizations involved in the future CAP discussions organized in 2019 in cooperation with the NRN acknowledged that the lack of knowledge is a key factor preventing innovation and the entry of modern technologies in the sector, thereby undermining the competitiveness of rural companies, which in turn leads to the competitiveness of the sector in the international market. The OECD study entitled "Innovation, Agricultural Productivity and Sustainability in Latvia" [1] also stated that "there has been a significant increase in the number of adults in education (mainly non-formal education), but the increase is mainly due to the low initial level. Measures should be promoted to ensure that both formal and non-formal lifelong learning is accessible, including financial access to such learning. The study also concludes that "low innovation capacity and low-complexity business are linked to low birth rates, continuous (mostly young people) emigration, skilled labour shortages and a high proportion of the shadow economy. These factors affect Latvia's medium-term productivity and competitiveness". Moreover, the agricultural and forestry industries in Latvia have long been characterised as fragmented, which is a restrictive factor in making it easy to access quality counselling and educational services to entrepreneurs in the sector.



[1] Innov

Figure 2 The level of education of Latvian farmers is characterised by available farm structure and farm census data for 2010, 2013 and 2016. [2]

Even if the level of education and knowledge of entrepreneurs in rural areas is sufficient, taking into account rapidly occurring changes in all sectors, including agriculture, where market conditions are still changing, innovation, robotisation processes are taking place, knowledge and advisory support is important, which can respond rapidly to demand by attracting Latvian or world leading specialists in specific areas. Higher education and vocational education programmes are not so rapidly adaptable to market changes.

The provision of high-quality lifelong learning and continuing education services to rural entrepreneurs and citizens increases the number of young people and adults in rural areas with adequate quality and skills to carry out their work, as well as the knowledge and skills needed to manage the business.

[2] LRATC medium-term performance strategy, 2021-2025, picture by A.Radžele-Šulce, 2020

2. Characteristics of AKIS

The Latvian AKIS includes a wide range of participants who ensure, manage, finance, carry out, implement, inform and facilitate innovation. The main players are policy makers, researchers, teachers, advisors, farmers, private enterprises, consumers, non-profit organizations and markets.

AKIS includes traditional service providers consisting of research, advisory and educational organizations that are structured and managed by agriculture, science and education policy. There are different formal and non-formal learning areas and innovation networks that often connect knowledge actors with different organizational and industry experience.

Forestry KIS (FKIS) consists of state-owned forests, which are fully managed by an JSC "Latvian State forests" under the authority of the Ministry of Agriculture. Municipalities are managing their forests by themselves, trough advisory service providers or management institutions established by them. Private forest owners are extremely diverse, too. There are 150 000 private forest owners. Some of the forests belong to small local forest owners and part of them, submerged through local businesses, is owned by large foreign conglomerates.

Depending on the forest owner, the way in which the advisory service is provided is changing significantly. The sector is even more fragmented than the Agricultural AKIS.

2.1. AKIS description

Public sector

Government

The Ministry of Agriculture of the Republic of Latvia is the main governmental institution responsible for the sector of agriculture, food, forestry and fisheries. Its main objectives are formation and implementation of strategies and policies in the aforementioned areas.
Areas of expertise:

- Agriculture

- Animal health, welfare and breeding
- Fisheries and aquaculture
- Forestry
- Common Agricultural policy and Rural Development
- Trade and Market Surveillance
- Climate Change, Bioeconomy and Sustainable Use of Resources
- EU and International Affairs
- Research and Education

Subordinate institutions of MoA are:

- Paying agency
    - Rural Support Service
- Controlling Agencies
    - Food and Veterinary Service
    - State Plant Protection Service
    - State Forestry Service
    - Agricultural Data Center
    - State Technical Monitoring Agency
- Education and research organizations
    - Latvia University Life Sciences and Technologies
        - Institute of Agricultural Resources and Economics;
        - Institute of Horticulture
    - Latvian Plant Protection Research Centre Ltd.
    - Latvian State Forestry Research Institute "Silava";
    - National Research Institute of "Food Safety, Animal Health and Environment".
- The Ministry is a public shareholder in such capital:
    - State Joint Stock Company "Latvian State Forests";
    - State limited company "Ministry of Agriculture, Real Estate";
    - State limited company "Amelioration project";
    - Public limited company "Latvian Rural Advisory and Training Centre".

The Ministry of Education and Science is responsible for the policy of science and education. It works on scientific and technological developments and

innovation policy and coordinates its implementation. Still, Latvian University of Life Sciences and Technologies as the only agricultural university and state funded agricultural and forestry research organizations are supervised by the Ministry of Agriculture. Agricultural vocational education level is coordinated by the Ministry of Education and Science.

Ministry of Environmental Protection and Regional Development areas of activities directly or indirectly connected to AKIS are Global climate change, GMO free territories in Latvia, Green public procurement, Protection of Species and Habitats, Regional develpment, Soil quality and Specially protected nature teritorries, Water protection.

It is also overseeing Latvian **Municipalities**, which are able to impact development in local level, by closely cooperating with farmers, forest owners and rural development actors, or choose other priorities.

ALTUM is a state-owned development finance institution, which offers state aid for various target groups with the help of financial tools (such as loans, credit guarantees, investing in venture capital funds, etc.). ALTUM develops and implements state aid programmes to compensate for the market's shortcomings that can't be solved by private financial institutions.

State aid programmes administered by ALTUM, are implemented with public resources – European Union and other international institutions, national and ALTUM's attracted financing. ALTUM's shareholders consist of the Republic of Latvia's Ministry of Finance, the Ministry of Economics and the Ministry of Agriculture.

Advisory organization

Latvian Rural Advisory and Training Centre (Public/commercial)

Latvian Rural Advisory and Training Centre (LRATC) is the largest agriculture and rural advisory organization in Latvia. LRATC is advisory enterprise which is owned by the state (99%) and the Latvian Farmers Federation (1%). It was established in 1991 and consists of a central office in Ozolnieki and 26 branches throughout the whole territory of Latvia.

Following objectives have been set out for the operation of the operation:

- Facilitate rural development by improving the professional and economic knowledge of rural entrepreneurs;
- ensure organisation of advice and training in all Latvia's territory;
- increase the competitiveness of the rural population in the European Union;
- Organise post-graduate education of the staff of institutions reporting to the MoA.

For the moment most of the organization`s financing is based on annual contract with MoA for implementing different tasks concerning agricultural and rural development, advisory and training funded either by national or EU budget. At the moment LRATC provides its services to over 20,000 farmers and rural businesses.

Since 2008 LRATC has the delegated task to act also as a **Latvian Rural Network Support Unit,** which since 2018 includes **EIP Support Unit**, and acts also **Latvian Fisheries Network Support Unit** since 2010. During this period experts have been working in a wide range of activities:

- Networking - especially on the local level, involving also those who are not active in the farming NGO. Number of seminars, working groups, conferences, etc. are organized every year all over the country.
- Providing support to youth and entrepreneurship in the countryside, fostering new businesses through training, inspiration, assistance and competition.
- Preparing agricultural, aquaculture and other calculations to the Ministry of Agriculture for decision making, setting the amount of various compensations, payments.
- Experience exchange and good practice transfer activities.
- Preparation and dissemination of newsletters and magazines (separate in Rural development, Forestry, Fisheries and aquaculture, animal husbandry), which are issued in different frequency – from monthly to quarterly editions. The E-newsletter is prepared on a weekly basis.

LRATC is also active in the vocational training of the farmers, forest owners and other entrepreneurs. Besides vocational education programs as "Basic Agriculture", "Organic farming", "Fresh-water fish and crayfish aquaculture",

which are accredited in the Latvian Ministry of Education and Science, LRATC is also providing a wide scope of different vocational training programs.

All services of LRATC are provided by:

- 26 regional offices providing state and EU funded information services and advice (incl. activities of National Rural Network and Fisheries Network) and commercial services (incl. agri-environmental advice, crop, livestock, accounting, economy, trainings) and other activities.
- 9 forest advisory offices, providing trainings, information and advice for private forest owners.

National Centre in Ozolnieki, provides methodological advice for the regional offices and development of new products and services.

Forest management organization

Joint Stock Company "Latvia's State Forests"

The purpose of the activities of Joint Stock Company "Latvia's State Forests" (LVM) is administration of state-owned forest property and management of public forest, ensuring preservation and increase of its value and generation of revenue for its owner – the State.

LVM manages and administers 1.63 million ha of land, including 1.60 million ha of forest land, which incorporates 1.41 million ha of forest. The territories under the governance of LVM, in respect of which the main management goal is production of high quality timber, comprise 1.17 million ha of forest.

Farmer based organizations

There are several types of Farmer based organizations in Latvia. They act as NGO's or Cooperatives.

Farmer based NGOs

In Latvia, farmers are represented by a wide range of non-governmental organizations. The largest of these are:

- Farmers Parliament

- Latvian Agricultural Organization Cooperation Council
- Young Farmers club
- Latvian Organic Agriculture association
- Latvian Farmers association
- Farmers association
- Association of Statutory companies
- Latvian Agricultural Cooperatives association

These NGOs also participates in the **Advisory Council of Non-Governmental Organizations of Farmers**, which works to provide sectoral ministry with proposals for drafts of regulatory enactments and policy planning documents, taking into account the interests of farmers.

Most often, NGOs do not hire advisors*, but they are composed of industry experts who have the possibility to advice members of* organizations*. They often participate in international projects, thus being at the forefront of the exchange of information.*

Sectoral farmer based NGO's – such as Latvian Goat breeders association, Beekeepers association, Latvian Association of Meat Beef Growers, Association of seedling growers and so on.
These organizations mostly do not provide advice directly, but act as information exchange point for its members. From time to time these organizations organize some seminars or trainings and during those farmer-to-farmer advice is ongoing.

Cooperatives

The work of cooperatives is regulated by Cabinet Regulation No. 357 of 16 July 2019, Regulations on Conformity of Cooperative Companies (Regulations) and it lays down the eligibility criteria for cooperative societies and the procedures for evaluating them.

The cooperative has to fill the eligibility rules and then it is a kind of guarantor for the peasant that this cooperative can be trusted. It is also then possible to receive the national and European Union support for cooperatives and other legislative advantages.

Main benefits of the accession of the cooperative are:

- Materials and raw materials required for farming at lower prices;
- Ensuring markets for sale and higher prices for production;
- Greater market power and wider export opportunities;
- Education and new knowledge with exchange of experience, training and counselling;
- Help sales and marketing;
- Responsibility and involvement in decision-making;
- Organised cultural and entertainment activities;
- Financial aid in the non-financial years;
- Sustainability and long-term profits.

There are several types of Cooperatives in Latvia and they are certified by Latvian Agricultural Cooperatives Association. In 2020 there are 50 cooperatives which have passed the eligibility rules:

- Dairy cooperatives 25
- Grain growers' cooperatives 14
- fruit growers' cooperatives 4
- Sheep breeders' cooperative 1
- Forest owner cooperatives 3
- Vegetable growers' cooperatives 1
- Small scale food produces' cooperative 1
- fruit and vegetable producers' cooperative 1

As for advisory work, some cooperatives employ advisors and usually they are paid via participation fees. Mostly cooperatives are interested in maintaining constant quality of production.

Forest owner based NGOs

The Forest Advisory Council (MCP) is an advisory and coordinating body whose performance is aimed at promoting the shaping and implementation of a balanced forest sector policy in Latvia, the operation of which is determined by BOM Regulation No 473 of 3 July 2012, “Forest Advisory Board by-law”.

The MCP consists of representatives of private and public forest owners and managers (public and local government), timber industry, forest non-timber value

managers, forest management services providers, environmental and nature protection, and employee interest groups.

Private sector

Private advisory organizations

Integrated growing school (LTD) (Private) The aim of the school is to increase the level of knowledge of learners and trainers, to raise the prestige of agronomics, agriculture and forestry and the competitiveness of Latvian national producers in the European market, on the basis of the principles of integrated farming and cultivation. To achieve the objectives, the School shall carry out adult vocational development education programmes, training, courses, decision support systems, individual advice, as well as applied science studies and recommendations development in Latvia and Europe.

eAgronom

eAgronom is an international company, which claims to give an independent agricultural advice. There are three advisors in Latvia and the company bases their advice on advanced AI-based decision support toolkit that leverages prescriptive analytics to increase productivity. Company trough digital applications provides such tools agronomical planning, financial analysis, employee management, AI alerts and Suggestions and also direct advice.

Sellers (input market)

Farmers, especially commercial farmers and cooperatives, rely on the advice and technology of Sellers, like agro-chemistry companies, agricultural machinery companies. These companies associate advice with marketing, organize demonstrations.

These companies need strong advisers as a marketing tool – no money is required for advice, but the advisor, essentially, performs the role of sales representative and makes money for the company.

This kind of advice often can be considered to be biased, with the purpose of growing production sales. Often sellers do not come with an advice, but with a solution in a form of chemical.

Processors

Mostly processing companies are interested in maintaining constant quality of production, thus they provide some kind of advisce or even experience exchange visits for farmers.

Private innovators

Some farmers or individuals are very active and creative. They find unexpected ways to develop their businesses - it being a primary agriculture (for example by growing unaccustomed species or using different methods, or secondary (by processing agricultural produce). Often they are ready to share their experiences and show others their way of work (for example Pupuči, Grasbergs, Milzu).

Freelance advisors

Freelance advisors must be of good repute, persuasive and effective performance so that farmers can re-trust their advice. Freelance advisors, participating in the survey, both have higher education and significant years of experience in the field. There is no register of independent advisors available in Latvia, so it is difficult to judge the number.

Third sector

Other NGO's

Natural protection NGO's tends to teach farmers and forest owners, mostly through demonstration activities, how to operate in areas with care of a nature. They can play a particularly important role in the field of forestry, when it is possible to completely break down forest management activities in a given area by locating a specific habitat there.

The Natura 2000 network includes 333 sites in Latvia – 4 nature reserves, 4 national parks, 239 nature closures, 37 nature parks, 9 protected landscape areas, 7 protected marine areas, 9 natural monuments and 24 microreserves. Land areas cover 12% or 787729 ha of Latvian land area (excluding waters). These areas have different protection and management regimes, ranging from minimum restrictions in protected landscape areas to a complete ban on economic activity in nature reserves.

Operational groups

Operational groups usually consist of farmer, scientific institution and advisory service provider. These are strong, usually project directed unregistered unions that aim for a common development goal via innovation.

LEADER Local action groups (LAG's)

Local action groups play a large role in rural areas. These formations collaborate with municipalities, local NGOs, entrepreneurs and farmers in order to develop the local territory. They can impact a development direction of a local community towards or away from agricultural activities.

Research and education

Research institutions in Latvia are research institutes, universities, companies and other organizations that are established in order to carry out research and development of scientific qualification, and are registered in the National Register of Research Institutions. In 2020 there are 62 research institutions registered in Latvia, 22 of them are public research institutions funded by the government.

Latvian University of Life Sciences and Technology (LLU) is one of six universities in Latvia. LLU carries out studies in various sectors of the economy specializing in bio-science (agriculture, veterinary, forest science), engineering (food technologies, engineering, environmental and water management of agriculture and forestry, land management, landscape architecture and planning, construction), sustainable rural development and environmental protection (climate change and adaptation regional impacts, social sciences, agrarian and environmental economics, regional development and governance).

The LLU also implements study programmes in agriculture, forestry, veterinary medicine, in woodworking, bio-material-based construction, electric energy based on use of renewable resources, water purification and distribution, water and land resources in management, nature tourism, the food industry and biochemistry, ICT.

Although official scientists and trainers of the LLU do not provide advice but only scientific support, advisory support for farmers, foresters and entrepreneurs in a form of call or short e-mail is not denied, most often without any remuneration. Advice is based on knowledge and enthusiasm of scientific and teaching staff.

One of institutes, working within LLU is **The Institute of Agricultural Resources and Economics (AREI)** with more than 100 years of history, is a unique scientific platform not only in Latvia, but in whole of Europe. AREI is the leading crop breeding institute in Latvia. The research directions of the institute are related to crop genetics and breeding, crop managment and agroecology for sustainable farming provide quality requirements of raw materials for processing, as well as development of sustainable rural space economic analysis for agriculture, food production and fisheries. The institute operates in Riga, Priekuļi, Dižstende and Viļāni. One of Scientific institutes is AREI. The scientific expertise of AREI covers areas related to the sustainable use of agro-resources and the development of rural areas. The fields of scientific research of AREI are based on the topics of the agricultural and rural economy today and on the future vision of sectoral needs, as well as on past experience, research base and traditions of the scientific institutes consolidated within AREI. Particular attention is paid to the integrated development of research through agricultural education and agricultural practices, ensuring the use and transfer of newly created knowledge.
Directions of the **Institute of Horticulture**'s activities are scientific activity in the sectors of horticulture and healthy food; protection of genetic resources and promotion of sustainable use; integrated sectoral, scientific and educational development promotion and Promotion of awareness of the institute and the sector.
LLU includes also other other Research Institutes, Research trial centres and Research Laboratories, which are a part of scientific basis and demonstration activities.

Other Publicly funded research institutes:

Derived public person **"Latvian State Institute of Wood Chemistry"** research themes' priorities embrace practically all fields related to the utilization of wood and lignocellulose biomass and are based on interdisciplinary theoretical wood and lignocellulosic materials studies on the molecular and nano-level.
Latvian State Forest Research Institute "Silava" is the main centre of forest science in Latvia and leader of scientific ideas in forestry and the related research

and development in the country. Its Research areas are: Forest ecology and silviculture; Forest tree breeding and climate change; Genetic Resource Centre; Forest regeneration and establishment; Forest phytopathology and mycology; Forest entomology; Forest operations and energy; Wildlife management; Forest products processing; National Forest Inventory.

Institute of Food safety, Animal Health and Environment "BIOR" is a research centre of national importance which develops innovative research methods and creates new practically applicable knowledge in the following areas of science: public and environmental health, food, fishery and veterinary medicine.

Registered Research institutes, not directly funded by State:

Baltic Studies Centre (BSC) is a private non-profit research organisation in the field of social sciences.. The areas of BSC expertise include sociology, sustainable agriculture, food supply chains, innovation networks, peri-urban agriculture, community development, public policy analysis.

BSC undertakes action oriented research strategies and cooperates with producers' organisations, policy makers, municipalities, SMEs, and other research and advisory organisations nationally and internationally. This helps to focus the research on the needs of practitioners and enhance practical innovations.

Latvian Academy of Agricultural and Forestry Sciences aims to to consolidate and organise the potential of scientists in the fields of agriculture, veterinary medicine, food, the agrarian economy, engineering and forest in addressing the most pressing nature laws and economic challenges and Encourages cooperation with producing companies and farms.

The vast majority of scientific institutions mentioned above offer scientific services, but scientific institutions such as BIOR, SILAVA, AREI and some others also provide a specific advice, mostly through demonstration and paid services.

Vocational education

There are 10 schools which provide agricultural education and one school that provides forestry education in Latvia. In AKIS these act mostly as information receivers, seldom participating in innovation projects.

Other

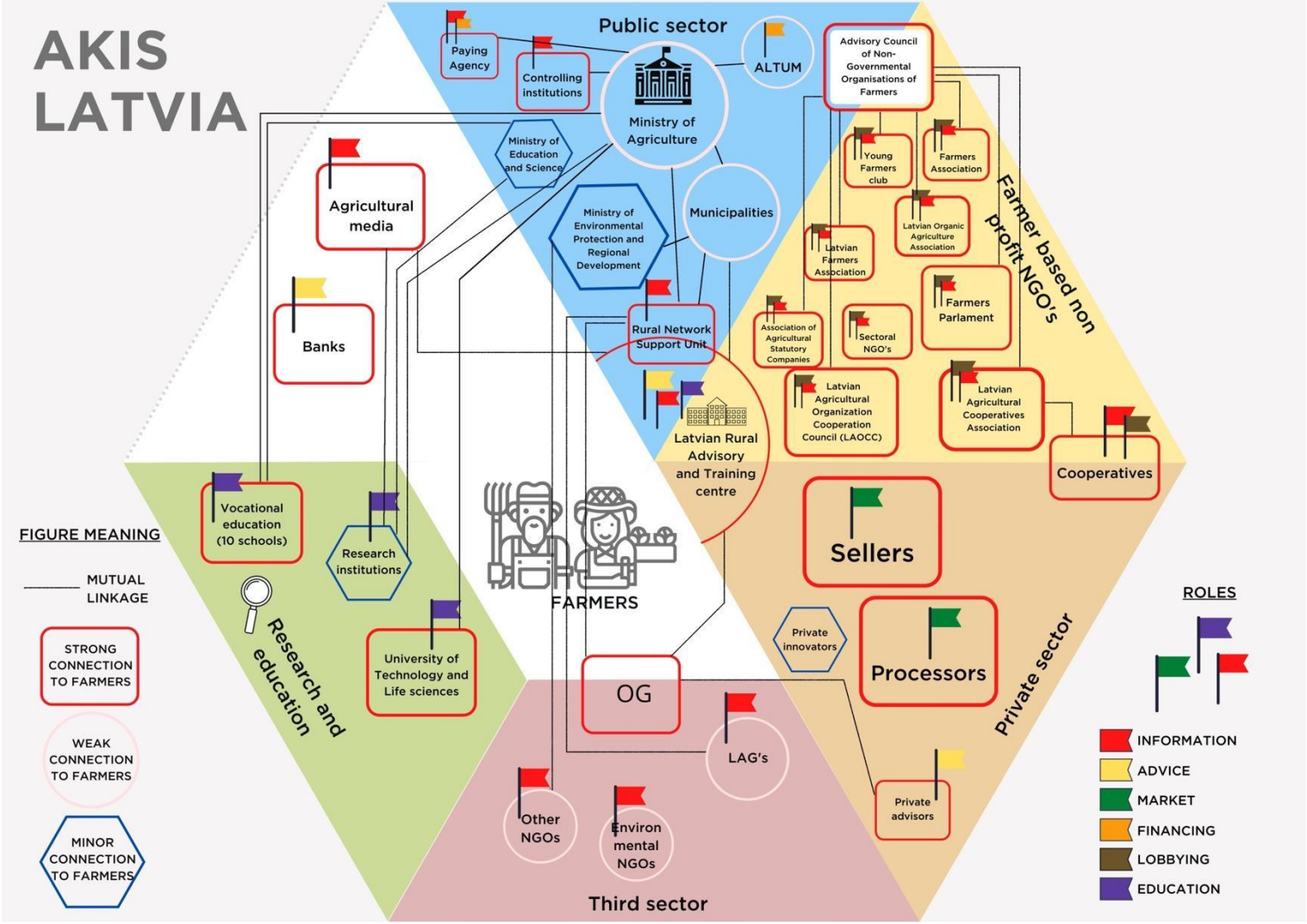
Agricultural media

There are several agricultural and forestry magazines available in Latvia. AgroTops, Lopkopis (livestock farmer), SaimnieksLV(Master), Lauku māja (Farmhouse), Dārza pasaule (Garden world), Medības (Hunt), Profi, Dārzs un Drava (Garden and apiary), Bioloģiski (Biological).
Also TV broadcasts Zemes stāsti (Earth stories) and Uz meža takas (On the forest trail) are present.
From time to time Journalists and TV producers are inviting advisors to talk about actual topics, but usually these broadcasts can not be considered as advisory method.

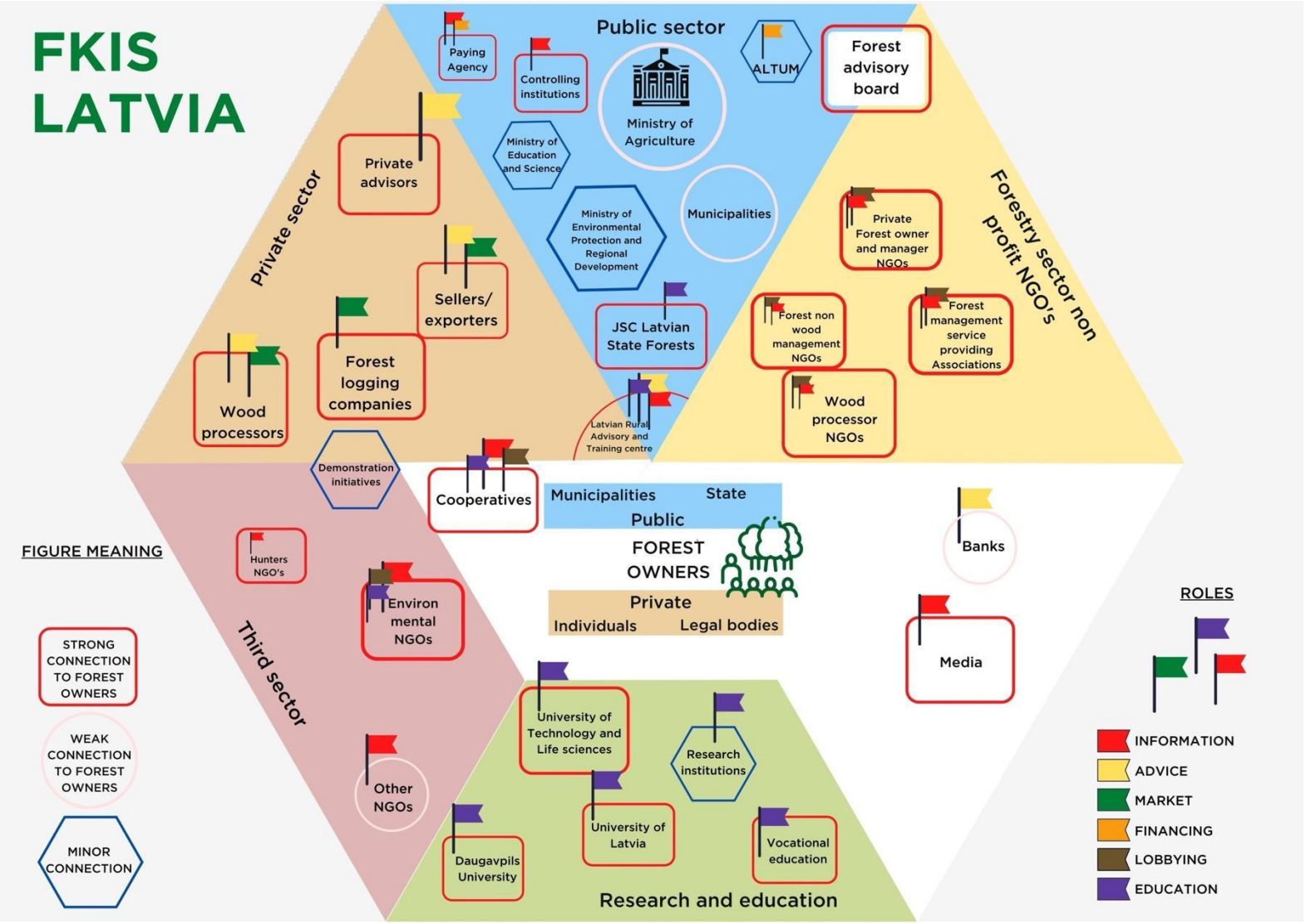
Banks

Banks have an impact to development of the farms, since often different fiscal instruments are necessary for farm development and project implementation.

2.2. AKIS diagram



i2connect
INTERACTIVE INNOVATION



3. History of the advisory system

"The re-establishment of an independent Latvia in 1990 and the accompanying political, social and economic transformations set the major implications on the composition and functioning of the current Latvian AKIS. Many AKIS institutions (universities, agricultural schools, research institutes) have a long history dating back to even the 19th century and the traversing Soviet period, and there are well established research traditions, institutional relations and accumulated knowledge stock. However, the specific post-socialist conditions of privatization, introduction of the market economy and restructuring of agricultural production also demanded reorganization in the agricultural knowledge and information system. In order to respond to the knowledge needs of new farmers, many of whom were even without specific agricultural backgrounds, and in 1991 the Ministry of Agriculture and the Latvian Farmers' Federation established the Latvian Rural Advisory and Training Centre with an extensive advisers' network all across the country. Also new research issues were identified in both the social and natural sciences in relation to land and agrarian reform, new food production technologies, new crop varieties etc.

The EU accession process, launched in the second half of the 1990s, is another major milestone which has driven considerable transformations both in agriculture and the AKIS. In the result of the harmonisation of national and EU legislation (which often meant, though, one-sided approach "accordingly to the provisions of EU laws") agricultural legislation, priorities, regulation and support measures have significantly changed. In order to effectively transmit this new framework to agricultural producers, an active involvement of AKIS institutions was necessary. LRATC was reorganised in 2004 into a limited liability company and its selffinancing part has increased. But it is retaining the strong influence of MoA, which contracts LRATC for the implementation of specific rural development programmes. In parallel to LRATC services, there has been an increasing number, and role, of various private actors in AKIS, in particular agricultural inputs from industry, professional organizations and farmers' cooperatives. Their knowledge supply is often more specific and better focused, but it involves the risks of biased knowledge as well as fragmentation and uneven access to knowledge at the system level." [3]

[3] AKIS and advisory services in Latvia Report for the AKIS inventory (WP3) of the PRO AKIS project S.Šūmane, M. Grīviņš, T. Tisenkopfs (Baltic Studies Center), 2014

In recent years, EIP-AGRI's activities have facilitated cooperation between AKIS actors. The new opportunities and funding available have contributed to mutual negotiations and cooperation. Currently 94 innovative projects are being introduced for agricultural development. It promotes not only direct cooperation in the course of ongoing projects but also new contacts and collaborative ideas outside them.

The second instrument, introduced recently, is Innovation voucher, which is government financial support tool offered by the Investment and Development Agency of Latvia (LIAA) with an objective to drive collaboration between industry and the research community. It is available to all size companies (including startups) registered in Latvia which seek to innovate their existing product/technology or develop a new one. Farmers and rural entrepreneurs also do not hesitate to use it. In many cases, not only scientists are involved in cooperation, but also advisers to move the idea more widely.

As a part of the national innovation policy, in Latvia are establishing Business incubators, Knowledge transfer centers, Industry innovation clusters and similar trans-disciplinary platforms, where learning, exchange and collective knowledge creation takes place.

4. The agricultural and forestry advisory service(s)

The survey was sent twice to 57 agricultural and forestry advisory service providers and NGOs. Almost all email receivers were reached also by telephone. Unfortunately the response rate was small. Only eight service providers filled the survey questions. Only LRATC responses cover forestry advisors as well. The assumption is that there were several main reasons for that:

- LRATC, which is the author of the Country Report, is the biggest agriculture and forestry further education and advisory provider of the country. The survey can be seen as a competitiveness risk.
- The Survey for organization, providing advisory, took at least 50 minutes to fill in and if there is no clear benefit for the organization for filling it, it can be seen as unnecessary work.
- The survey was not working or allowing to fill it in in Latvian for most of the time. Authors have at least three known indications about that.

Significant amount of description and information comes from the studies of literature, gray documents, policy documents and Expert interviews.
Several actors were interviewed:

- Raimonds Bērmanis – Director of Forest Advisory Services Centre;
- Sandra Muižniece – Brasava - Professor, lead researcher and Head of LLU Innovation and Technology Transfer Centre.

4.1. Overview of all service suppliers

Advisory services in Latvia are provided by several types of service providers. Some of them offer advice as a service, some do not formally consider their service as advice, although in substance it is (for example scientific institutions, paying and controlling agencies) and some call the service as advice, even though it is essentially the sale of the product.

Agricultural advice in Latvia can be described as decentralized. Even the main agricultural advisory organization is covering big part of the market, it still covers just a part of it and there is an increasing number of public, private and third sector organizations, which provide direct or indirect advice. There is no coordination between organizations providing agricultural advice, nor common certification system or similar, which could indicate the most suitable advisors.

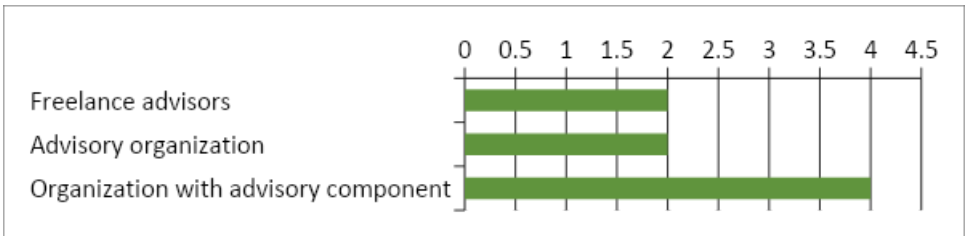


Figure 3 Advisory providers, participating in a survey.

Only eight agricultural and forestry advisory service providers filled the survey. Forestry advisory is given only by one organization of those (LRATC). Six of those submitted their responses anonymously.

4.2. Public policy, funding schemes, financing mechanisms, advisory service providers

Government via Ministry of Agriculture, Ministry of Education and Ministry of Economy leads innovation system: it develops innovation policy and monitors and implements innovation programmes, provides funding for research and development and education budget and support for business innovation.
The Ministry of Economy determines innovation policy and coordinates its implementation. Latvian Investment and Development Agency (LIAA) supports business development by promoting more foreign investment, as well as increasing the competitiveness of Latvian entrepreneurs in domestic and foreign markets.
The Ministry of Education and Science works on scientific and technological developments and innovation policy and coordinate its implementation. In this process, it works with Ministry of Economics and other sectoral ministries and, where appropriate, consult with industry associations and social partners.
Ministry of Welfare draws up state policy to reduce unemployment, participates in the development of employment policies and the development of a career development support system, also coordinating the development of proposals for active employment measures (including the unemployed training).

In Latvia, most of the agricultural and rural development aid is provided under the CAP, mainly through a single hectare aid under the direct payment scheme. Direct aid granted to specific products has been progressively reduced since 2004.

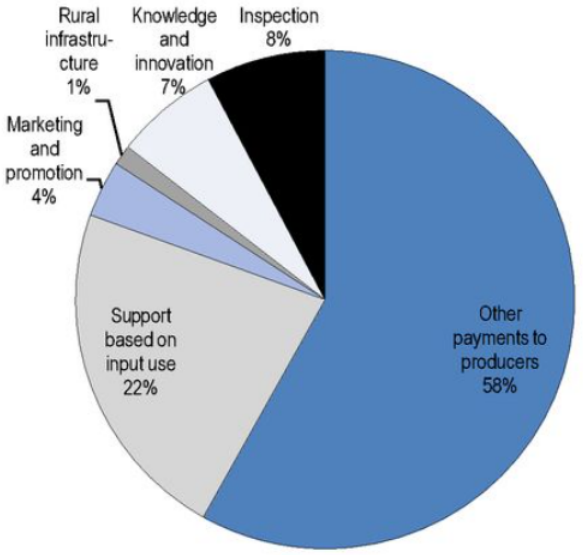


Figure 4 Composition of national support to agriculture in Latvia 2004-2016[4]

The RDP supports knowledge transfer and information activities and advisory services. Innovation is also promoted by the support of the RDP for cooperation and participation in the working groups of the European Innovation Partnership (EIP).

Organizations, participating in survey are funding their activities from several sources: Two of organizations are funded only by cost recovery from farmers fee. Bigger ones are also funded by public financing (State and EU) and thus are able to participate in different international project programmes (Horizon 2020, Interreg programmes, Erasmus+, LIFE).

4.3. Human resources and methods of service provision

Human resource

	Advisory organisation		Organsation with advisory component			
Total: employees	420	2	7	56	11	2
Total: advisors	306	2	3	18	6	2

[4] Innovation, Agricultural Productivity and Sustainability in Latvia, OECD, 2019 www.zm.gov.lv/public/ck/files/OECD_petijums_LAT.pdf

Back-office employees	Yes	Yes	No	Yes	Yes	No
If yes, how many?	82	1			10	
Changes	Same	Same	Decr.	Incr.	Same	Same

Table 1 Number of employees in organisations, 2020

The range of advisors number in each advisory organization differs. The biggest is LRATC, which has 420 employees. 306 of those are providing advice. They are advisers and service providers in rural development, plant production, animal husbandry, forestry, fisheries and aquaculture, farm management, bookkeeping.
The second largest is organization with advisory component with 56 employees, of which 18 are directly providing advisory services to farmers. This is also the only organization, indicating a significant increase of employees, mentioning continuous growth year by year.
Smaller organizations have the total number of employees from 2 to 11. And all, except the smallest ones, have personnel, dealing with other duties than advice.

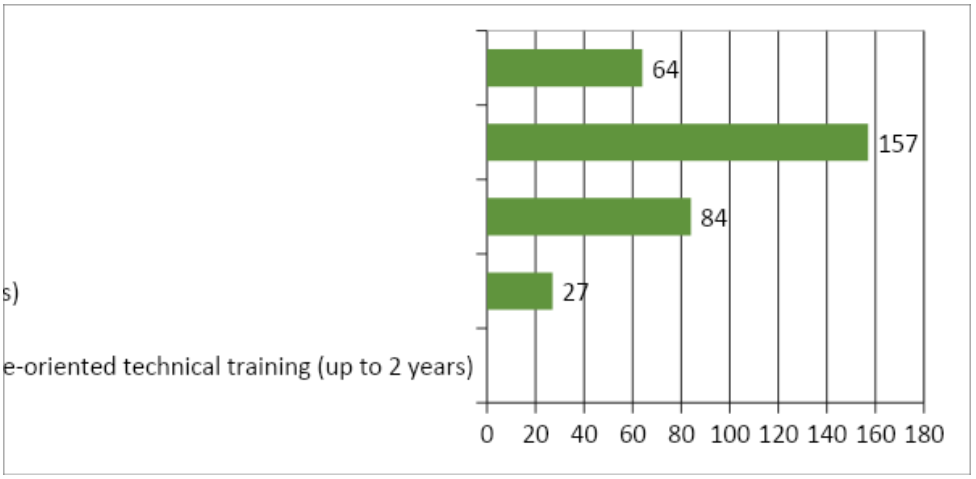


Figure 5 Education level of advisors and freelancers

Total count of all advisors represented in the Survey is 337. As shown in Figure 5, 311 or 92% of those have a higher education.
Additional requirements for recruitement of advisors, but when starting their work, some organizations require several kind of certifications.

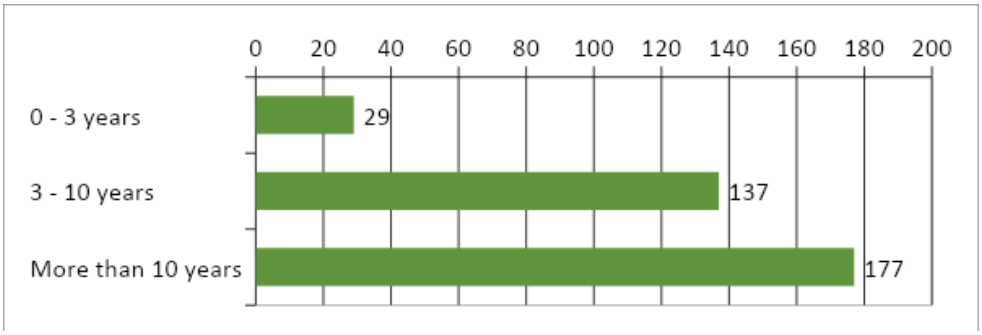


Figure 6 Advisors professional experience in years

In accordance to survey data, more than half or 52% of advisory service providers work more than 10 years in the field. Those with minor experience mostly work in advisory organizations and organizations with advisory component with bigger number of employees (8% of 306 advisors, 17% of 18 advisors). Therefore it can be concluded that those who want to start their career in advisory field, are mostly trained by those organizations and after gaining an experience can decide to go work elsewhere or stay in the organization.

As for the freelance advisors, it is possible to decipher the exact time period working as an advisor, and it is significant – 25 and 32 years for those, participating in the survey.

Advisory certification

Only advisory organizations are mentioning the advisory certifications. Respondent with two employees does not explain it further.

LRATC as an organization has two certificates: Certificate of the advisory company issued by the Rural Support Service; Certificate of the Education Authority issued by the Ministry of Education and Science.

Only LRATC is mentioning advisor certificates and is using several. In certain sectors (e.g. crop production, livestock production), the labor market does not ensure the availability of qualified specialists, so the internal certification system is an important instrument for ensuring the competence, knowledge, skills and skills of employees of LRATC.

The by-law provides that the competencies of employees are increased through two training and certification systems:

- the sector professional qualification system (mandatory) provides an annual training process and knowledge test (production technologies, EU and Latvian legislative requirements);
- the International Certificate for European Consultants in Rural Areas (European Rural Regional Consultants Certificate, “CECRA”) (optional), which ensures that qualifications are raised in general advisory methods.
- External certificates are used to improve the professional skills of Forestry advisory specialists Plant protection specialists.

One of Freelance advisors has mentioned the presence of certificate of Plant protection advisor.

4.4. Clients and topics

Comparing 2016 data with 2010 data, it can be concluded that the share of farm managers with acquired basic, vocational or higher agricultural education has increased by 8% pp., which may have been driven by linking rural development support measures to acquired higher, secondary vocational agricultural education or the acquisition of basic agricultural knowledge for at least 160 hours in volume. However, the overall level of education and knowledge of farm managers remains to be described as insufficient. The representatives of farmers' organisations involved in the future CAP discussions organised in 2019 in cooperation with the NRN acknowledged that the lack of knowledge is a key factor preventing innovation and the entry of modern technologies in the sector, thereby undermining the competitiveness of rural companies, which in turn leads to the competitiveness of the sector in the international market. The OECD study entitled “Innovation, Agricultural Productivity and Sustainability in Latvia” also stated that “there has been a significant increase in the number of adults in education (mainly non-formal education), but the increase is mainly due to the low initial level. Measures should be promoted to ensure that both formal and non-formal lifelong learning is accessible, including financial access to such learning. The study also concludes that “low innovation capacity and low-complexity business are linked to low birth rates, continuous (mostly young people) emigration, skilled labour shortages and a high proportion of the shadow economy. These factors affect Latvia's medium-term productivity and competitiveness". Moreover, the agricultural and forestry industries in Latvia have long been characterised as fragmented, which is a restrictive factor in

making it easy to access quality counselling and educational services to entrepreneurs in the sector.

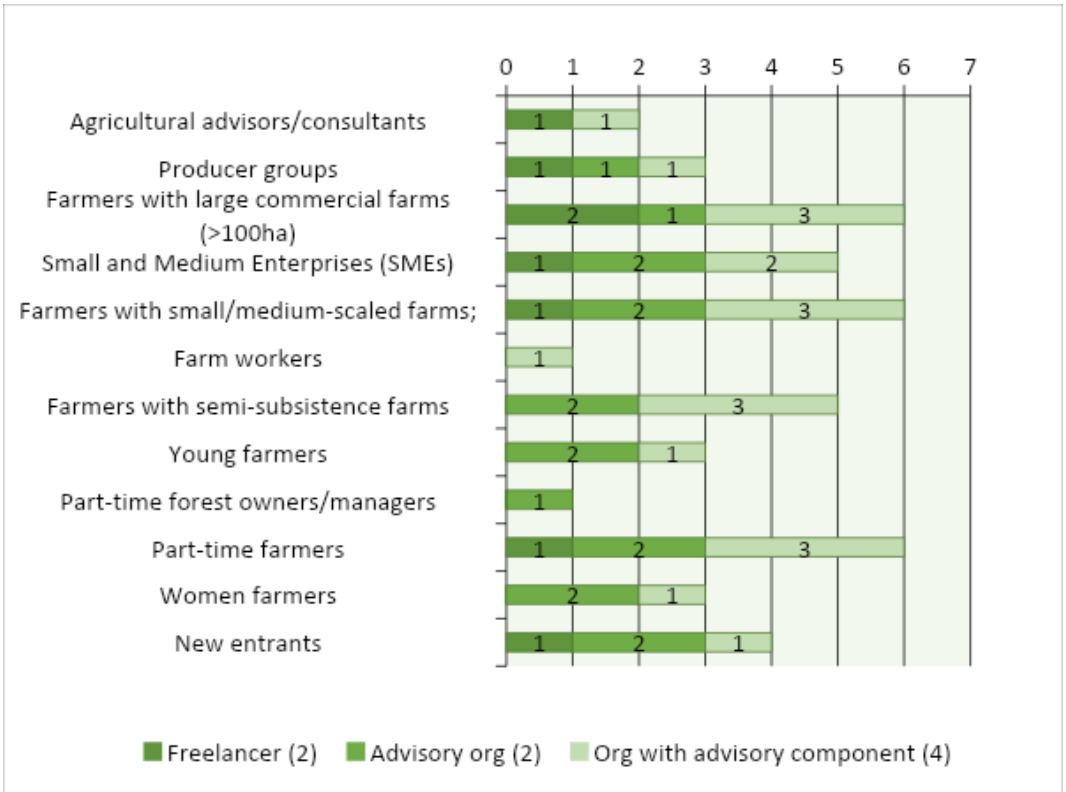


Figure 7 Frequency of client groups by advisory organization type

Client groups differ by respondents. Most active users of advisory services are Farmer groups with large and medium/small farms, as well as part time farmers (which can be included in two previously mentioned groups). All three advisory providing categories are working with those in similar amount. Also Small and medium enterprises are mentioned similarly. But, there is a possibility that within those survey participants can include also small and medium sized farmers.

The less targeted client group is Farm workers, which is mentioned only by one participant. Also Forestry advice is provided only by one respondent. The Forestry sector advisors were targeted during the Questionnaire, but none responded.

When analyzing target clients of the Freelance Advisors, it can be seen, that mostly these are stable clients, paying the costs. Organizations however are funding part of their activities not only from cost recovery from farmers, but also from Public funding (both national and EU project funding), therefore they are able and are working with those clients, which are not yet stable enough to pay

their own fees. Also it is a nuance of Rural development, since different Rural actors are targeted for diversified development.

Advisory topics provided	Freelancer		Advisory organization		Org with advisory component			
Crop production		x	x	x	x	x	x	
Farm machinery			x		x		x	
Vegetables			x	x			x	
Fruits and vines			x	x				
Herbs				x				
Aboriculture			x					
Forest protection/Conservation			x					
Livestock production			x	x			x	
Timber and wood markets			x					
Fisheries/Aquaculture			x					
Insects/Apiculture			x	x				
OTHER								
Business planning	x		x					
Environmental solutions	x		x					
Food production and processing	x							
Cash flow management, financing			x					x

Table 2 Advisory topics provided

From Table 2 it can be concluded that Freelance advisors and organizations with advisory component work with few specific topics, rather than advisory organizations, which provide wide range of options. It can be connected to a specialization of a freelancer or an organization. The interesting part is that both participating advisory organizations are providing wide range of expertise, but in the same time – one of them has 420 employees, but other – only two. The big gap can be also seen in the number of clients, where LRATC has 6000 clients, but the other organization – 10.

Most demanded Cross-cutting advisory topics	Freelancer		Advisory org		Org with advisory component			
Entrepreneurship and farm management	x		x	x	x		x	x
Production technologies		x			x	x	x	
Accounting/Bookkeeping			x	x				
Use of digital equipment and decision support systems		x					x	
Tax and legal advice			x	x				
Marketing and logistics							x	
Rural development support and diversification (farm/forest)			x	x			x	

Support with grant application and compliance with regulation and standards	x		x				x	x
Agri-environmental stewardship measures and nature conservation		x	x	x				

Table 3 Most demanded Cross-cutting advisory topics

When comparing with most demanded advisory topics (Table 3), it can be concluded that the Advisory organizations are providing also more advice, which is not directly connected to a production, but is more general – connected with accounting, legal advice and taxes. Still, the questionnaire asks the most demanded advisory topics, so it cannot be concluded that Advisory organizations are not providing other mentioned topics, but possibly doing it in a smaller scale, when compared with ticked ones.

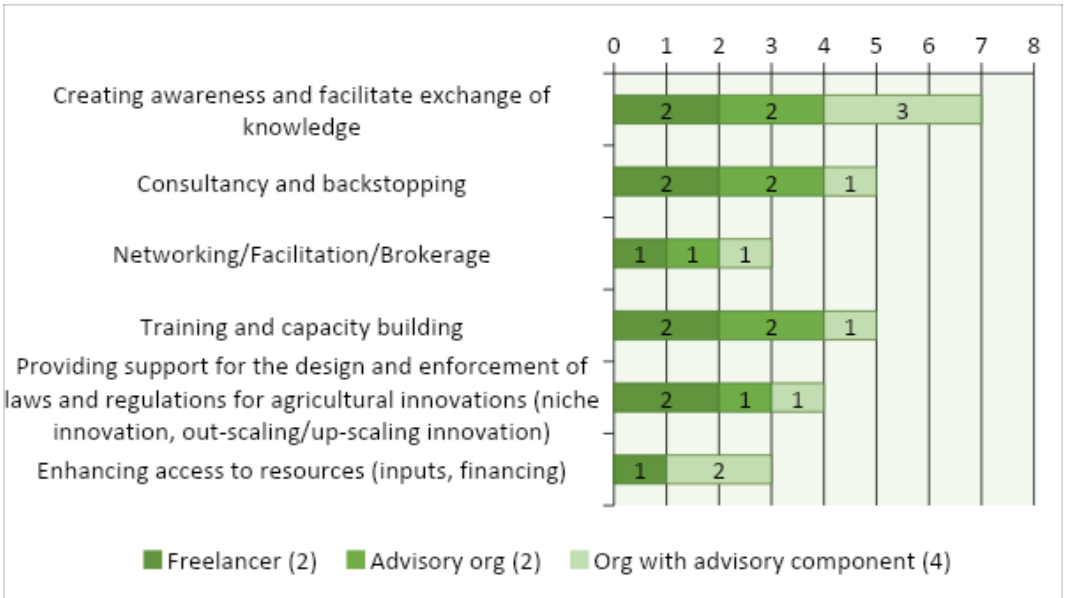


Figure 8 Advisory activities by advisory organization type

Most frequently used activity is creating awareness and facilitating exchange of knowledge, which is done by 88% of advisors and organisations. Less – five of eight are providing consultancy and backstopping, and training and capacity building. Less used is Enchancing access to recourses and networking, facilitation and brokerage.

Two of the organizations are outsourcing some of the topics. One of those mentions Crop production, Animal husbandry and Cross-Compliance in some cases, but not significantly.

Advisory methods

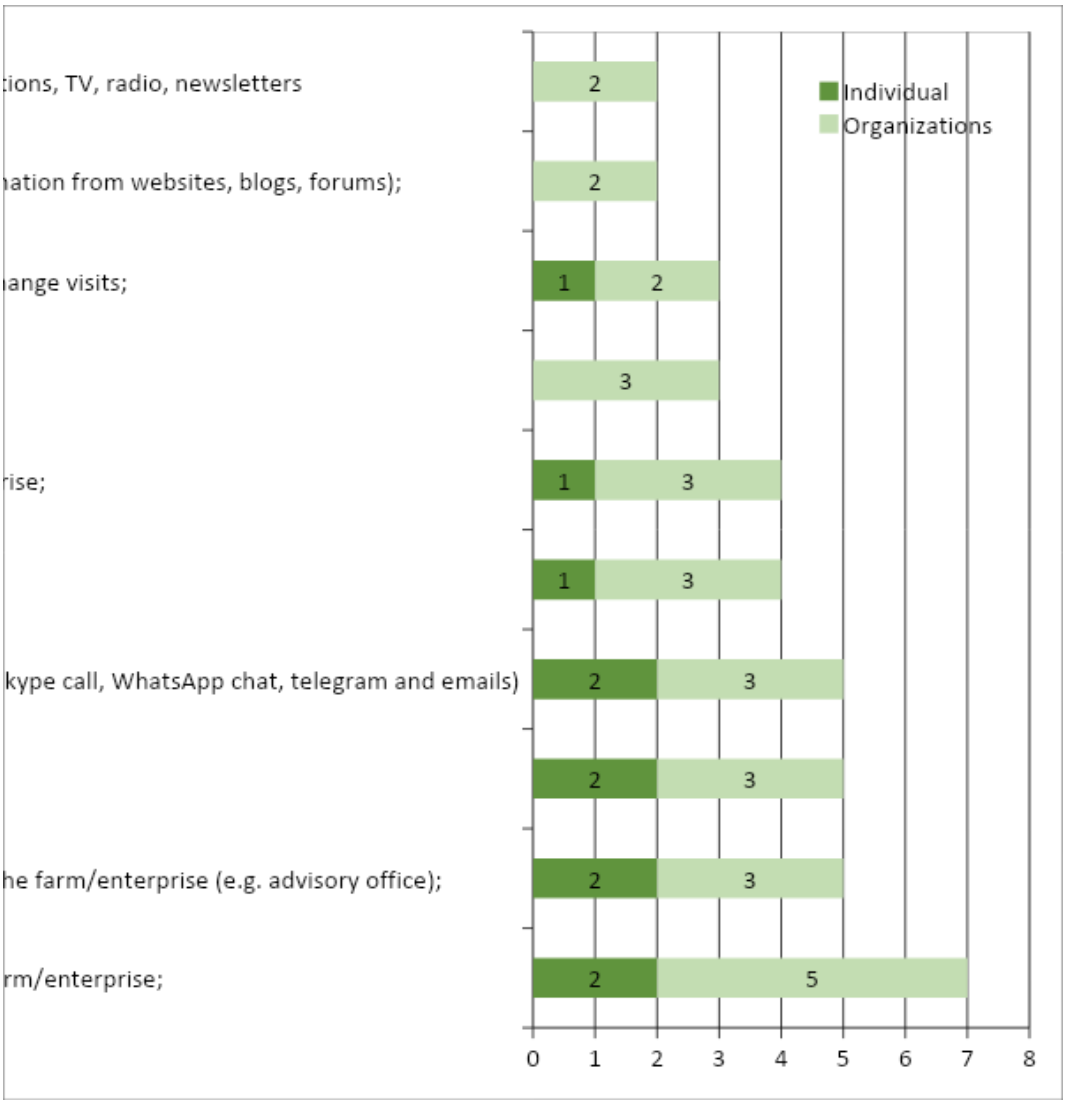


Figure 9 Advisory methods, used by respondents

Most frequently used is an individual advice– on the phone, different communication tools or face to face advice on and off the farm premises. These are done both, by individual advisors and organizations.

Group advice is used less, and mostly by organizations. Mass media advice is used only by some of organizations and none of individual advisors who responded, are using it.

Type of advisor	Individual	Group	Mass media
1. Freelance	100	0	0
2. Freelance	70	30	0
1. Advisory organisation	80	17	3
2. Advisory organisation	100	0	0
1. Organsation with advisory component	70	20	10
2. Organsation with advisory component	30	40	30
3. Organsation with advisory component	20	70	10
4. Organsation with advisory component	100	0	0

Table 4 Advisory methods used based on type of advisor (%)

When looking at percentage of usage of advisory methods by different types of advisors and organizations, no strong correlations can be seen.

COVID-19 has not changed the use of advisory methods for freelance advisors and those, working with small number of farmers. Others had to change the methods, working more online, via phone and emails. The bigger organizations are working also on online seminar and video streaming options. A lot of on-site group and individual meetings, seminars and experience exchange options are not allowed, so part of events are being postponed, hoping for better conditions soon. Organizations are forced to work more online, which can be both – positive and negative. The positive aspects – wider range of farmers and rural inhabitants can be reached, negative – possibility of specific, targeted questions is less possible. Also, older generations often are not able to fully participate online due to lack of digital skills.

4.5. Linkages with other AKIS actors/knowledge flows

	Freelance advisor	Freelance advisor	Advisory org.	Advisory org.	Org. with an advisory component	org. with an advisory component	org. with an advisory component	org. with an advisory component
Universities	Weak	Medium	Medium	No coop	Medium	Medium	Weak	No coop
Research institutions	Weak	Medium	Medium	No coop	Strong	Weak	Medium	No coop
Public authorities	Medium	No coop	Medium	No coop	Medium	Weak	No coop	Strong
Farmer based organisations, professional organisations	Weak	Medium	Weak	Medium	Medium	Medium	Medium	No coop
NGOs	No coop	No coop	Medium	No coop	Weak	Weak	Medium	No coop
Private companies (e.g. advisory organisations)	Weak	Medium	Weak	No coop	Medium	Strong	No coop	No coop
Upstream industries	No coop	Medium	Weak	No coop	Medium	Weak	No coop	No coop
Downstream industries	No coop	No coop	Weak	No coop	Medium	Weak	No coop	No coop
EIP Operational group	No coop	Strong	Medium	No coop	Medium	No coop	Weak	No coop
EU projects (Horizon 2020 multi-actor projects)	No coop	No coop	Strong	No coop	Weak	No coop	Medium	No coop
Other actors	No coop	Medium	Weak	No coop	Medium	Weak	Weak	No coop

Table 5 Cooperation between AKIS actors

Since the response rate was 8 respondents, it is possible to combine all answers in Table 5. When looking at color coded answers, it is clear that the type of organization (or freelancer) does not affect the strength of cooperation with different types of organizations. Almost all survey participants assess that they are cooperating with farmer based organizations, research institutions and universities. The least cooperation seems to be with downstream industries and EU projects.

The cooperation with other actors is totally up to a respondent, and is not affected by the type of it.

4.6. Programming and planning of advisory work

Two of the organizations have a staff development strategy. One of those is LRATC and other is the organization with advisory component. Both respondents have the biggest amount of employees between the respondents (420 and 56). It can be concluded that when there is small amount of employees, it is easier to keep track of each strengths and necessary improvements, but when there is a large amount of people working in the organization, some kind of structure has to be applied. Both organizations also are the only ones to have a rainer/training unit responsible for capacity development.

Organizations in their responses do not mention specific programs. LRATC by-law provides that the competencies of employees are increased through two training and certification systems:

- the sector professional qualification system (mandatory) provides an annual training process and knowledge test (production technologies, EU and Latvian legislative requirements);
- the International Certificate for European Consultants in Rural Areas (European Rural Regional Consultants Certificate, "CECRA") (optional), which ensures that qualifications are raised in general advisory methods.

The mechanism for rewarding the advisors is mentioned only from side of LRATC. Organization is accounting the revenues of each consultant and the premium according to the amount of work done. Also each year the best advisors in each sector are congratulated.

4.7. Time allocation for advisory work

	Advisory org	Org with advisory component	
Teaching and training activities	15	10	10
Innovation support activities (facilitation, networking, brokerage)	2	5	10
Targeted consultation services (business plans, credit/subsidy application, etc.)	65	60	30
Information dissemination (face to face, via digital tools)	3	20	10

Further development of one's knowledge and skills (participating in training programs)	5	5	10
Others	10		30

Table 6 Amount of time an advisor spends for each activity (%)

Three respondents have given an answer to a question about time, allocated for activities. In all cases most time is allocated to Targeted consultation services and non-specified "other" in case of one organization with advisory component.
For further development they are using 5-10 percent of their time. All respondents use 0-15% of time for teaching and training activities. Estimated percentage of time differs for dissemination of information activities, varying from 3 to 20 percent.

4.8. Advisory organizations implementing the EU-FAS

"In Latvia, the EU Farm advisory system (EU-FAS) is organised at the national level. The delivery of the EU-FAS is granted to an advisory organisation on the basis of public procurement procedures. In practice, there are only two advisory organisations which have been able to comply with the tender rules and have been granted the EU-FAS contracts. These are LRATC, the biggest EU-FAS provider and the only provider of the EU-FAS in agriculture, and the Forestry Cooperative Society, a union of three forestry cooperatives that offers EU-FAS services only in forestry. Financially and in terms of the number of consultations and clients covered, LRATC is by far the largest EU-FAS provider and provides the full spectrum of the mandatory EU-FAS consultations. 70 out of 306 advisors employed by the LRATC are directly involved in the delivery of the EU-FAS. However, to be capable to ensure the full range of consultations required by the tender rules, LRATC has to involve experts from other organisations, notably the Latvia University of Life Sciences and Technologies, some research institutes, as well as cooperatives.
EU-FAS activities in Latvia are fully funded from public sources. Approximately 68% of the finances come from the European Agricultural Fund for Rural Development and the remainder is national funding.
The key strengths of the EU-FAS in Latvia are that it is a unified and nationally-operating system that is well supported by a digital management platform. The weaknesses are that farmers are insufficiently aware about the

services and there is a limited capacity of service providers to increase the number of EU-FAS consultations." [5]

5. Summary and conclusions

Latvia has identified all the necessary elements so that AKIS system can operate. Still more coordinatory work needs to be introduced to enhance the mutual cooperation in long term.

In the field of education there are few new entrants to the sector, the role of lifelong learning is therefore very high and necessary for the development of agriculture and forestry.

Although there are difficult climatic conditions in Latvia and a short period of vegetation, the availability and quality of agricultural land and water are very good. There is very good environmental quality in the country and no national problems have been identified so far, despite the intensive use of fertilisers over the last ten years. The main problem of water management is the sustainable amelioration of excessively wet soils. Monitoring and improving the impact of agriculture on the environment must be carried out continuously.

Today, crop cultures and dairy livestock accounts for the majority of Latvia's agricultural production. The structure of commercial holdings is twofold: livestock farms are generally smaller than average EU holdings, while crop culture farms are mostly large and export-oriented. Grain is Latvia's main agricultural and food export group.

5.1. Summary and conclusions on sections 1 – 3

The overall level of education and knowledge of farm managers remains to be described as insufficient.

Measures should be promoted to ensure that both formal and non-formal lifelong learning is accessible, including financial access to such learning.

[5] Review of the implementation of EU-FAS policy in Member States of EU- Latvia, E.Kīlis (Baltic Studies Center), 2019

The agricultural and forestry industries in Latvia have long been characterized as fragmented, which is a restrictive factor in making it easy to access quality counselling and educational services to entrepreneurs in the sector.

The Latvian Agriculture AKIS includes a wide range of participants who ensure, manage, finance, carry out, implement, inform and facilitate innovation. The main players are policy makers, researchers, teachers, advisors, farmers, private enterprises, consumers, non-profit organizations and markets.

In recent years, EIP-AGRI's activities have facilitated cooperation between AKIS actors.
Currently 94 innovative projects are being introduced for agricultural development. It promotes not only direct cooperation in the course of ongoing projects but also new contacts and collaborative ideas outside them.

Government financial support tool - innovation voucher, offered by the Investment and Development Agency of Latvia is available to all size companies (including startups). In many cases, not only scientists are involved in cooperation, but also advisers to move the idea more widely.

As a part of the national innovation policy, in Latvia are establishing Business incubators, Knowledge transfer centers, Industry innovation clusters and similar trans-disciplinary platforms, where learning, exchange and collective knowledge creation takes place.

5.2. Summary and conclusions on sections 4

One of the reasons for low responsiveness to a questionnaire could be that the study was carried out by the largest advisory company in the sector. Respondents may not have wanted to disclose information to competitors.

A lot of different projects have recently been askeing to provide similar information. It would be desirable to work more closely with other projects to obtain information, rather than regularly asking primary providers to prepare it again and again.

Large organisations care about the education of their advisers, while independent consultants and the small consulting firms leave their self-development in their own ways. This may be due to easier traceability of employees, but it is noted that AKIS would have the opportunity to coordinate the training processes of advisers.

Individual advice is still ongoing, but as the costs of advisory sercvices increase, advisors will have to switch to the forms of group advice.

New advisers should be encouraged to enter the system, since a large number of advisers are working for 10 years and more.

Advisory companies also offer general (legal, taxes, networking) advice rather than directly related to production.

Less targeted group is farm workers — When working with small holdings, fewer advice is provided to employees of large holdings.

6. Acknowledgement of partners, information sources and gaps

Unfortunately the response rate to a questionnaire was low. Only eight service providers filled the survey questions. Only LRATC responses cover also forestry advisors. The assumption is that there were several main reasons for that:

- LRATC, which is the author of the Country Report, is the largest agriculture and forestry further education and advisory provider of the country. The survey can be seen as a competitiveness risk.
- The Survey for organization, providing advisory, took at least 50 minutes to fill in and if there is no clear benefit for the organization for filling it, it can be seen as unnecessary work.
- The survey online system was not working or allowing to fill it in in Latvian language for most of the time. Authors have at least three known indications about that.

For this report, three special interviews were conducted:

- Raimonds Bērmanis – Director of Forest Advisory Services Centre;
- Sandra Muižniece – Brasava - Professor, lead researcher and Head of LLU Innovation and Technology Transfer Centre;
- Inta Nagle - Head of Rēzekne LRATC offices;

In addition, insights from other conversations, conducted by the author during other activities regarding AKIS in Latvia were used:

- 8 personal interviews and regarding study on knowledge transfer, cooperatives and NGO's.

Special thanks to Survey participants for devoted time.

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Appendices

Appendice 1 List of AKIS institutions