AKIS and advisory services in Estonia

Updated report for the AKIS inventory

(Task 1.2) of the i2connect project

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i2connect
INTERACTIVE INNOVATION

Executive summary

The aim of the report is to provide a description of the Agricultural Knowledge and Information System (AKIS) in Estonia. 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.

Agricultural land is generally extensively used in Estonia. Agriculture is characterised by high degree of concentration of production in relatively small number of commercial farms. Estonia is one of the most forested countries in the world: forests cover nearly half of the mainland. Fishing is divided into trawling on the Baltic Sea, coastal and inland fishing and long distance fishing.

The main characteristics of Estonian AKIS can be summarized as follow:

- Estonian AKIS benefits from the small size of the country. Key persons in different institutions know each other well and cooperate in different forms and topics.
- Several measures support cooperation between the actors. Knowledge transfer services are provided by publicly supported actors and a number of independent organisations.
- The formation of central hubs in agriculture, forestry and fisheries enable holistic planning of AKIS activities and the consolidation of relevant information and opportunities in a single online repository.

Large scale of different components of AKIS are available. The advisory services in Estonia could be described as a mixed system of supported and private advice providers.

Research and education actors include the universities, research institutes and vocational schools. There are several farmers´ representation organisations and farmer-based organisations and cooperatives in Estonia providing information and advice to their members. The media, input sellers and private companies are important part of knowledge transfer. In addition to supported activities, there

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are several specialists and organisations, providing information and advice to entrepreneurs.

In agricultural sector, the AKIS coordination is established around two bodies: the Ministry of Regional Affairs and Agriculture (MRAA) and Centre of Estonian Rural Research and Knowledge (Maaelu Teadmuskeskus, METK). The concept to AKIS centre is a unique holistic way to approach the needs and elaborate cooperation between AKIS actors. Long-term programming with a multi-actor organisations is big step towards developing a co-creative mind-set in Estonia. The main objective of the AKIS centre is to develop and coordinate a coherent AKIS system by strengthening the role of advisors in the AKIS, raising general awareness of the opportunities offered by the knowledge transfer exchange and innovation system, and serve as the central AKIS information point.

The main points of concern were raised during this study:

- **Advisors** are ageing and the younger generation is not interested to become an advisor. There is an expectation to have **joint actions** with all the persons, who do some kind of knowledge exchange, advising or innovation support services;
- **Insufficient funding for agricultural or rural research** is leading a lack of new domestic knowledge for transfer; several stakeholders have an opinion that scientific information is not available for producers in easily readable and understandable form;
- the agricultural **AKIS centre** has to start fostering cooperation and knowledge exchange in a new level.

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Abbreviations

AKIS	Agricultural knowledge and information system
ARIB	Agricultural Registers and Information Board, Paying Agency
CAP	European Union Common Agricultural Policy
EIP	European innovation partnership
EMFF / EMFAF	European Maritime and Fisheries Fund/ European Maritime, Fisheries and Aquaculture Fund
EU	European Union
FIC	Estonian Fisheries Information Centre
LAGs	LEADER local action groups (for fisheries, FLAG)
MRAA	Ministry of Regional Affairs and Agriculture
METK	Centre of Estonian Rural Research and Knowledge (Maaelu Teadmuskeskus, METK)
NSU	National CAP (rural) network support unit, which is operated by METK
RDF	Estonian Rural Development Foundation
RDP	Estonian Rural Development Plan

1. Main structural characteristics of the agricultural and forestry sector

Estonia is the northernmost and smallest of the Baltic countries, territory of 45,227 km^2. The population — 1.37 million in 2024 — is relatively urban and has been decreasing since the country regained its independence in 1991.

The rural area is important from the point of view of economic and food security, because it offers work to nearly 30% of the total employment participants in Estonia, and 31% of the companies operating in the rural area are engaged in agriculture, fishing, hunting or forestry. The agricultural and fishing sector and the food industry provide ~3% of the added value created in Estonia[1].

Although only ~4% of the employed work in the field of agriculture, fishing and food industry, the scope of influence also extends to other areas that are closely related to these sectors, e.g. sellers of fertilizers, feed, machine accessories, etc. According to the labor demand monitoring survey OSKA[2], it is predicted that employment in both agriculture and the food industry will decrease over the next decade, primarily at the expense of those doing simpler jobs, who could increasingly be replaced by technology in the future.

By 2024, 1.05 million ha of **arable land** (Figure 1), 0.25 million ha of natural grassland and 2.30 million ha of forestland were registered[3]. The organic crop area holds 227,741 ha (23%).

According to the number of applications for single area payment, the number of agricultural holdings is still decreasing: 17,425 applications in 2015 and 12,077 in 2024[4]. In total 1,968 farms were involved in organic production, of which 1,057 kept organic animals. Agricultural land continues to decrease primarily as a result of urban sprawl (residential and industrial buildings, roads) and afforestation.

[1] Ministry of Rural Affairs (2024, overview). Estonian Statistics, Agriculture [28.07.2024] https://www.stat.ee/et/avasta-statistikat/valdkonnad/pollumajandus-kalandus-ja-jahindus/pollumajandus

[2] "Future outlook on the need for labor and skills: agriculture and food industry", Tallinn 2023

[3] Source: Estonian Land Board 2024

[4] www.pria.ee

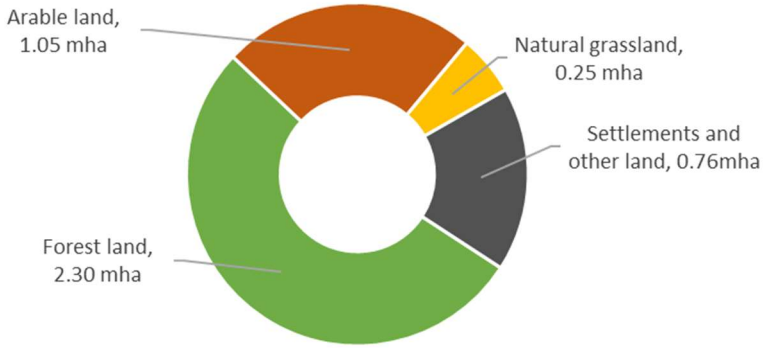

Figure 1. Total area of Estonia by land categories (Source: Land Board, 2024)

At the end of 2023 the number of cattle was 241,400, including 34% dairy cows (decrease of 3,3% compared to the previous year). According to Statistics Estonia 894,700 tonnes of milk was produced (an increase of 5%) and the average milk production per cow was 10,608 kg/year.

Summer cereals accounted for 41% and winter cereals a record 59% of the cereal growing area. Average yield of cereals differs a lot depending on the year and was 2.6 t/ha in 2018 and 3,4 t/ha in 2023. In the last ten years, the growing area of green corn has increased significantly (157%). In 2023, the area of grain and leguminous crops harvested for fodder also increased significantly, by 124% compared to 2022. Due to the dry and cold spring, there was little grass growth, and part of the grain was harvested for silage to ensure the animals' feed needs[5].

Estonia is one of the most forested countries in the world: forests cover half of the mainland. The forests here stand out with an abundance of species, preserved thanks to a large proportion of naturally renewed forests and few alien tree species. The area and reserves of **forests** have increased significantly over the last half century; almost half of Estonia is covered with stands. The area of Estonian forestland is 2,334,200 ha, of which about 74% are managed forests. The growing forest reserve is 456,7 mln m^3. The most common tree species are pine, birch and spruce.

A quarter or 24.6% of forestland has a stricter or more lenient protection regime. State owns 1.19 million ha or 51.5% of the total forest land area and private forests

[5] Overview of agriculture, fisheries and food industry for 2023, www.agri.ee

cover 1.13 million ha or 48.5%. There were 104,311 private forest owners in Estonia at the end of 2019, of which 94.3% were natural persons and 5.7% legal persons. The average size of private forest ownership in Estonia was 10.7 ha, in the case of natural persons this indicator was 6.6 ha and in the case of legal persons 78.6 ha[6]. The value added of forest sector accounted for 1.0% of Estonian total value added (212.8 million euros) in 2018.

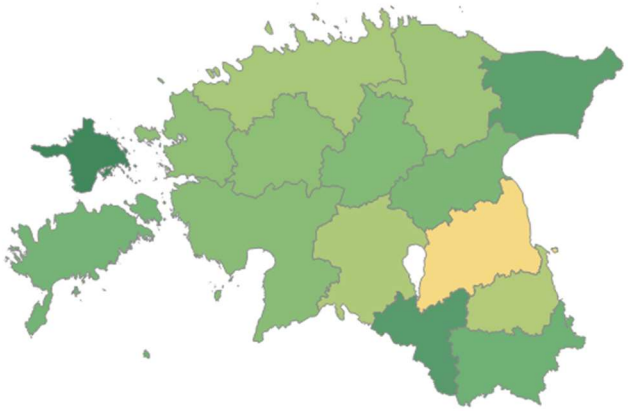

Figure 2. Forest coverage in counties *(Source: Estonian Environmental portal, 2024)*

The direct and related indirect and induced value added of the forest sector (forestry, wood industry, furniture production, paper and pulp production) in 2017 totalled 2.5 billion euros, i.e. 10.7% of the country's GDP and 12.4% of value added. According to Statistics Estonia's Labour Force Survey, the share of the employed in the forestry sector has remained stable at five to six per cent of the total number of employed in the last decade. Only the number of timber workers is taken into account and jobs related to nature tourism and non-timber values are not included. Forestry sector employs 35,800 persons (20% in forestry, 49% in wood industry, 26% in furniture industry and 5% in paper industry). Forestry income comes primarily from the sale of timber. It is estimated that wood accounts for more than 95% of forestry income[7].

Estonia has good preconditions for the production of **fishery and aquaculture** products. A total 73,727 tonnes of fish were caught in 2023 (incl long-distance

[6] Environment Agency, several publications: https://keskkonnaagentuur.ee/en; Yearbook Forest 2021.
[7] Ministry of Environment https://www.envir.ee/ 2021

fishing, trawling in the Baltic Sea, coastal fishing and inland fishing), which is 13% less than in the previous year. Estonian aquaculture consists of three areas of activity: fish farming, crayfish farming and fish farming for restocking in natural waters. A fourth area of activity is being added - algae and shellfish farming.

16% or 12,087 tons of Estonian commercial fishing catch is caught in coastal fishing, where 1,935 licensed fishermen operate. In 2023, a total of 2,505 tons of fish were caught on inland waters, 512 vessels were used for fishing in 2023, and 592 professional fishermen operated in inland waters, there were 345 license holders. In 2023, there were 45 licensed companies operating in the aquaculture sector.

Companies operating in the fisheries sector have a long tradition, know-how and experience. Over time, joint activities have become more active, a clearer example of which is the fisheries producer organizations, of which there are five in Estonia. Four of the producer organizations operate in the field of fishing and one producer organization is active in the field of aquaculture. These producer organizations bring together more than 500 employees. There are two representative organizations operating in the Estonian aquaculture sector, in addition there is one producer organization related to marine aquaculture. [8].

More than 1,000 legal entities (according to 2022 data, 1,023) operate in the field of **food industry** in Estonia (EMTAK 10; 11). By size group, the most are micro-enterprises with less than 10 employees, which make up ~80% of the total number of enterprises. However, micro-enterprises only account for ~5% of the sales revenue of the food industry, and ~70% come from companies with more than 100 employees. About 3% of the employed work in the food industry and ~3% of the added value created in Estonia is created. The dairy (23%) and meat (17%) industries account for the largest part of the production value of the Estonian food industry. More than a third of the value of the food industry's production (nearly €900 million) was exported, making up almost a tenth of the export of the processing industry.

[8] Overview of agriculture, fisheries and food industry for 2023, www.agri.ee

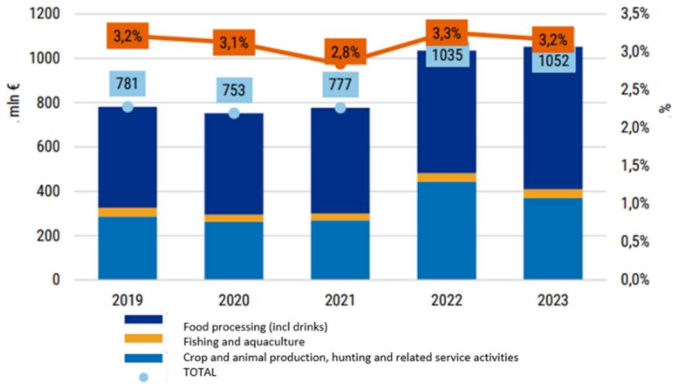

Figure 3. Gross value added in 2019-2023 *(Source: Estonian Statistics, 2024)*

In 2023, € 1052 million in **value added** was created in enterprises engaged in agriculture, fisheries and the food industry (Figure 3). These activities accounted for 4,6% of the value added created in Estonia. Companies in the agricultural, fisheries and food industries are important employers.

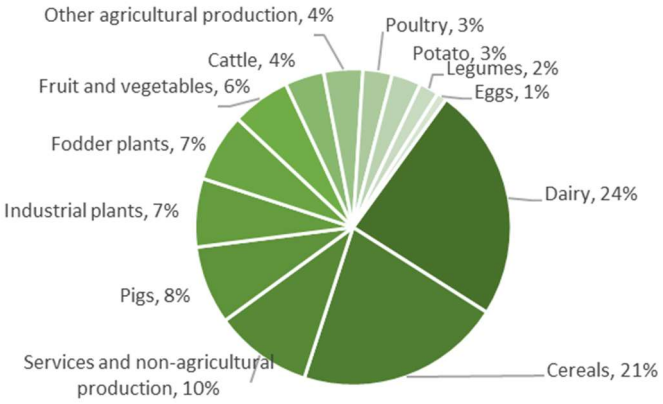

Figure 4. Structure of the total output value of agriculture in 2019 (Source: Ministry of Rural Affairs, 2020)

GDP from Agriculture in Estonia was 99.20 EUR Million in the first quarter of 2024. It averaged 107.39 EUR Million from 1995 until 2024, reaching an all time high of 218.40 EUR Million in the third quarter of 2015 and a record low of 34.00 EUR Million in the second quarter of 2017[9].

[9] https://tradingeconomics.com/estonia/gdp-from-agriculture

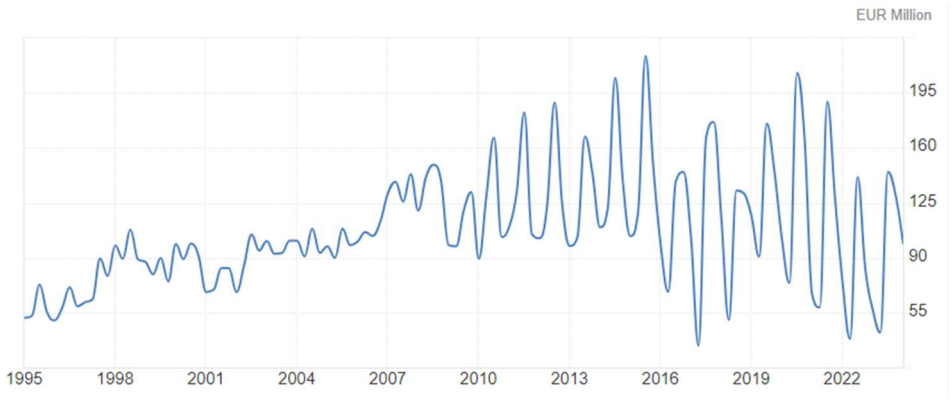

Figure 5. Trend in Estonian agricultural income (Source: Trading Economics, 2024)

Differences in economic development continue to be clearly felt by region in Estonia. Estonia's gross domestic product (GDP) has grown by a third in ten years, but the gap between rural areas and Estonia's GDP is still large and has remained unchanged, which reflects inequality.

Food production depends on the availability and condition of land resources. In the last five years, the area of cultivated land has decreased somewhat (~100 ha), while the area of natural grassland has increased by nearly 8,000 hectares and the area of forest land by nearly 16,200 hectares. In Estonia, by the end of 2023, 1.05 million hectares of cultivated land, 0.25 million hectares of natural grassland and 2.30 million hectares of forest land were registered in the Land Cadastre.

Agriculture plays a more important role in the overall economy of Estonia than it does in most other EU Member States, and seems to be more attractive to young farm managers than observed on the average in the EU Member States. Rural areas are predominant in Estonia, with 82% of the territory and 44.5% of population share. Rural areas face depopulation, poverty and ageing. The low level of economic activity, the limited quality job opportunities and missing basic infrastructures and services make rural areas less attractive[10].

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[10] European Commission, 2020

2. Characteristics of AKIS

The report covers the national framework, context and policies which have impact on the 'agricultural knowledge and innovation system' (AKIS), including farm advice and related activities in Estonia. The report covers also actions regarding knowledge transfer and innovation in the field of forestry, fisheries and aquaculture.

Estonian AKIS benefits from the small size of the country. Key persons in different institutions forming AKIS know each other well and cooperate in different forms and topics. Several CAP measures have been designed (and successfully implemented) to support the cooperation between the actors. Training and advisory services are provided in Estonia by publicly supported advisors and a number of independent organisations.

According studies or reports from 2015[11], the Estonian AKIS appears weak and fragmented, as no central hub exist for overall coordination of innovation and knowledge exchange in agricultural sector and rural activities that relate to it. To a certain extent, fragmentation has been fostered by the current structure of the support measures, with (sub-)activities being targeted at narrowly defined target groups. Thus, there have been separate support measures for advisory services, for knowledge transfer, for innovation cooperation.

The linkages and cooperation need enhanced collaboration, but the conclusion of weak AKIS is not correct. During the period 2014–2020, several steps have been taken towards a more integrated AKIS.

High quality knowledge transfer and advisory services at the heart of the coherent AKIS are essential for the sustainable development of the agriculture and food sector and contribute to increasing the competitiveness of enterprises in the sector by creating additional opportunities for the modernisation of agriculture and rural life, promoting and sharing knowledge, supporting innovation and digital transition and stimulating their uptake. The Estonian AKIS "ecosystem" will ensure an efficient flow of information between producers and researchers, makes

[11] ProAKIS (2014), European Commission recommendations for Estonia's CAP Strategic Plan (2020),

available up-to-date information on innovation and the latest scientific information, and ensures the provision of advisory services in areas of importance to the state on an equal basis and of uniform quality throughout Estonia, taking into account the needs and opportunities of different regions.[12]

2.1. AKIS description

Estonia benefits from the generally innovation-friendly attitude, there are plentiful opportunities to obtain vocational or higher education in the field of agriculture, food, fisheries, etc., the support schemes are available for research and development, knowledge exchange, and innovation. There are several Research and Development institutions in Estonia, whose thematic scope involves agriculture and food-related disciplines.

The Estonian AKIS has been gradually moving towards a more integrative and holistic approach. In the 2007-2014 period, the Estonian AKIS was characterized as a rather fragmented system. During the period 2014–2020, several steps have been taken towards a more integrated AKIS. In terms of the CAP Strategic Plan, the key actors of the Estonian AKIS include the agricultural and rural entrepreneurs (incl. forestry, food processing) and their representative organizations, advisors (both those rendering the service under the support measure as well as others), research and development institutions, educational institutions (universities, vocational schools) as well as other persons, institutions or organizations involved in training and knowledge exchange.

The structures of knowledge hubs were reformed in almost all sectors in 2022 to 2024.

- The **agricultural** AKIS system is now centrally supported by the Centre of Estonian Rural Research and Knowledge (METK) since 2023 as an AKIS centre (Advisory system formerly was led by Rural Development Foundation).

[12] Strengthening EU AKISs. 5th mandate report of the SWG SCAR-AKIS (2019-2022) (extract from the draft)

- The leading unit for disseminating knowledge in the field of **forestry** is Environmental Investment Centre since 2023 (formerly by Private Forest Centre, which was emerged to a larger unit).
- In the field of **fisheries and aquaculture** - The Fisheries Information Centre (same organisation that got new tasks in 2024).

The trainings and other knowledge transfer actions are organised by various private organisations as well by research and innovation institutes. There are universities and several institutes that conduct research in agriculture, forestry, fisheries and aquaculture. There are umbrella-organisations and university that combines many aspects of rural life. The collaboration initiatives for the programming period of 2013-2020, like innovation clusters and knowledge transfer programs, are not common in other parts of Europe.

Public authorities

The Ministry of Regional Affairs and Agriculture[13] (MRAA) is the main governing institution for the agriculture, commercial fishing, aquaculture, regional and rural affairs. It is responsible for the coordination of the AKIS, as well as the legal aspects and design of the supporting measures. Among other tasks, it also prepares the national programmes of agricultural applied research.

Regarding the AKIS, three other ministries play a significant role as well. **Estonian Ministry of the Climate** is responsible of information dissemination regarding environment protection (incl protection of NATURA areas), forestry (incl hunting) and fisheries (resources in water). **Ministry of Education and Research** regulates Estonia´s education, research, language and youth policy. The regulatory environment for general education, vocational education and higher education and public research is developed by the Ministry of Education and Research. The main strategic objectives of the **Ministry of Economic Affairs and Communications** regarding AKIS involve governance that encourages entrepreneurship and innovation.

The Agricultural Registers and Information Board[14] (ARIB) is a governmental agency fulfilling the functions of the Estonian Paying Agency and is responsible for

[13] www.agri.ee

[14] www.pria.ee

the administration of all related CAP (Common Agricultural Policy), EMFAF (European Maritime, Fisheries and Aquaculture Fund) interventions. It maintains the register of agricultural supports and agricultural parcels as well as the register of farm animals.

There are several public authorities, which help farmers and food processors to understand the legislations (for example, Agriculture and Food Board in the field of starting small-scale processing and Environmental Board regarding the maintenance of protected areas). These authorities also organise trainings and campaigns for adults and children both. **Environmental Investment Centre** is one of the main financiers of environmental projects in Estonia.

Research and education organisations

Estonia has a strong public research system, but weak research and development based innovation in firms[15]. The strengths of the Estonian innovation system are the conducive business environment, high public research expenditure and good skills base in the population. Research for Estonian agriculture, food industry, fisheries and rural life is carried out in several universities, institutes, technology development centers and competence centers, but major part of innovation is driven by input suppliers.

The Estonian companies are relatively small and industry-science linkages are not strongly developed, although programs have been implemented to facilitate public-private cooperation and to better connect education and skills to labour-market needs. Estonia has a very strong start-up scene and there is a very strong focus on deep tech start-ups. A few of them are also active in agricultural sector (such as e-Agronom)

The **Estonian University of Life Sciences**[16] is responsible for delivering synergy between five major fields of education and research: agriculture and agricultural economics, forestry, environmental sciences and applied biology; veterinary medicine and animal husbandry, technology and engineering. University provides scientific support and organises many trainings, to entrepreneurs and advisors.

[15] OECD (2018)

[16] https://www.emu.ee/

University of Tartu is related to AKIS mainly through education and research in the fields of environmental sciences and biology. **Tallinn University of Technology** is an important actor in education and research in the fields of biotechnology, material and food sciences. The **Center of Food and Fermentation Technologies (TFTAK)** and BioCC are the leading private research and technology institutions in the field of agri–food sector

The **Centre of Estonian Rural Research and Knowledge (METK)** was formed in 2023 by emerging Estonian Crop Research Institute and Agricultural Research Centre. It is a governmental research and development institute under the Ministry of Rural Affairs and Agriculture. Research is carried out in the following areas: development and upgrade of efficient and environmentally friendly agro-technologies, plant protection, plant health, agro-chemistry, fertilisation, and agro-meteorology. METK is dealing with breeding new varieties of agricultural crops and preserving plant genetic resources. The centre has different laboratories, field testing centres and departments dealing with agro-environmental monitoring, analysis of the rural economy (incl. FADN), and rural networking (national CAP Network support unit). METK has the obligation to accredit advisors regarding Qualification Standards and since 2019 has a leading role in agricultural knowledge transfer.

There are good opportunities to acquire **education** in agriculture, forestry, food and fisheries at the level of both vocational and higher education. Museums and their educational programs are closely linked to national curricula and contribute to raising public awareness. In addition to the Estonian University of Life Sciences, University of Tartu, and Tallinn University of Technology, the professions related to agriculture, handling of food and rural life is possible to study in 10 **vocational schools** (5 regarding agriculture). All schools have Boards, to keep in touch with farmers, processors and farmer based organisations.

Providers of Advisory Services and AKIS mediators

Professional advisors as well as other advisors, experts and mentors provide counselling services for farmers and enterprises. The state primarily supports the individual advisory service aimed at public interests.

The total number of nationally accredited advisors available in Estonia is 105 (on average: one advisor per 159 agricultural holdings[17]) with varying specialisation and level of skills.

There are a number of very different counterparts active in advisory services and knowledge exchange in Estonia, their interconnectedness varies, and there has been an identified need for a more systematic coordination of their activities.

The **county development centres** (in Estonian *maakondlikud arenduskeskused*), established in 2003, are development organisations located in each county (15), which offer free counselling for start-ups and operating companies, non-profit associations, foundations and for local authorities. These centres offer services to local entities in rural areas, which fall outside of agriculture, forestry and fisheries.

Up until 2023, the Advisory service was operated by **Rural Development Foundation** (RDF), a state founded organisation, that issues guarantees to banks for credits granted to farmers and other entrepreneurs in Estonian rural areas, and is responsible for RDP financial instruments. The foundation was the only eligible organisation to offer Measure 2.1 supported advice from 2015 to 2023. This task included providing trainings and back-office services to advisors.

In the CAP 2020+ a so-called **AKIS center** (a unit within the Center of Estonian Rural Research and Knowledge, METK) is responsible for both the coordination of advisory services as well as diverse formats of knowledge exchange activities, facilitating thereby a more systemic and sustainable development of the AKIS and overall innovation capacity of Estonian agriculture. At the same time the reform of the advisory system was taking place where the qualification for the officially recognized advisors where extended also to the researchers and qualified professionals with relevant working experience.

The tasks of the Estonian National **Rural (CAP) Network support unit** (NSU)[18] is executed by the department in Centre of Estonian Rural Research and Knowledge (METK). It facilitates flexible, open-minded and gradual development, with bottom-up initiatives based on needs of rural actors. The Rural Network activities involve the collection, aggregation and dissemination of best practices and

[17] In 2016 there were 16 700 agricultural holdings.

[18] www.maainfo.ee

innovative approaches; organising various events related to rural development. The NSU is actively involved in innovation transfer, as non-formal Innovation Network. NSU actively promotes the exchange experiences at local, national and EU level and organises seminars[19] for advisors and innovation brokers.

Innovation clusters are an initiative (non-governmental institution, with membership at least 10 farms) aiming to encourage broad cooperation between producers, processors, researchers and advisors. It encourages both national as well as international cooperation; several foreign partners are also involved in different clusters' activities[20]. That concept enables wider implementation of innovative solutions and active long-term cooperation of producers/processors and researchers. The clusters continue their activities even after the RDP support ended.

Third sector organisations and NGOs

Several **producers/processors organisations** are very active in coordinating or participating in knowledge exchange and innovation activities. There are different associations, unions and societies that unite the farmers and producers working within the same field of agriculture (dairy, crops etc.) or food processing (association of bakers, etc); NGO Estonian Village Movement Kodukant, Estonian Association of SMEs etc. Different kinds of co-operation are also promoted through CAP, e.g. LEADER and producers' cooperatives in general.

Estonian **LEADER Union** is a non-governmental organisation set up to contribute to the implementation of LEADER/CLLD principles in Estonia. The purpose of the union include the support the knowledge-based development of its member organisations. There are **26 LEADER local action groups (LAG)** in Estonia. Fisheries LAGs (8 groups) are operating separately. 99.99% of Estonian rural area is covered by LEADER local action groups (LAGs), every LAG has 60 members on the average.

The **Estonian Chamber of Agriculture and Commerce** (since 1996) has united agricultural producers and their unions (incl horticulture), processors of

[19] https://maainfo.ee/index.php?page=3710

[20] Agricultural Research Centre (2019) Mid-term review of Estonian RDP

agricultural products and their unions, forestry organisations and companies providing services to the agricultural sector. It helps in finding business partners, the exchange of market and price information, organising forums and information days, and arranging participation in trade fairs in Estonia and abroad. It is representing Estonia in COPA/COGECA.

The **Estonian Farmers Federation** unites the county-based farmers unions and several other organisations related to agriculture and rural life. Several **regional farmers and producers unions** are active in organising different knowledge transfer activities (mostly in their own counties but also across the whole country) and some of them also offer both private or supported advisory services.

The **Estonian Food Industry Association** was founded in 1993. It represents and promotes the interests of Estonian food and drinks industries and is actively involved in knowledge transfer activities.

Several **organic farming organisations** (e.g. Estonian Organic Farming Foundation, Organic Farming Centre of Estonian University of Life Sciences, Estonian Organic Farming Platform) are also actively involved in different knowledge exchange, applied research and innovation related activities. In 2006, organic farming organizations founded the Estonian Organic Farming Platform, the main aim of which is to develop the organic farming sector.[21]

As an example of farmer-led organisation, the **Estonian Horticultural Association** is the organisation uniting enterprises working in this field. It has been active in several knowledge and innovation activities and is partner or coordinator in different CAP projects.

Private sector

Producers' cooperatives are also important in providing knowledge and advice (mostly) to their members. There are about 100 agricultural co-operatives in Estonia (*Põllumeeste ühistu KEVILI*, *Talukartul*, etc). The legal form of cooperatives

[21] Organic farming in Estonia 2023. https://www.pikk.ee/ilmus-mahepollumajanduse-aastaraamat/

can be “for profit” or non-profit NGO, their activities and attitudes still depend on their mission. Although there are not many producers’ cooperatives, some of them (e.g. KEVILI) are active in organising field days and other events and advising farmers. Organised events often have high participation and some of them are recorded and so made available for a wider viewing audience.

There are also some other organisations and unions offering advice and training, like companies involved in **selling agricultural inputs** and/or buying production (Scandagra, DeLaval, BASF etc) or other services (electronic farm field recording etc). These are quite active in organising field and information days and training for farmers as well as providing advice. They usually have enough financial resources to employ good specialists, but their advice and training is oriented towards selling their own products and therefore considered not independent.

The interviewers pointed out, that advisors and farmers consider **other entrepreneurs** as an important source of information.

The impact of **media** cannot be considered insignificant. As newsletters and social media postings provide mostly information with news-value, only some news contain information about research and innovation results or best practices of agriculture[22]. The main media websites are managed by business-oriented companies (www.pollumajandus.ee, maaleht.delfi.ee). There is one agricultural magazine (Farmers Notifier, *Põllumehe Teataja*) and the use of specialised social media groups (for dairy farmers etc) grows more familiar. A lot of information is channelled through social media and mailing lists, but the websites of state authorities and organisations are most useful, regarding advisors.

Forestry

There are about 113,000 private forest owners in Estonia, among whom more than 14,100 have joined forest cooperatives (that own over 578,000 ha, ie almost half of the total area of private forest land). There are almost 30 active forest cooperatives in Estonia[23].

[22] Exploring digitalization …, CASA, (2019)

[23] https://www.erametsa.ee/metsauhistud/ November 2020

The state continues to influence forest owners' forestry practices. The leading unit for disseminating knowledge in the field of forestry is the **Environmental Investment Centre**, that took over the role of previous **Estonian Private Forest Centre**. Environmental Investment Centre is a State Agency under the administration area of the Ministry of the Climate. that bring together market needs and investment possibilities for the environmental projects. The objectives regarding forestry are raising competence of private forest owners and promoting environmentally friendly and effective private forestry. Main tasks are: administrating national and EU subsidies for private forest owners (incl. forestry advisory support as well as the organization or ordering of sectoral training and information days); and maintaining website www.eramets.ee. The state provides relatively high freedom to forest owners for management[24].

The **Estonian Private Forest Union**[25] was established as an organization by the most active forest owners in 1992. It is an umbrella organization for local forest owner associations and altogether 20 local associations are members, representing about 1/3 of Estonian private forest land.

Advice to private forest owners is provided by advisors of **private forest associations/cooperatives**, most of them have joined the Estonian Private Forest Association. Local forest owner associations have been set up to unite individual forest owners on a county or community level. The local private forest entities are called cooperatives (in Estonian *ühistu*), but they are NGO-s in juridical form. Trainings for private forest owners are organized by the same forest associations, and the Private Forest Centre as well as private trainers. Private trainers have also used support measures managed by the Ministry of Rural Affairs and described in RDP to finance the trainings. The forestry advisors are employed or contracted by these private forest associations/ cooperatives.

According to the interviews, private advisors rely on the mailing lists or news-feed on social media for training opportunities. Digital media is an important part of our lives. The advisors, working for forestry cooperatives, can rely on weekly updates of information feed by their back-offices.

[24] Lawrence, A etc (2020)

[25] https://erametsaliit.ee/

There is good amount of forest research, but finding the results is relatively difficult. From the interview: “It should be made public by the person carrying out the study, as this study must have a meaning. Public opinions approach to forest management is nowadays based on faith, not research or practice”.

Fisheries

Fishing is divided into trawling on the Baltic Sea, coastal and inland fishing and long distance fishing. 1700 licensed fishermen are active in coastal fishing on the Baltic Sea an there are 101 fish processing facilities in Estonia, most of them are small enterprises with less than 50 employees.

The purpose of the activities of the **Fisheries Information Centre** is to coordinate the cooperation between the fisheries and the aquaculture sector, anglers’ organisations and researchers as well as to order and coordinate relevant studies and pilot projects being of interest for the aforementioned target. In cooperation with scientists and researchers, the Fisheries Information Centre collects, analyses, distributes and publishes relevant information concerning the fisheries management and fishing industry as well as aquaculture sector including the processing and marketing of aquaculture products. The centre is established in 2011 under the supervision on Estonian Maritime Institute, University of Tartu.

The Fisheries Information Centre makes close cooperation with fisheries areas, enabling the **Fisheries Local Action Groups** (FLAGs, 8 in total) to provide comprehensive information, knowledge and assistance for the implementation of their action strategies.

Over time, joint activities have become more active, there are six **fisheries producer organizations** in Estonia, and the central umbrella cooperative uniting producer organizations[26]. The Estonian aquaculture sector is characterized by a high degree of fragmentation between several small-scale products and production methods. Also in coastal and inland fisheries, joint production and marketing are not yet widespread. Companies operating in the fisheries sector have a long tradition, know-how and experience, and have begun to develop and

[26] https://www.agri.ee/kalamajandus-teadus-nouanne/kalamajandus-ja-kalapuuk

introduce new processing equipment with state-of-the-art technological solutions and environmentally friendly farming technologies[27].

As the aquaculture sector is small, there is not a sufficient market for veterinarians and advisors specializing in the Estonian aquaculture sector. At the same time, there is a shortage of skilled labour, demanding a lot of manual labour and usually paying low wages.

Digitalisation level

Based on data prior to the pandemic, Estonia ranks 9th out of the 28 EU Member States in the 2022 edition of the European Commission's Digital Economy and Society Index (DESI)[28]. Estonia continues to perform strongly in the uptake of digital technologies. The country is a global leader in the digitalisation of public services. However, to ensure no one is left behind, measures promoting connectivity and further digitalisation of businesses would be essential..

On digital skills, Estonia is just above the EU average for basic digital skills. However, the country outperforms in the proportion of Information and Communication Technologies (ICT) specialists in employment and has the highest percentage of ICT graduates in the EU. Businesses are not yet reaping the full benefits of the digital economy. Despite some innovative companies driving the Estonian business ecosystem, more traditional businesses and SMEs are lagging behind.

On connectivity, the country's fixed and mobile broadband take-up is high. Furthermore, Estonia scores above the EU average as regards overall fixed Very High Capacity Network (VHCN) coverage, although it is still unavailable to many households in rural areas.

[27] MRA (2020) Draft "Development Plan for Agriculture and Fisheries until 2030" https://www.agri.ee/et/eesmargid-tegevused/arengukavad-ja-strateegiad

[28] European Commission. *Digital Economy and Society Index 2022. Estonia*

Conclusion of AKIS actors

There are three universities and several research institutes for agriculture, processing of food, forestry, fisheries and aquaculture. In addition, there are vocational education centers that offer vocational education in the field. There are designated bodies regarding agriculture, fisheries and forestry sectors for the whole knowledge and innovation dissemination concept.

The cooperation and information exchange between the public and private advisors and between the production areas can be developed further.

The structures of knowledge hubs are formed in all related sectors. The **agricultural** system is now centrally supported by the AKIS centre (METK). The leading unit for disseminating knowledge in the field of **forestry** is Environmental Investment Centre; in the field of **fisheries and aquaculture** - The Fisheries Information Centre.

2.2. AKIS diagram

Regarding connections, Estonia benefits from the small size. The Estonian AKIS connects single actors directly with each other. In figure 7, the linkages are represented using solid lines indicate a strong linkage, and dashed lines to indicate weaker linkage, indicating intermittent communication. As arrows on the lines show the flow of information, all the arrows are double-sided.

There are several chambers, cooperatives, farmer-based and other sectoral organizations with direct linkages to their members, still most AKIS actors have direct contacts with each other. The universities, research institutions and vocational schools all have advising boards with farmers/ foresters/ fishermen/ processors and use the opportunities of these enterprises for study-visits, practice locations and demonstration events (incl. demofarms).

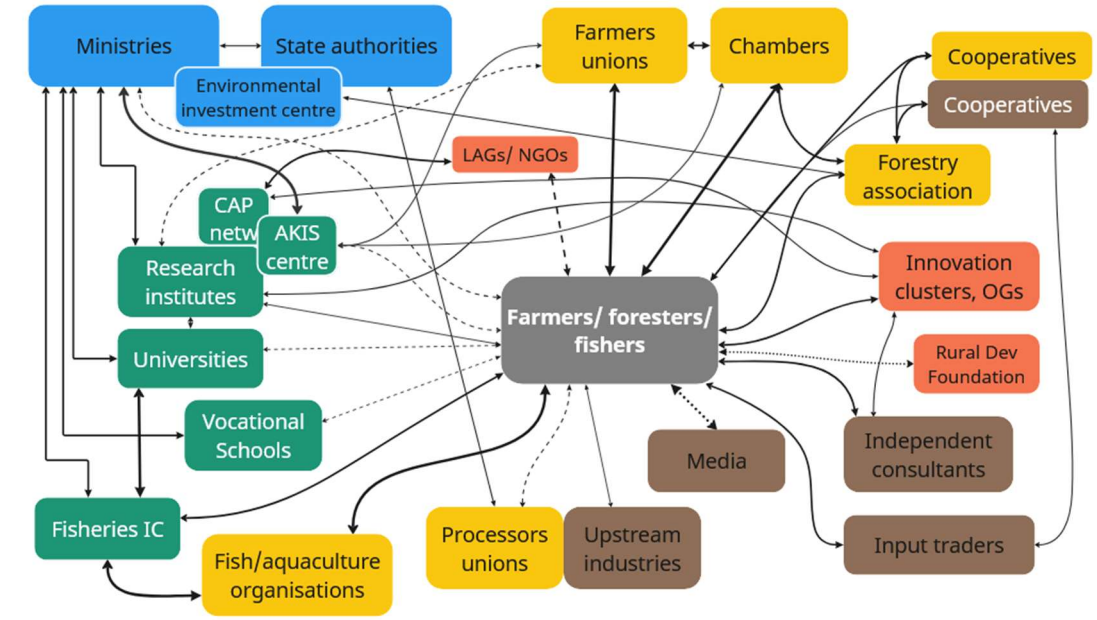

Figure 7. Estonian AKIS diagram

As in most countries, there are public research institutions, universities and school, operating directly under supervision of ministries, having regular contacts. The AKIS centre and CAP network support unit are part of one research institution, though with their different tasks having different relationships with AKIS actors.

2.3 AKIS supporting policy frameworks

For the period 2014-2022 about 50% of the CAP expenditure of Estonia was foreseen by RD measures, which is substantially higher than the EU average (about 25%), while the share of direct payments was 49% and the share of market

measures - less than 1%[29]. Support for agriculture, food industry and rural development is paid within the EU Common Agricultural Policy (CAP) from the European Agricultural Guarantee Fund (EAGF, CAP Pillar I), the European Agricultural Fund for Rural Development (EAFRD, CAP Pillar II) and the state budget according to RDP and state aid rules. In 2019, a total of € 308 million was paid in subsidies to agriculture, the food industry and rural development, of which 85% was from the EU budget.

The implementation of the priorities of the European Union 's Common **Fisheries** Policy (CFP) is funded by the European Maritime, Fisheries an Aquaculture Fund (EMFAF). The support for **forestry** is funded by Estonian state budget.

Agricultural AKIS centre

In the programming period 2014-2020, Estonia allocated 4.44% of the total rural development budget for M1 (knowledge transfer and information actions), M2 (advisory services, farm management and farm relief services) and M16 (co-operation). This is above the EU28 average of 3.63%[30].

In the CAP 2023-2029, building the coherence and linkages between different AKIS players has been set as one of the strategic objectives. The three main AKIS related interventions have been designed based on a holistic and combinability principle: support for AKIS development – 0.1, supporting advisory services – 0.2, and support for innovation cooperation – 0.3.

Thus, a so-called **AKIS center** (0.1) was established. The main objective of the AKIS center (a unit within the Centre of Estonian Rural Research and Knowledge, METK) is to develop and coordinate a coherent AKIS system by strengthening the role of advisors in the AKIS, raising general awareness of the opportunities offered by the knowledge transfer exchange and innovation system, and serve as the central AKIS information point.

The activities of the AKIS center include:

[29] Case study report – Estonia (2020)

[30] Agricultural Research Centre, Study on knowledge transfer (2019)

- Promoting cooperation and networking with different parties (Estonian and foreign); analysis of the need for knowledge exchange and advisory services in Estonia.
- Organization of knowledge exchange, information and promotion activities, including support and enabling funding to other organisations;
- Providing a support function for advisors in the provision of advisory services, including maintaining the register of supported advisors, providing trainings and encouraging new advisors;
- Providing and developing digital services, including the online knowledge platform.

Agricultural knowledge transfer

The RDP/CAP provides an opportunity to support training and reporting activities. The activities supported include training and information days, training itself and training cycles, courses, conferences and study excursions for those operating in the agriculture, food and forestry industries. The production, purchasing and updating of information and training materials are also included under the support. The main target group for advisory and training support are producers involved in the production or processing of agricultural products and their workers or companies and individuals involved in forestry.

RDP M1 - knowledge transfer and information actions - was supported as single national/county level projects or as long-term knowledge transfer programme implemented in eight selected topics. The knowledge transfer programmes are targeted to a certain topic and contain a wide set of activities (e.g. information days, trainings, conferences, demonstration activities, information materials) supported in a combined and coordinated way and implemented by a consortium of several organisations. Programmes are structured in a similar way and run for 4 years (started at different times, the first ones in 2015). In 2021, the MRAA organised a call to cover seven presently running programme topics as one single large programme. National and county level training projects were much smaller and contain one type of activity

The support of information days and trainings has mostly been based on the division of needs into either county or national ones. Various calls for proposals (1998–2001) and application rounds (2002–2019) and the principles of forming

evaluation committees (eg deciding county needs under the leadership of county governments; with the help of the paying agency's regional offices) have been tested. Since the funding period 2004–2006, support has been provided for the organization of agricultural and rural training and the publication of information materials at two levels: county and national activities. In the ERDP 2014–2020 period, knowledge transfer programs were added, which began to consolidate the activities submitted in the application rounds of national activities. According to the MRAA[31], the target value of participation is exceeded (126%).

Starting 2024, the AKIS center is responsible of organization of knowledge exchange, information and promotion activities, including support and enabling funding to other organisations.

Many other measures and activities also indirectly affect information dissemination systems:

- RDP/CAP investment measures, primarily with regard to the need to involve advisors and provide information regarding the requirements of support;
- Support for the development of short supply chains and local markets, especially in terms of network formation;
- RDP/CAP environmentally friendly management, organic farming support etc through mandatory training for applicants;
- activities of local action groups (LEADER-type measure) and producer groups through training of members;
- national CAP (rural) network through information activities for the public and beneficiaries;
- information days and conferences organized from the own resources of professional organizations or with the support of sponsors;
- presentations and conferences introduced by companies that sell or buy production inputs or services;
- advice, mentoring, trainings, conferences by county development centers (main concerns in the field of non-profit organizations and the food industry);
- consulting, trainings, etc. in the field of forestry;

[31] MRA (2020) RDP annual implementation report for 2019

- training and information activities funded by the Environmental Investment Center, regarding the information of preserving the nature and habitats;
- public training order of the Ministry of Education and Research with the support of the European Social Fund in vocational education institutions or professional higher education institutions providing vocational education to adults (incl horticulture, greening etc);
- labour market training offered by the Estonian Unemployment Insurance Fund and support for starting a business.

Agricultural advisory services

M2 - Advisory services, farm management and farm relief services includes aid for the use of advisory services (was implemented through one single advisory service coordinating organisation, Rural Development Foundation, see in the sections 2.1 and 3) and aid for training of advisors. Training of advisors was implemented with separate public procurements organised for each training. All licenced advisors can participate in these trainings, not only the ones contracted by the Foundation.

The amount of agricultural advisory support per client or contract is limited (up to 3000 € per client per year), and the support rate has also varied (50–90%), depending on the amount of service requested by the client or the field of service. In addition to the advisory support, short-term advice (up to 2 hours per client) was also supported on significantly simpler terms and is free of charge for the client. The high increase in the number of contracts is related to the fact that from 2018 to 2023 advice was supported for submitting support applications (using the customer portal of paying agency). When Estonia implemented a mandatory digital application system for all measures a lot of producers (especially older ones) needed help using the system. Before 2018 a similar service was offered to producers which was supported by the state.

The **CAP national regulation for advisory support,** which came into effect at the beginning of 2024, significantly expanded the range of advisers. Advisors are either with a professional certificate or experts without a license (lecturers, researchers, experienced practitioners, etc.), provided that the quality and impartiality of the services are ensured. The list of advisory service providers maintained by METK includes experienced advisors who are independent and

have completed a mandatory annual training or trainings of 25 hours appropriate to the areas of advice.

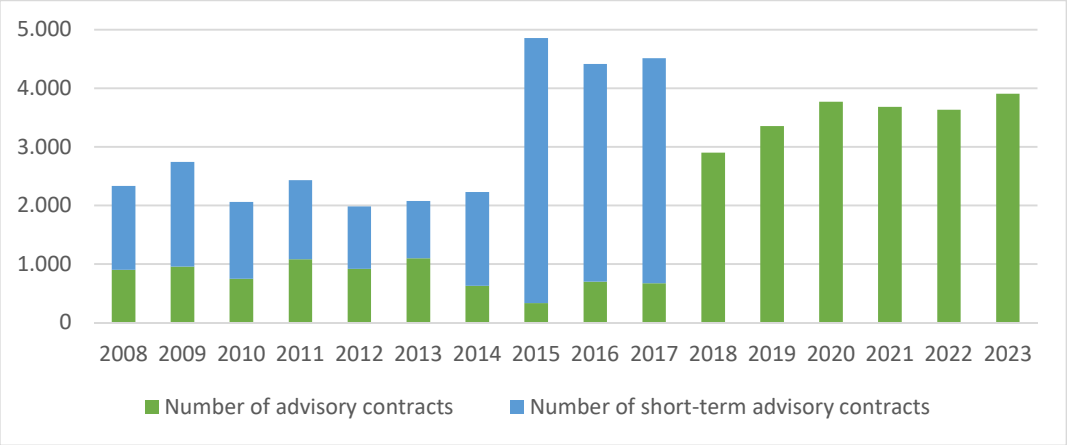

Figure 10. Number of supported (one-to-one) advisory contracts in 2008-2023. **Note**: short-term contracts were not supported by RDP up to 2018. (Source: ARIB 02.11.2020, 31.02.2024, calculations by METK)

Interest in advisory services has fluctuated over the years (see figure 10). Changes in the conditions of advisory support have significantly affected the use of advice, the functioning of the system and its reputation among advisers. Advice on animal husbandry and crop production remained stable over the years (taking into account seasonal fluctuations depending on the growing season), but the amount of advice on supported economy topics depended most on the investment support application period and advisory support rate (support 90%, 75% or 50%)[32]. A 2018 survey on agricultural advisory services[33] showed that larger companies rely somewhat more on consultants of the input companies than they do on supported advisory services.

In the RDP period 2014–2020 (lasting 2015-2023), advisory support was only available to primary producers of agricultural products and access was not available to forest landholders, rural food production companies, start-ups, rural communities, producer groups and innovation projects. Mentoring programme in agricultural advisory system was not widely used. Mentoring is a collaboration,

[32] Agricultural Research Centre, 2019. Study on knowledge transfer
[33] University of Tallinn, 2018.

sharing the knowledge and experience of successful and experienced farmers with less experienced farmers.

In the CAP period 2023-2029, the main target group of advisory services continues to be producers engaged in agriculture and rural economy (except fishing, hunting), as well as processors of agricultural products and private forest owners. Special attention is paid to young, starting entrepreneurs. Entrepreneurs who are starting up or making a leap in development (for example, expanding from primary production to processing) have a high need for advice, but their financial opportunities are mostly limited due to investments in fixed assets. The innovation initiatives (including the processing of novel food) have the possibility to turn to the AKIS centre for innovations support services.

Agricultural innovation cooperation

The components of RDP **measure Cooperation (M16)** are activities of Innovation Cluster and Development of New Products, Practices, Processes and Technologies, incl. European Innovation Partnership operational groups. The **CAP intervention Cooperation** has similar possibilities for projects.

Innovation clusters are aiming to encourage broad cooperation between producers, processors, researchers and advisors. The RDP measure was designed based on EIP principles but widened according to the specific needs of the sector. It encourages both national as well as international cooperation; several foreign partners are also involved in different clusters' activities[34].

Support is based on 4-year action plans designed by NGO-s consisting of producers/processors with research/development organisations and some traders as partners, linking to execute common innovative actions. In the end of 2019, support was granted for 43 innovation cooperation projects[35], but officially, only two EIP operational groups have been implemented for the year 2020[36].

Within the cooperation measure, there were also smaller projects, usually implemented by 1-2 businesses and a research partner. A lot of these projects

[34] Agricultural Research Centre (2019) Mid-term review of Estonian RDP
[35] MRA, (2020) RDP Annual implementation report for 2019
[36] Case study of Estonia (2020)

from the period 2014-2020 were not considered as EIP-OG due to the technical reasons.

Under the CAP intervention, the activities are divided to three slots:

1. Major projects - e.g. **innovation clusters**, development of new products, practices, processes and technologies, implementation of test projects;
2. Small projects - development of new products, practices, processes and technologies, implementation of test projects;
3. Development component - voucher for testing methods and working practices and adapting them if needed, preliminary studies for the development of large and small projects.

It is mandatory to share information on projects starting, on-going and ending. It is mandatory to disseminate project information and the results obtained through both the national and EU CAP networks. In addition to the involvement of the research partner, the intervention also supports the involvement of an advisor. The advisor may be involved as a partner or representative of the applicant.

Estonia has a strong public research system, but weak innovation in firms. Research necessary for Estonian agriculture, food industry, fisheries and rural life is carried out in several universities, institutes, technology development centres and competence centres. The competencies of Estonian research and development institutions are diverse and international research cooperation in the field has become increasingly active. The shortcomings of the innovation system are partly linked to the relatively small size of Estonian companies. The most innovative companies in Estonia are the subsidiaries of foreign companies and foreign-owned companies. In the agricultural sector, innovation is facilitated by suppliers of equipment and materials[37].

According to the interview with MRA, the small size of Estonia is good for knowledge transfer, but it is also an obstacle regarding research. The low number of researchers has its limitations for applying for grants (no time to do enough). MRA is operating the applied research programme for agriculture, including co-

[37] OECD, 2018

financing for international programs. In academic world, the focus is towards scientific publications, not towards the needs of entrepreneurs.

Forestry advice and knowledge exchange

The leading unit for disseminating knowledge in the field of forestry is the Estonian Private Forest Centre, which manages the support schemes for knowledge dissemination. As of 2018, advisory support may be applied for and received by a forest association/cooperative for advisory services provided to a private forest owner.

The forestry advisor is a forestry expert who has been awarded the advisors certificate in the field of forestry[38]. He or she has usually a university degree or vocational training in forestry, at least three years of professional work experience. A large number of forestry advisors have signed a declaration of independence, promising to ensure the impartiality and to avoid conflicts of interest. On average, one person advises 130 forest owners per year[39]. The dominant aspects for advice are renewal and afforestation, subsidies, Natura 2000 and the forest management plan. The support per one forest owner is 100 euros.

According to the expert interviews, the support is not dependent on the duration of the service and usually one supported advice lasts 2-3 hours. These private forest owners, who are not members of forest associations, have to pay fully on their need for advice. According to the satisfaction survey on forestry advice[40] 96.2% of respondents found the advice they received from an advisor helpful or rather helpful. Over 90% of the respondents considered good or very good the important characteristics of the advisors, such as availability, communication skills, reliability and the quality of the advice.

A forest association with at least 200 members may apply for support[41], which includes: 1) group advice; 2) co-operation in the field of forestry; 3) the activities of the forest association; 4) the establishment of a school forest and the

[38] The concept of forestry advisors profession is set out in the forest law.
[39] Environmental Investment Centre, 2023 (4297 forest owners advised by 33 advisors)
[40] Private Forestry Centre, 2019
[41] https://www.erametsee/toetused/uhistutoetus/

organization of activities. The support is 40 euros per member of the association, within the support for group advice is up to 500 euros per group advice, but not more than 2000 euros per year per association[42].

Many agricultural producers have forest and these private forest owners, who have also farmland, can receive RDP or CAP supported forestry advice. The knowledge exchange actions can also receive funding from RDP.

Knowledge transfer regarding fisheries and aquaculture

The knowledge transfer entities regarding fisheries and aquaculture are **Fisheries Information Centre** (FIC) and **Fisheries Local Action Groups** (FLAGs, 8 in total). The main funding for knowledge transfer and innovation comes from EMFF/EMFAF. According to the interviews, there is unfortunately no professional advisors of the field, as there is not enough market even for part-time advisor. The entrepreneurs have to seek the help of universities, other practitioners or from abroad.

The Fisheries Information centre was established in 2011 under the supervision on Estonian Maritime Institute, University of Tartu. In 2011-2015, the activities of FIC took place within the framework of the measure "Other joint activities" of measure 3.1 "Joint activities" of the "Operational Program of the European Fisheries Fund 2007-2013".

The Ministry of Rural Affairs has established schemes for using grant for promoting the cooperation between scientists and fishers or aquaculture operators in 2015. The activities in current period will take place in the framework of Measure 1.3, “Grant for the Promotion of Cooperation between Scientists and Fishermen” and Measure 2.6, “Grant for the Promotion of Cooperation between Scientists and Aquaculture Operators” of the EMFF Operational Programme. The research actions are selected regarding the decisions of the FIC Board. The final date of the activities of the Fisheries Information Centre shall be 31 December 2022.

The ministry of Regional Affairs and Agriculture (new title since 2023) established new interventions since 2023 according to European Maritime, Fisheries and Aquaculture Fund (EMFAF). The Fisheries Information Centre is continuing to

[42] Private Forestry Centre, 2020

operate, setting it's focus to 3 priority areas: fisheries, aquaculture and valuation of living aquatic resources.

The Fisheries Information Centre makes close cooperation with fisheries and aquaculture areas, enabling the FLAGs and producer organisations to provide comprehensive information, knowledge and assistance for the implementation of their action strategies.

2.4 AKIS coordination mechanisms

In agricultural sector, the AKIS coordination is established around two bodies[43]: the Research and Development Department of the Ministry of Regional Affairs and Agriculture (MRAA) and Centre of Estonian Rural Research and Knowledge (Maaelu Teadmuskeskus, METK).

The official function of the **AKIS coordination body** in the managing authority is performed by the Research and Development Department of the **MRAA**, as stated in CAP Strategic Plan section 8.1. In the coordination structure of AKIS, the ministry has the role of policy maker for enabling legislation. The R&D department at the Ministry plays a policy-making role by designing the strategy for AKIS strengthening and providing guidance to ensure that the activities on knowledge transfer, advice and innovation are in line with the overall national and EU objectives.

The operational actions of AKIS coordination body are appointed to **METK**. This semi-governmental research and development agency is officially appointed on by the MRAA to act as a national **AKIS Centre** for CAP 2021+ period. The nomination of METK to this role is provided in the national CAP law and described in more details in implementation act signed at 30th May of 2023.

The main objective of the AKIS action plan in Estonia is to increase productivity and innovation capacity in the agricultural sector. The AKIS centre is in charge of the day-to-day organisation of knowledge transfer and advisory activities and the

[43] Compendium (2023)

mapping of future needs. This is done in cooperation with representative organisations in the sector, regional organisations, etc. to ensure that the practical needs of the sector are taken into account.

The R&D department at the Ministry is a contact point in policy level for European Commission and government of Estonia, reporting indicators and overall performance. The AKIS centre and CAP network are implementing the actual networking within the country and among peers in other countries.

The concept to AKIS coordination for the whole country is a unique holistic way to approach the needs and elaborate cooperation between agricultural and rural stakeholders (farmers, food processors, local ambassadors, researchers, advisors, officials etc). Long-term programming with a multi-actor organisations is big step towards developing a co-creative mind-set amongst AKIS actors in Estonia. Only a semi-state agency can afford to extend its "reach" and "impact" via a specialist multi-actor network of key partners and participatory/consultative stakeholder processes to deliver the best possible sustainable holistic AKIS coordination and enabling services to Estonian farmers and wider rural community.

3. History of the agricultural advisory system

Just as there are several words describing dissemination of information (advisory and extension) in the world, separate activities have been emphasized and funded in Estonia: either advice and dissemination of information, or support for training and information activities. **Advice is interpreted more broadly than just the advice of a professional advisor,** it means also getting advice from an acquaintance, expert, etc. without a formal agreement. Farmers are not able to determine exactly whether the information was obtained through advice or training[44].

The Estonian advisory activities were supported since 1920 with the establishment of advisory bureau in 1928[45], but the timeline was interrupted by the soviet regime. The history of Estonian modern agricultural advisory service goes back to 1989 (foundation of local farmers organisations) and it has been changing ever since[46]. The first modern advisory services system was organized by the Farmers` Federation in 1991 (the year of restoration of independence) and included advisory centres of regional (county) farmers unions, and the Jäneda Advisory and Training Centre. In 1993 and 1994, projects with foreign partners (from Denmark and Germany) were implemented to support the development of advisory services.

Estonia has been implementing advisory support for farmers since 1995 and, and since 1997 - the support for group activities (with the help of Phare project, British Know-How fund and World Bank loan). The support for the activities of individual advisors has evolved through the support for the activities of county centres and co-ordination centres, up to one national advisory organization. In order to improve the qualification of the advisers, certification of advisors started in 1997. The farm advisory services and the Farm Advisory System were financed from the state budget, from the European Agricultural Fund for Rural Development and by farmers.

[44] Agricultural Research Centre (2019), Advisory systems and advisory tools (2008)

[45] Ministry of Agriculture (2006),

[46] Look at the development of Farm Advisory System in the PRO-AKIS country report (1989-2013)

The Estonian advisory system has been reformed more than 10 times over the years, but not much has changed in the course of these reforms: funding flows remained largely the same, support rates, conditions for regional centres and the location of the coordination centre changed. Agricultural extension and advisory services until 2013 were provided by local advisory centres mainly related to producers or farmers' unions, one in each county (15 in total). The advisors of Estonian Farm Advisory System were all working for a local centre on contractual basis and most advisors were self-employed.

From 2010-2023, the Estonian Rural Development Foundation (RDF) was coordinating the Farm Advisory System. The RDF provided back-office for all the advisors and local advisory centres, including trainings, developing advisory tools etc. RDF maintained the www.pikk.ee portal that also hosts the main calendar for agricultural events.

According to the PRO AKIS project report (2014): "For several years there was a search for a joint Estonia-wide agricultural and rural economy organisation to unite advisers, which could take the central role in developing the advisory system, providing exchange of information, collaboration with stakeholders, providing support services to advisers, and which could be in charge of sharing workloads. Experts from the Ministry of Agriculture indicate that given the size of Estonia and the interest for advisory centres, the advisory system needs to be optimized by the state."

Although more than 50 advisors were related to the RDF, there were also a number of priate agricultural advisors providing services to farmers, working independently from the RDF. So, an Estonian producer can either get CAP supported advice from the advisors or can use the services of private advisors (not supported by CAP).

The support of information days and trainings has mostly been based on the division of needs into either county or national ones. Various calls for proposals (1998–2001) and application rounds (2002–2019) and the principles of forming evaluation committees (eg deciding county needs under the leadership of county governments; with the help of the paying agency's regional offices) have been tested. Since the funding period 2004–2006, support has been provided for the organization of agricultural and rural training and the publication of information materials at two levels: county and national activities.

In the RDP 2014–2020 period knowledge transfer programs were added, they began to consolidate the activities submitted in the application rounds of national activities. The projects, implemented by multi-actor consortia of information action providers, covered most nationally supported knowledge transfer actions (M01 in RDP, public procurement) with the goal to provide more efficient and coherent information and knowledge flows to the agricultural and food sector. During the implementation of the programme, the concept of AKIS has been observed and put in practice as much as possible already before the official start of AKIS centre.

For the CAP period 2020+, one of the orientations will be to strengthen the common information space between the different actors involved in the AKIS.

4. The advisory service(s)

The web-survey of the i2connect project (see Annex) is representative regarding the fields of agriculture or fisheries. In Estonia 2015-2023, there was one main agricultural advisory organisation and some organisations, where is advisory component. There are some fisheries and aquaculture organisations, but no freelance advisors. In the field of forestry, answers are scarce: only one representative of forestry organisations answered to the web-survey, although there is more than 30 forestry cooperatives/associations. There is no freelance forestry advisors in Estonia, although forestry management service providers do give some advice as well along the cooperation with the client.

The organisations representation to the survey was balanced: most of the represented organisations are national (63%, 10), three claim to be regional and 3 sub-regional. 50% of the responded organisations are farmer-based, professional or non-governmental (figure 8). In category "others" were Paying Agency, dairy farming supplies and services provider and state owned business, operating in private law.

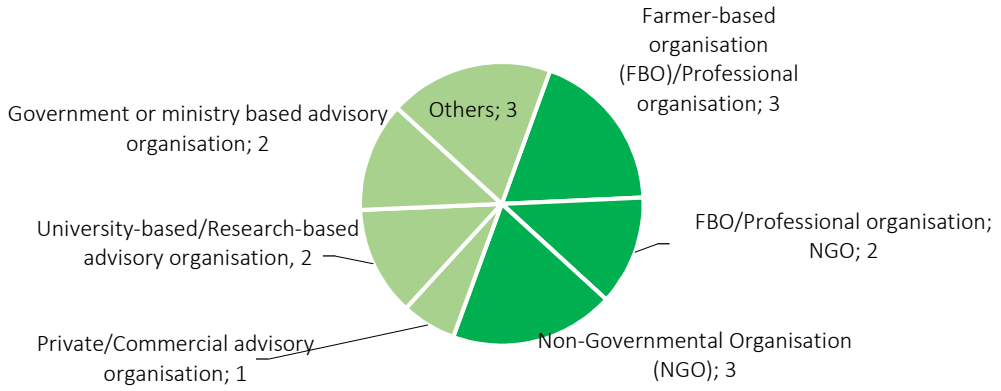

Figure 8. Categorisation of responded organisations (n=16)

Out of 10 responded freelance-advisors, three were full-time advisors, most of them worked nation-wide, one internationally and 50% of them had national advisory certificate.

4.1. Overview of advisory service suppliers

In Estonia, the different components of AKIS have been made available to the producers and other interested parties.

Farmer can either get RDP /CAP supported advice or can use the services of private advisors. From 2015-2023 the Rural Development Foundation (RDF) was the only organisation eligible for RDP advisory support, so all advisors offering RDP-supported advice needed to have a contract with the RDF. From 2024 all interested entities can provide CAP supported advice, if they have advisors, who are validated to the public registry of advisors.

Forest associations, the Estonian Private Forest Association and the Environmental Investment Centre as well as private trainers organize trainings for private forest owners. In some cases, the actions are supported through RDP/CAP, different innovation projects or state budget (domestic support schemes in the field of forestry and grants for nature education etc.).

The information dissemination in the field of **fisheries and aquaculture** is organised through the Fisheries Information Centre, there is no specialised advisors due to the low number of potential clients.

There are different associations, unions and societies that unite the farmers and producers working within the same field of agriculture (dairy, crops etc.). Different kinds of co-operation are also promoted through LAGs and producers' cooperatives in general.

4.2. Financing mechanisms and topics of advisory service

For the period 2014-2022 about 50% of the CAP expenditure of Estonia was foreseen by RD measures, which is substantially higher than the EU average (about 25%)[47]. The implementation of the priorities of the European Union 's Common

[47] Case study report – Estonia (2020)

Fisheries Policy (CFP) is funded by the European Maritime and Fisheries Fund (EMFF). The support for forestry is funded by Estonian state budget.

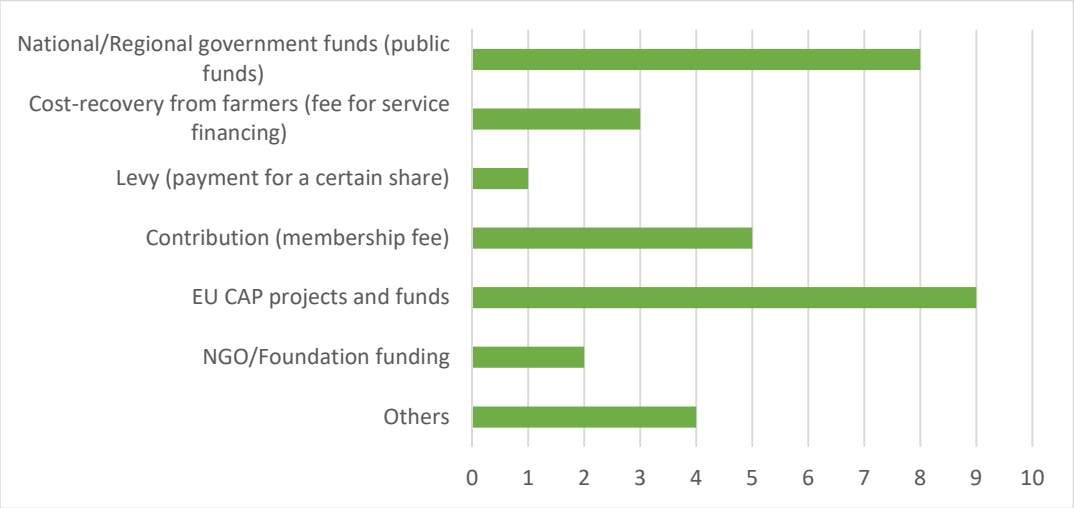

Figure 9. Primary sources of funding for organisations (n=16)

The respondents of the survey show high dependence on grants (Figure 9): EU CAP projects, including RDP/CAP; national or regional projects and EMFF (European Maritime and Fisheries Fund[48]).

Cost recovery from farmers, levy, membership fee and revenue from the sale of goods[36] are the financing options for private cooperatives and producer organisations. Six respondents (37.5%) confirmed the change of organisations budget more than 10% in the last three years. The LAG and innovation cluster's budget depends on the success in applying grants for projects; the cooperatives and input traders budget depends highly on the performance of producers/clients.

According to the knowledge transfer study[49], in the period 2016–2019, farmers and food processors, as well as companies in other sectors, have used the advisory service / consultation mainly on the application for support and preparation of the necessary documentation, as well as on accounting and tax issues.

[48] EMFF and revenue from the sale of goods were mentioned in category "others".

[49] Agricultural Research Centre, 2019

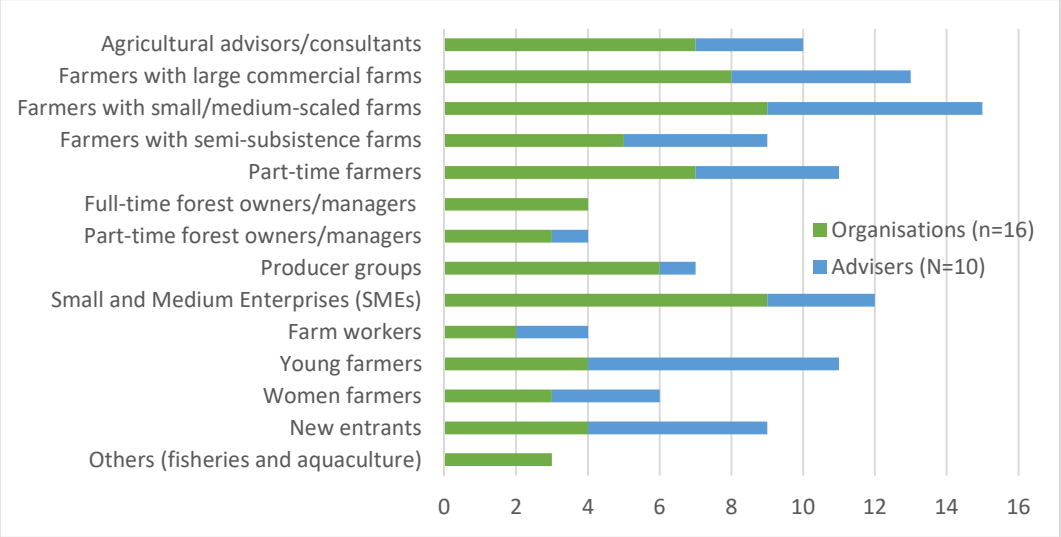

Figure 11. The main client groups

Almost half of both farmers and food processors used the service of applying for subsidies and preparing the necessary documentation (46% and 44%, respectively). Advice on accounting and tax issues was used by 34% of farmers and 38% of food processors. Among farmers, the most popular topic was crop production (77%). The most important trainings for food processors were related to food hygiene, safety and handling.

Farmers and other entrepreneurs' value study circles, farm visits and demonstration activities. Visiting foreign countries is also active, and in parallel, so-called agro-businesses organize study trips. Study trips encourage cooperation and cooperative activities. There is a lot of information exchange on crop topics in the form of field days, and the so-called field walk form is becoming popular.

According to the i2connect web-survey, the main client groups for the advice providing organisations are farmers with small/ medium-scaled farms and Small and Medium enterprises.

Regarding the responses to the web-survey (Figure 12), the main fields of advice are related to production technologies and entrepreneurship, as well the compliance of legal requirements or applying for support. Bookkeeping and taxes are usually not the issue of an advisor regarding the advisory providers, this is considered as regular paid service.

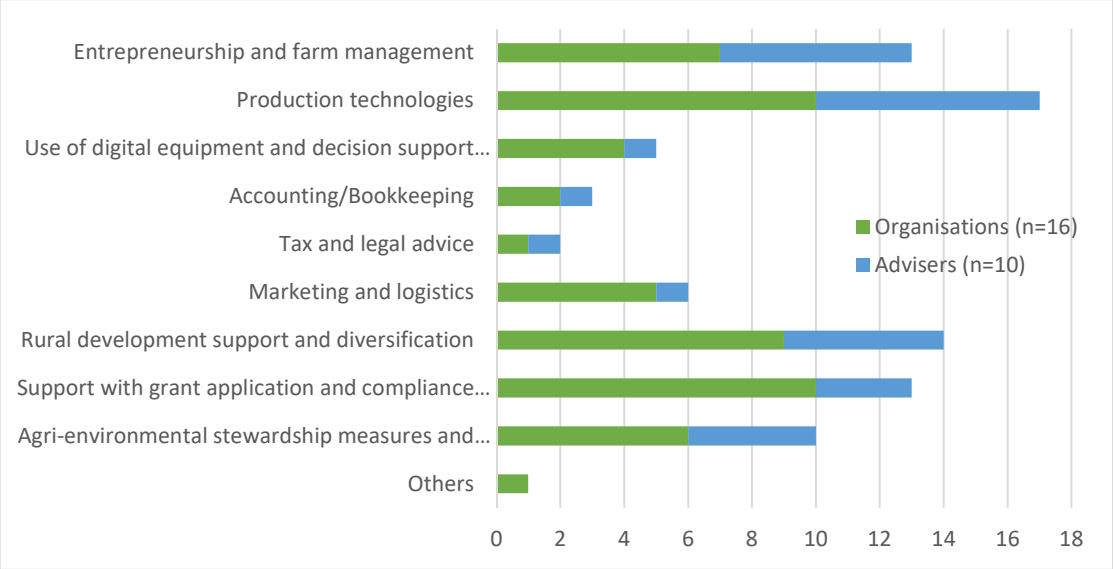

Figure 12. The cross-cutting advisory topics

Main production areas, crops and livestock, need more attention, as other fields were mentioned relatively equally (Figure 13). Other topics: processing industry and services; advice for applying subsidies; organisation of trainings and information actions; poultry farming, occupational safety, financial management.

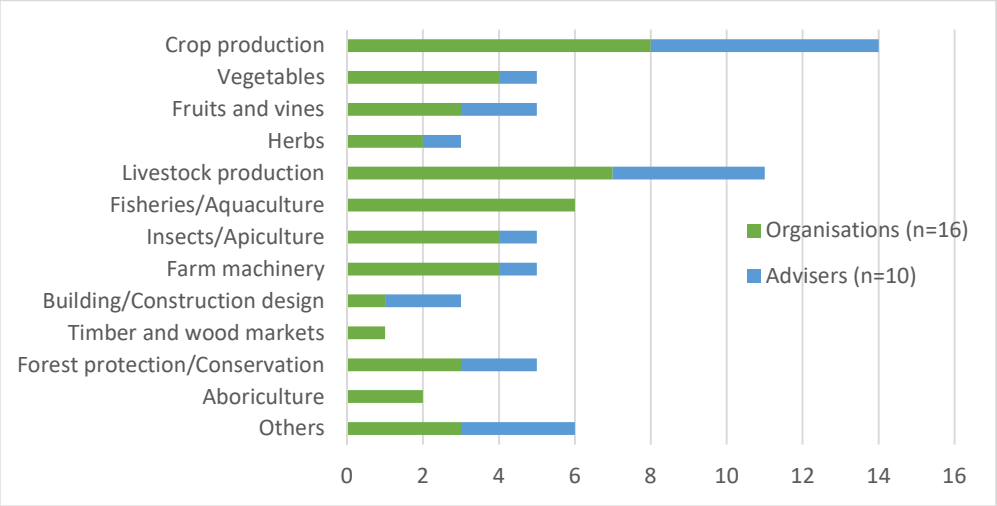

Figure 13. The advisory topics

The ranking of topics is representative regarding the fields of agriculture or fisheries. (In Estonia there is one main agricultural advisory organisation and some organisations, where is advisory component. There are some fisheries and

aquaculture organisations, but no freelance advisors.) In the field of forestry, answers are scarce: only one representative of forestry organisations answered to the web-survey, although there is more than 30 forestry cooperatives/associations.

Six out of 16 respondents (38%) confirmed that they outsource some advisory topics to external consultants: best methods of bee-keeping, fish farming, applying for RDP subsidies. One respondent added: "*We have really good co-operation with scientist and exerts in our region. Our organisation is the intermediary of knowledge.*"

The number of clients varies a lot regarding the scope of the organisation:

- 20-50 clients in the fields of bee-keeping or fisheries/aquaculture;
- 100-150-300 clients in the field of national organisations, who have regular contact with the farmers, fishers and other producers;
- 3000 clients for the national advisory office;

The number of clients per freelance advisor varies depending on the time allocation. The full-time advisors have 30-70 clients for average year; part-time advisors have 6-15 clients. A certain advisor, who works also internationally, has 45 clients even as he claims to be part-time advisor.

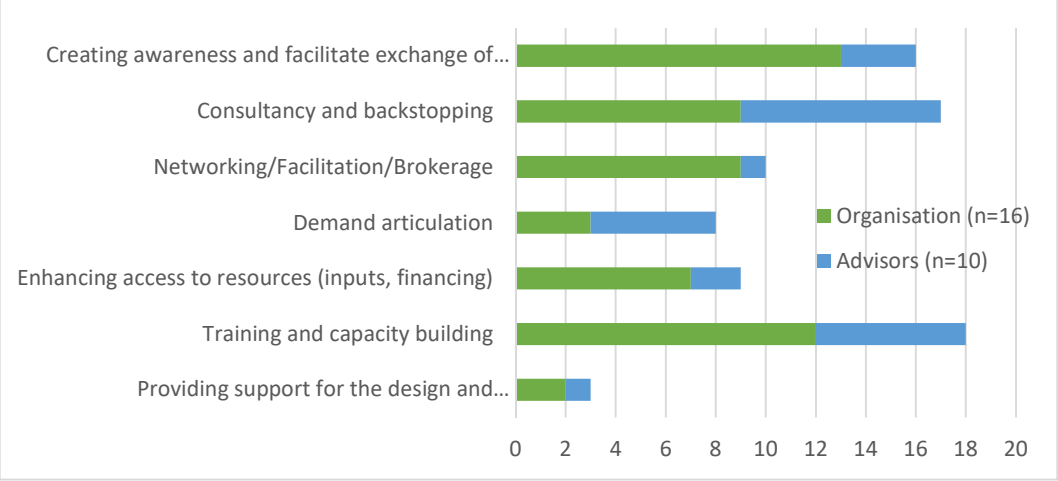

Figure 14. The main advisory activities

The main advisory activities are classical individual advising and training. Comparing the answers, organisations with advisory component see more the

need to create awareness and facilitate exchange of knowledge, as freelance advisors encounter that need less frequently. Among other, the clients need help from advisor on demand articulation i.e. identification and communication of different needs.

Individual advice is the most expensive way of transferring knowledge, the most common method of knowledge transfer is organizing information days and trainings and publishing materials (according to expert interviews and surveys).

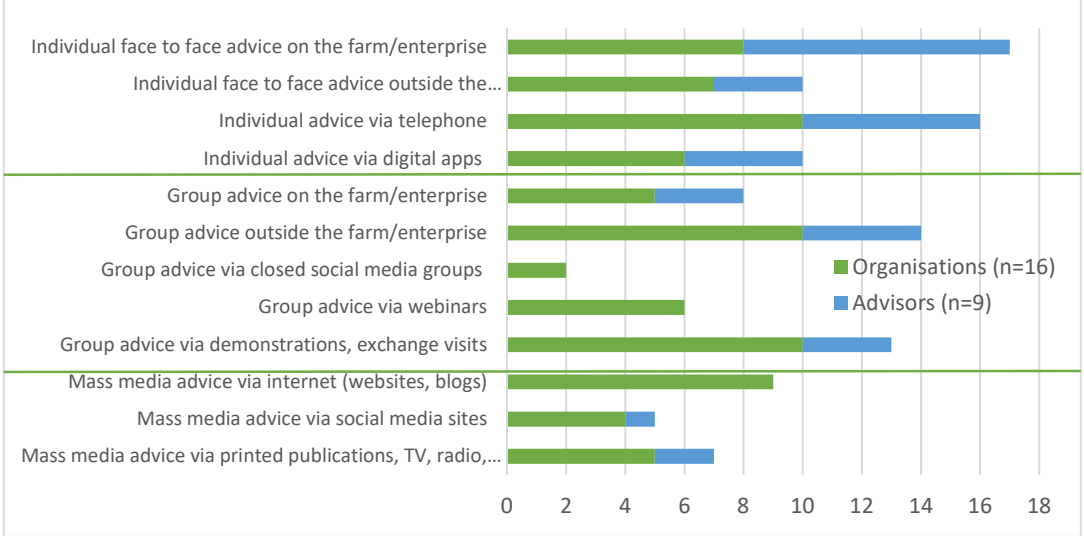

Figure 15. Advisory methods (Question "Which advisory methods are most frequently used")

Regarding the web-survey, there is no clear picture on the overall preferred advisory method - proportion depends on the profile of the overall organisation or individual preference of the person. The individual advice is provided mainly on the farm or via telephone (Figure 15). Regarding the interviews, individual advice outside the farm/enterprise (in office) is dominant in the field of economics. Group advice is organised as information days or trainings in a classroom or via demonstrations on the spot (in a farm or experimental centre). Group advice via closed media groups is not common and probably depends on the age of farmers and advisors; social media groups are used among agricultural students. The reluctance to use distance methods (webinars, social media etc) for advisory methods will probably soon change due to the overall social distancing.

COVID-19 pandemic has changed the use advisory methods (58 %) for organisations and freelance advisors both. There are less physical meetings or

seminars (cancellations change to webinars or to individual meetings) and there is a need to keep distance on the field days. The number of larger training days have reduced, information is shared in smaller groups and via YouTube video; group counselling through webinars grew rapidly. There are less face to face meetings, individual meetings are partly replaced by remote support meetings and more advisory work is organised by phone and Skype.

4.3. Human resources and methods of service provision

In all branches of agriculture and the food industry, the problem is the aging of the skilled workforce, labour shortages, and the low motivation of young people to work in the agricultural and food sector. In 2020, the number of farm managers that had attained basic training was close to EU average (16,5% and 17,5% respectively). On the other hand, Estonia has higher than average number of farm managers with full agricultural training: 32% against EU average of 10%[50]. Agricultural knowledge for employees is mostly gathered in the course of work, rarely in level studies, but rather in trainings and one-off information days.[51]

In support of the advice, MRAA and the Ministry of the Climate have both been of the opinion that the supported advice is based on advisors with verified competencies and that the profession is awarded in accordance with the principles of the European Qualifications Framework. The certification board, hosted by METK, evaluates the advisors. As of 20th July 2024, there were 101[52] advisors with a valid professional certificate and 113 valid professional certificates as one advisor can have certificate in more than one field. Most certificates have been issued in the field of forestry – 49 (42%, Figure 16). There are 21 professional advisors in the field of economics of agriculture.

[50] European Commission. CAP context indicator C.24 Agricultural training of farm managers. Based on EUROSTAT [ef_mp_training] .

[51] OSKA - Estonian Qualifications Authority (2017)

[52] Estonian Qualifications Authority public data, calculations of METK [25.06.2024]

In addition to the certification, the list of advisory service providers maintained by METK includes also other advisors. Out of 60 persons in the registry, 55 have also a certificate as a professional advisor. The main advising fields in the registry are rural economics, plant production and forestry (29, 21 and 14 persons respectively), but most advisors cover many fields[53].

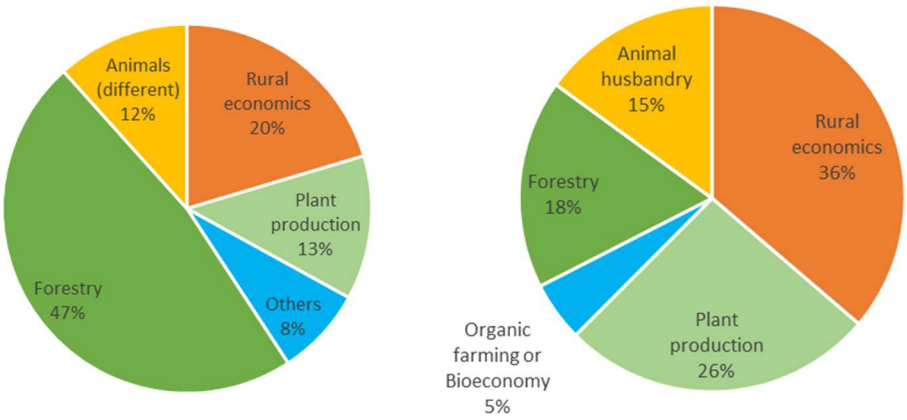

Figure 16. The number advisors in Estonia: professional advisory certificates on the left, registered fields of advice for CAP on the right.

For organisations, who provide supported advice, the national certification of individuals is important. According to the results of the web-survey, the organisations, who provide market-oriented advice, appreciate more the practical experience and methodical skills for providing trainings. Only one respondent confirmed that the organisation has certification, staff development related to products and systems they are providing to the dairy farmers.

There are very small organisations providing advisory services where the number of employees is 1-3, and there are organisations who have large number of employees, but the proportion of advisers is close to "0" as the services are not called as advisory services. The organisations with 1-10 employees the share of advisors is 48%. In the organisations with 20-100 employees, the share of advisors is 36%. In three out of 16 responded organisations (19%) confirmed the change of advisors during five past years. In one organisation, there was downsizing to cut the costs but in two of them - an increase: "*Increasing complexity of knowledge*

[53] https://www.pikk.ee/nouandeteenistus/konsulent/

and practices dairy farmers need to be aware of" and "*We are farmers organisation and we intermediate knowledge and innovation*."

As described in Case study report in 2020[54], a representative of the MRA explained: "The advisory services in Estonia could be described as a „mixed" system of supported and private advice providers. Farmer is free to choose whether he/she prefers supported advice from the certified advisor or pays the full price to buy the service from the market (that is unregulated). One of the challenges for the AKIS in the next CAP is building better interaction and connections with the FAS and non-FAS advisors".

As in the agricultural sector, older advisers (aged 50+) make up a significant part (61%) of the advisory system and a significant proportion of advisers in younger age groups are not ready to work as consultants. Many advisors do not work full time and have other duties (e.g. working at the same time at University) or having their own companies providing other services (e.g. book-keeping, trainings). The advisory work is not attractive for many, as it depends on the season and the support rate per hour is low. Involving young people is difficult, as the advisor has to have a significant amount of knowledge and long-term diverse practical experience.

According to the web-survey, 40% of the advisors have experience over 10 years and 4 % have experience up to 3 years. The younger generation is more likely to become an advisor for input selling companies or cooperatives. There is no advisors for fisheries or aquaculture. The training of advisors should be flexible and based on their individual needs. There is an expectation to have joint actions with all the persons, who do some kind of advising or innovation support services. There is a proposal for a new advisors programme to start on 2021, which aims to cover training opportunities and there are intentions to add recruitment activities in the new CAP period.

The Case study of Estonia (2020)[55] pointed out, that most of the agricultural production produced in Estonia is produced by large enterprises and many have their own specialists in both plant production and animal husbandry, so they don´t

[54] Evaluation of the CAP's impact on knowledge Exchange and advisory activities (2020)

[55] Case study report – Estonia. (2020)

have a need to use an advisory service. Another important reason is that a lot of advice is provided by the companies involved in selling agricultural inputs and/or buying production. They have enough financial resources to employ good specialists, but there is clearly a disadvantage as their aim is to sell their own products and therefore their recommendations are not independent. Although there are not many producers´ cooperatives, some of them are active in organising field days and other events as well as advising farmers. In addition, some private advisors prefer to work independently and offer their service market-based.

Concerning integration within AKIS, better linkage of advisors and research/applied research and universities is needed in order to guarantee that advisors have up to date knowledge about new techniques/research and that researchers are aware of the producers´ expectations. This remains one of the main challenges in the coming years.

4.4. Linkages with other AKIS actors

There are many educational and research institutions in Estonia that deal with the bioeconomy, i.e. biological resources, agricultural activities and food science. The level of research institutions is good, but the role of adding value to the advisory service and training can be elaborated.

Teachers and researchers could be the ones who complement the advisors. In practice, it is common that teacher works also as advisor, similar to situations where a researcher acts as a trainer. As a rule, more than half of all farmers or enterprises do not see the need for cooperation with a research institution. The main obstacle for cooperation with research is the lack of resources, i.e. the lack of time, staff and money. Also the lack of suitable specialists in the specific field in Estonia and the lack of corresponding competence, the lack of resources for longer cooperation and the fear of information leakage[56].

Regarding the cooperation - it is important to continue the activities of innovation clusters, knowledge transfer programs and research and development centers. Innovation cooperation and knowledge development need longer-term stability.

[56] Agricultural Research Centre, 2019. Study on knowledge transfer

It is important that the state commission longer-term horizontal and vertical (ie sectoral) research.

During the web-survey, the organisations and advisors were asked to evaluate the cooperation of different entities regarding the advisory services (Figure 17). The highest rating in average was given to public authorities, as everybody interested on legislation and support possibilities. The lowest ratings were given to the EIP operational groups and EU projects, as their activities and results are not published well or often enough (NSU has taken some actions, but there is still a lot to improve). The ratings are subjective, according to the respondent personal connections.

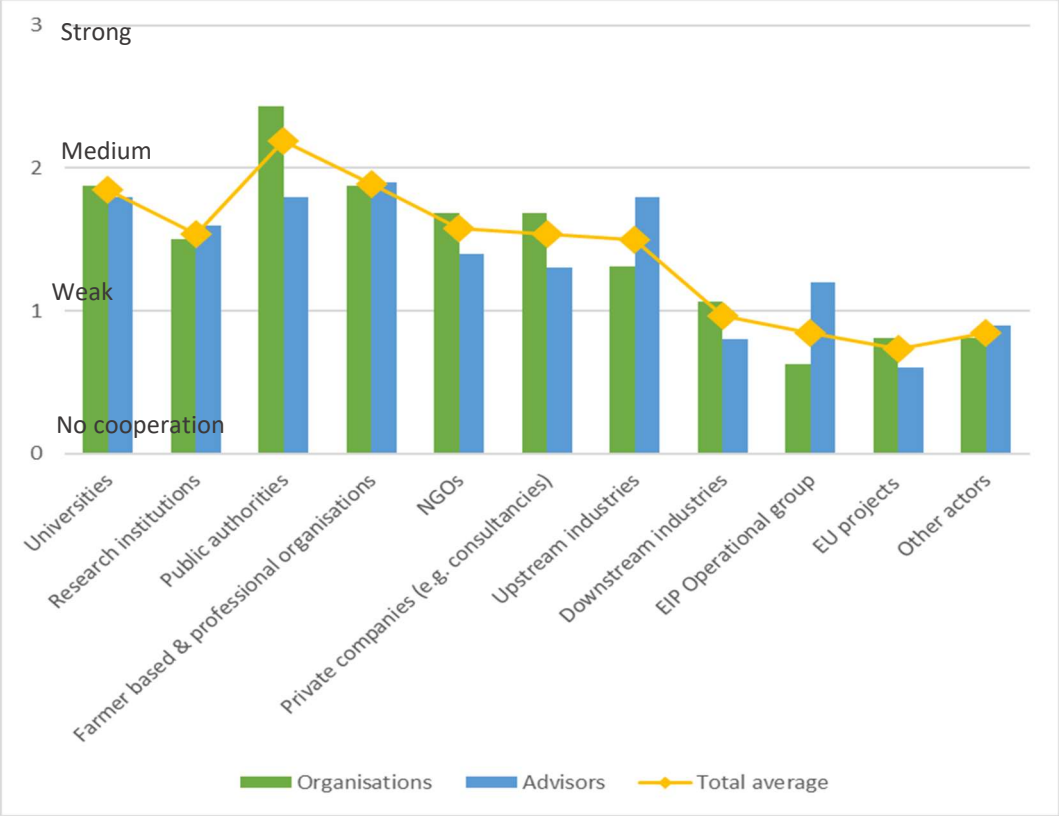

Figure 17. Degree of cooperation

According to a RDP/CAP SWOT analysis, one of the weaknesses of the Estonian agricultural sector was limited cooperation and coordination in knowledge exchange between scientists, trainers, advisors and producers. So, in designing the CAP interventions there was an intention to tackle this problem and create

qualitative change in co-operation between the producer, the processor, the adviser and the researcher. The RDP knowledge transfer programmes are successfully implemented and are a good example of effective implementation of cooperation between different stakeholders.

According to the interviews, representatives of the MRAA identified items for improvement. Estonia is a relatively small country where people who are involved in different AKIS parts generally know each other. However, not every farmer knows where to start seeking advice and not everybody can afford to pay for special knowledge/research/advice. At the same time, many activities are supported by CAP, and these are mostly affordable or free of charge. Academic education in Estonia is mostly free of charge as well.

The improvement of digital solutions is needed, to make them more convenient for end users. There may be a need for very basic information (which can be provided through on-line materials) or for very specific individual problem solving (which can be provided by advisory service). One of the conclusions of the OECD study[57] is that, in addition to the limited economic capacity, the main problem of the Estonian agricultural innovation system is the lack of cooperation between private companies and research and development institutions. There is a need to further develop information systems, including market information (big data), as innovation becomes more complex and requires a lot of information.

On the positive side there are a lot of activities in knowledge transfer, where also the results of research are introduced; there is a supported advisory system (both the advisory service and training of advisers); and that a lot of reports of applied research are published online and are available to everybody. In addition, there are cooperation projects in the RDP, such as innovation clusters and knowledge transfer programmes where information exchange works both ways.

[57] OECD (2018) Innovation, Agricultural Productivity and Sustainability in Estonia

4.5. Programming and planning of advisory work

Efforts have been made to further develop the agricultural advisory system, including knowledge transfer, on several occasions. For example, the aim of the project PIKK (1999–2002) was to make information on agriculture and rural entrepreneurship more accessible: the concept of the advisory system coordination centre and the portal www.pikk.ee were launched. The latest development plan of the Estonian agricultural and rural economy advisory system was for 2012–2020.

Research, innovation and knowledge transfer have been singled out as one of the activities of the Development Plan for Agriculture and Fisheries until 2030[58]. The final report of the ex-ante evaluation of the development plan emphasizes both the need to implement a flexible model of the advisory system and the need to look at the innovation support system in an integrated way in terms of knowledge creation.

In period of 2023-2029, the **National CAP network support unit'** activities remained to the same unit, operating previous national rural network. In addition, the MRAA approved the tasks of rural AKIS hub[59] in METK on in May 2023. The expectations from this unit are to evolve the tasks of advisory services and training and recruitment of new advisers. The unit aims also to integrate the innovation support services, enhance cooperation in knowledge transfer, innovation and promotion of cooperation in many levels.

The hub for **forestry AKIS** is remaining in the same unit as previously although the mother-organisation is now known by a different name (Environment Investment Centre). **The hub for AKIS in Fisheries and Aquaculture** remains to be the Fisheries Knowledge Centre.

According to the web-survey, less than half of the responded organisations (44%) have a staff development plan. This includes scale of training subjects (or

[58] https://www.agri.ee/et/eesmargid-tegevused/arengukavad-ja-strateegiad

[59] https://www.agri.ee/euroopa-liidu-uhise-pollumajanduspoliitika-strateegiakava-2023-2027

agreement how much an employee can participate in paid trainings (for the one-month salary per year and during work-time). The plan can describe wide scale of training subjects incl. specialization related (plant protection, occupational safety, risk management etc.), methodological and general development. Trainings are usually outsourced to universities or professional trainers, some are organized by organisations themselves; internal training is not very common form. There is no clear pattern, how many days in a year an advisor receives training (from 2-15 days, many did not answer to that question - possibly because the advisors attend information activities as a part of their job to contact the clients, make a presentation or for collaboration with other organisations). Only few organisations can reward good performance or skill development.

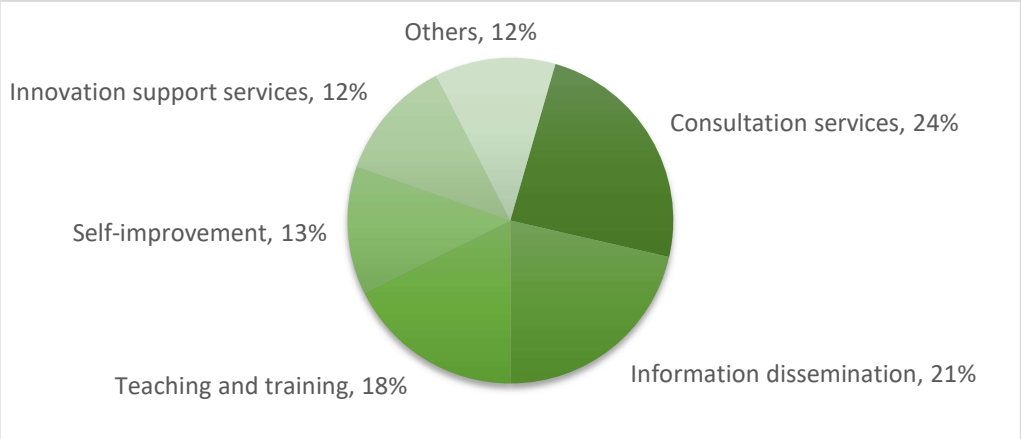

Figure 18. Average proportion of advisors worktime in organisations

As average (Figure 18), 39% of advisors worktime goes to teaching, training and information dissemination, 36% of time is occupied with consultation and innovation support services. There was no consistency of answers about time allocation, as the advisors in the organisations have other responsibilities besides the knowledge exchange. Only three respondents pointed out the time allocation to other activities (project management in case of LAG; processing applications in case of Paying Agency; sharing experiences within the organisation in case of an input trader).

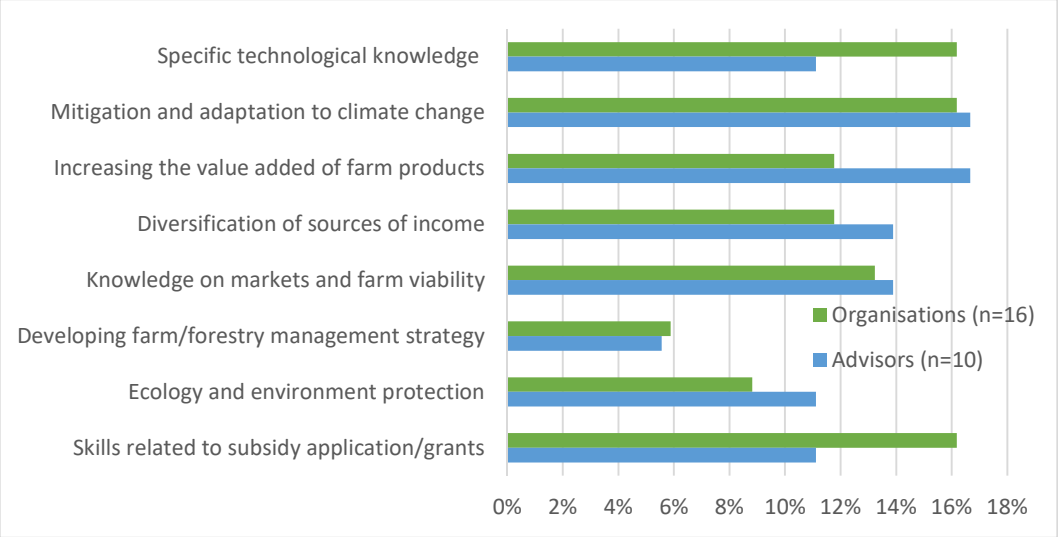

Figure 19. Technical skills and knowledge

Regarding the knowledge gaps or training needs to meet the challenges of CAP, the responses to survey showed the different understanding of organisations and freelance advisors (Figures 19 and 20). The freelance advisors seem to need knowledge (more than advisors related to organisations) about the diversification of sources of income, increasing the value added of farm products as well on ecology and environment protection. The organisations advisors need their knowledge base elaborated (more than freelance advisors) in the fields of specific technologies and subsidy applications/ grants. The development of farm/forest strategy does not appear to be a big issue for either the groups.

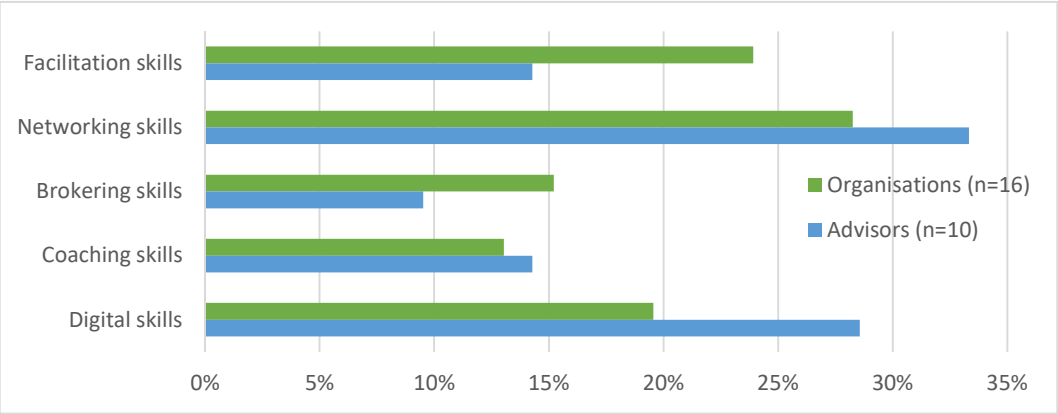

Figure 20. Methodological and communication skills

The advisors feel the lack of digital and networking skills, while organisations assume the need to develop facilitation and brokering skills. This difference can be the result of the definition of the terms (brokering / facilitation) by different persons regarding their background. Advisors point out the need to learn the possibilities to increase the value added of farm products.

4.6. Advisory organisations forming the AKIS and evaluation of their AKIS implementation

Several studies have shown, that the Estonian producers' satisfaction with advisory services is high[60] - 96% of foresters, 98% of farmers and 87% of food processing companies who used advisory services were either definitely or rather satisfied with the quality of the advice received. Participants in knowledge transfer events value the practical occasions - implementation of study circles, farm visits and demonstration activities.

There need for a central organization dedicated to disseminating knowledge[61] is appointed in all AKIS sectors. Regarding the rural areas, it takes time to reoraganise, so that the members of the organizations would feel responsible for the common system. Lack of cooperation may be due to lack of time.

Within the framework of the CAP, EMFAF and national policies, several interventions encourage the dissemination and acquisition of knowledge. Training or education institutions and non-profit organizations that continuously organize training activities mainly provide the content and scope of the implemented projects. The experts noted the need to extend the target group from farmers (foresters, fishers) to wider public, including consumers. The trainings for advisors should also be accessible to researchers, lecturers of trainings or other entrepreneurs.

[60] Private Forestry Centre (2019), Agricultural Research Centre (2019), University of Tallinn (2018)
[61] Agricultural Research Centre (2019). Study on knowledge transfer

5. Summary and conclusions

Large scale of different components of Estonian AKIS are available. They advisors provide services and information to farmers, foresters, food processors and other interested parties. Estonia is a relatively small country where people who are involved in different AKIS parts generally know each other.

The advisory services in Estonia could be described as a mixed system of supported and private advice providers. Research and education actors include the universities, several research institutes and vocational schools. There are several farmers´ representation organisations and producer organisations and cooperatives in Estonia providing information and advice to their members. Training and farm advisory services are provided in Estonia by publicly supported advisors and a number of independent organisations. The input sellers and private media companies are important part of knowledge transfer.

Several CAP measures have been designed (and successfully implemented) to support the cooperation between the actors.

The main points of concern were raised during this study:

- **Advisors are ageing** and the younger generation is not interested to become an advisor. There is an expectation to have **joint actions** with all the persons, who do some kind of knowledge exchange, advising or innovation support services;
- **Insufficient funding for agricultural or rural research** is leading a lack of new domestic knowledge for transfer; several stakeholders have an opinion that scientific information is not available for producers in easily readable and understandable form;
- the agricultural AKIS operating body has to start fostering cooperation and knowledge exchange in a new level.

5.1. Summary and conclusions on sections 1 – 3

The main challenges for the provision of infrastructure and services in Estonia are the high concentration of the population in main urban centres, and its low density in most rural areas. Agriculture is one of the most traditional industries in the

Estonian economy, it plays an important role, supplying food to residents and for export and providing employment. Estonia is one of the most forested countries in the world: forests cover nearly half of the mainland. Estonia has good preconditions for the production of fishery and aquaculture products (Baltic Sea and inland water). Estonia performs well on digital public services, but while both the broadband coverage of rural areas.

Estonian AKIS benefits from the small size of the country. Key persons in different institutions forming AKIS know each other well and cooperate in different forms and topics. Agricultural advisory service have been reformed more than 10 times.

The EU funding programs have created several possibilities for AKIS. The linkages and cooperation need constant and further collaboration and the earlier conclusion of weak AKIS is not correct. The system operating in Estonia has all the components of well-functioning AKIS. Cooperation requires consistent action towards common goals. The key issue in disseminating information in Estonia is people, their commitment and knowledge. Constant communication between groups and increasing trust are crucial for the viability of the system. Regular meetings, wide-ranging information on activities and the dissemination of good practice contribute to the co-operation of the parties. The organization of AKIS requires consistency, there is no perfectly functioning system.

The concept to AKIS coordination for the whole country is a unique holistic way to approach the needs and elaborate cooperation between agricultural and rural stakeholders (farmers, food processors, local ambassadors, researchers, advisors, officials etc). Long-term programming with a multi-actor organisations is big step towards developing a co-creative mind-set amongst AKIS actors in Estonia.

The main objective of the AKIS center (a unit within the Centre of Estonian Rural Research and Knowledge, METK) is to develop and coordinate a coherent AKIS system by strengthening the role of advisors in the AKIS, raising general awareness of the opportunities offered by the knowledge transfer exchange and innovation system, and serve as the central AKIS information point.

5.2. Summary and conclusions on sections 4

In most cases, the organization of the dissemination of information is described through institutions or support measures. The advisory services in Estonia could be described as a „mixed" system of supported and private advice providers. Farmer is free to choose whether he/she prefers supported advice from the enlisted advisor or pays the full price to buy the service from the market (that is unregulated).

According to the i2connect web-survey, the main client groups for the organisations, providing advice are farmers with small/ medium-scaled farms and Small and Medium enterprises. The number of clients per freelance advisor varies depending on the time allocation. The full-time advisors have 30-70 clients for average year; part-time advisors have 6-15 clients. The individual advice is provided mainly on the farm or via telephone. Group advice is organised as information days or trainings in a classroom or via demonstrations on the spot (in a farm or experimental centre). The supported advice is based on advisors with verified competencies.

There are a sufficient number of active professional advisors in Estonia, who cover the activities of forestry, agriculture and rural economy. The AKIS of forestry is supported by advice from owners' associations and private advisors; nevertheless, the state remains involved by accrediting the advisors. The support scheme for professional agricultural advisors has changed significantly and the outcome of change in yet not known. Older advisers (aged 50+) make up a significant part of the advisory system and many advisors have other duties (e.g. teaching or book-keeping services). There is unfortunately no professional advisors of the field of fisheries and aquaculture.

The respondents of the survey show high dependence on grants: EU CAP projects, national or regional projects and EMFAF. Estonia has actively implemented and gained very good experience in using knowledge transfer support for trainings (incl. In-service trainings, information days, conferences, presentation days, etc.). The knowledge exchange in the field of forestry is mainly organised through forestry associations/cooperatives, the actions are supported.

Entrepreneurs' satisfaction with advisory services is high, including 96% of foresters, 98% of farmers and 87% of food processors. Changes in the conditions of advisory support have significantly affected the use of advice, the functioning of the system and its reputation. Advisory support is limited to newcomers, fishers and aquaculture entrepreneurs, rural food producers and communities, producer groups and innovation projects.

In addition to supported activities, there are several specialists and organisations, providing information and advice to entrepreneurs. Most of the agricultural production produced in Estonia is produced by large enterprises and many have their own specialists. The companies involved in selling agricultural inputs and/or buying production provide a lot of advice - they have financial resources to employ good specialists. In addition, some private advisors prefer to work independently and offer their service market-based.

There are many educational and research institutions in Estonia that deal with the green sector. During the web-survey, the organisations and advisors were asked to evaluate the cooperation of different entities regarding the advisory services. The highest rating in average was given to public authorities. The lowest ratings regarding the level of cooperation were given to the EIP operational groups and EU projects, as their activities and results are not published well or often enough. In order to ensure better cooperation between companies, it is necessary to continue information dissemination, training and advisory activities in fisheries, forestry and agriculture. More attention should be given to food processing advice and innovation support services.

On the **positive** side there are a lot of activities in knowledge transfer, where also the results of research are introduced; there is a supported advisory system; and that a lot of reports of applied research are published online and are available to everybody. In addition, there are cooperation projects in the CAP and EMFAF where information exchange works both ways.

As average, 39% of advisors worktime goes to teaching, training and information dissemination, 36% of time is occupied with consultation and innovation support services – the individual work with the client is as much important as the group and mass media methods together.

The aging of the workforce, the shortage of professionals and skilled labor and the low attractiveness of the agriculture or fisheries sector for young people call for a holistic approach: **creating a positive image of the sector**, more effective cooperation between research and education institutions, businesses and providing advice. It is important to help those involved in the sector to better adapt to changes in society (eg the development of digital skills, a higher value-added orientation in the value chain) and to enable workers and entrants in the sector to respond flexibly to change.

6. Acknowledgement of partners, information sources and gaps

The implementation of the i2connect study in 2021 involved three phases: (1) a desk review based on a focused documentary and literature review, (2) interviews and (3) web-based survey. For this report, special interviews were conducted. In addition, insights from other interviews, conducted by the author during other studies regarding AKIS in Estonia were used (see paragraph 6). For this report, special web-based survey was organised in 2020 with unified questions for all countries related to i2connect project. The link to questionnaire was sent to 96 organisations (incl research institutions, farmers organisations etc.), 120 advisors (regardless of their affiliation with organisations). 16 organisations (response rate 16%) and 10 freelance advisors filled the survey.

For this report, special interviews were conducted:

- In 2019 - regarding agricultural side of AKIS with the 3 representatives of Research and Development department of Ministry of Rural Affairs – Helena Pärenson, Lehti Veeväli, Gret-Kristel Mällo;
- In 2019 - regarding forestry side of AKIS with the forestry advisor, representative of Estonian Private Forestry Centre and representative forestry group in Estonian Chamber of Agriculture and Commerce – Ülle Läll;
- In 2024 - regarding forestry side of AKIS with the forestry advisors – Henrik Leibur, Leho Leis, Andry Mataloja, Egely Hunt and Jürgo Järving;
- In 2019 and 2024 - regarding fisheries and aquaculture with representative of department of fisheries of Ministry of Rural Affairs (Ministry of Regional Affairs and Agriculture in 2024) – Eve Külmallik.

Since 2023, the organisation behind the report, METK, was selected to be the main organisation for development and implementation of AKIS in Estonia. For that task, several workshops, meetings that were held and interviews conducted by large team are integrated into this report. In addition, insights from other interviews, conducted by the author during other studies regarding AKIS in Estonia were used:

- 17 personal interviews and 4 focus groups regarding study on knowledge transfer relating agricultural and food processing enterprises[62];
- 3 interviews with advisors (1 in the field of agricultural economics with the connection to innovation cluster – Triin Luksepp, 1 forestry advisor – Aira Toss; and 1 agronomist of private cooperative – Tiiu Annuk) for the study conducted for the H2020 project EUREKA – European Knowledge repository for best agricultural practices (www.h2020eureka.eu);
- 4 interviews with knowledge transfer programme (2021-2024) board members – Hardi Tamm, Renata Tsaturjan, Olav Kreen, Kaja Piirfeldt, Merit Mikk;
- 4 interviews with agricultural advisors regarding the transfer of organisation of advisory back-office from Rural Development Foundation to METK – Jekaterina Näälik, Lea Toompuu, Marek Ruiso, Ell Sellis;
- Workshop on AKIS actors and activities, roles and needs was held in May 2024 with 36 representatives of several organisations under the umbrella of modernAKIS project – Modernisation of Agriculture through more efficient and effective Agricultural Knowledge and Innovation Systems (www.modernakis.eu).

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[62] Agricultural Research Centre (2019)

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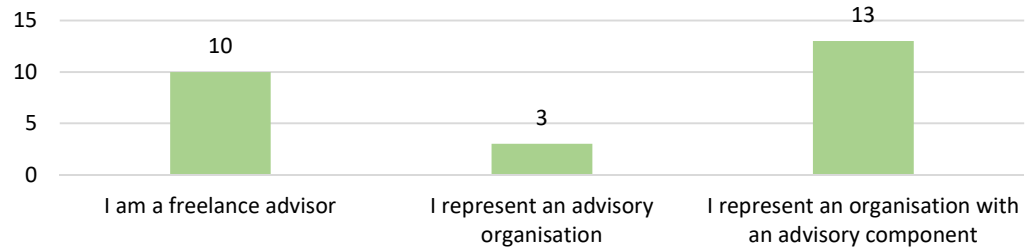
Appendices

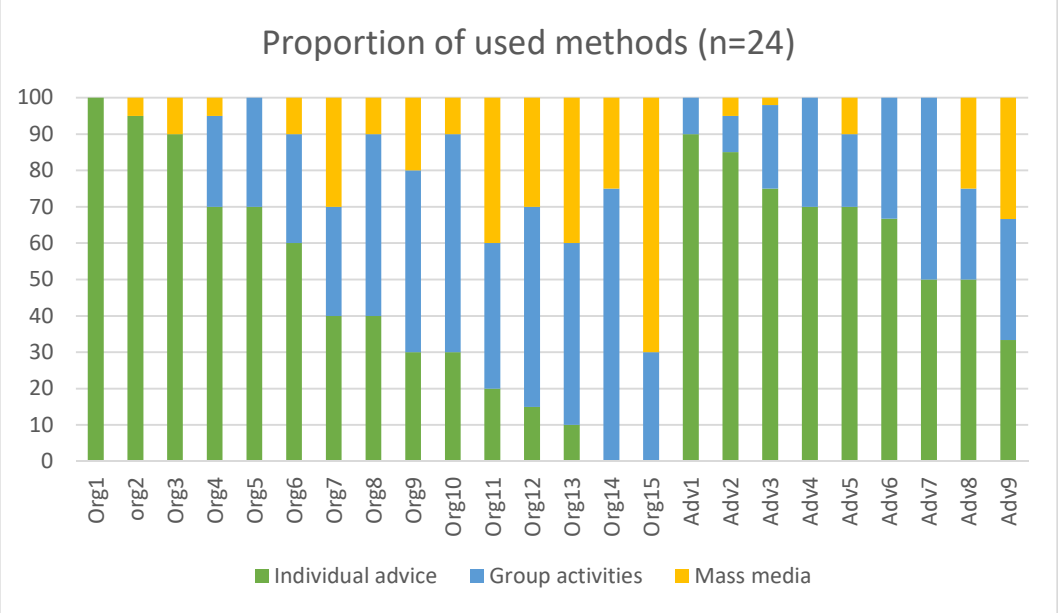
Annex. Additional data from web-survey

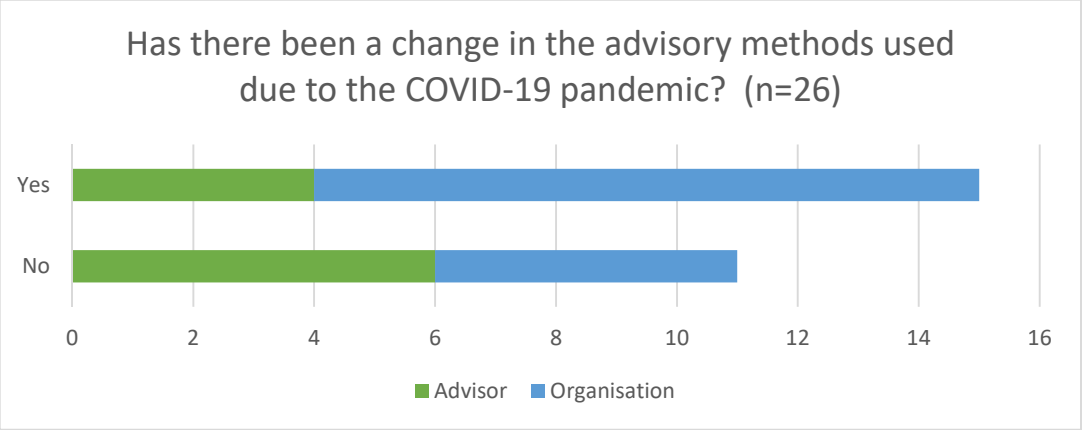
Respondents to the survey:



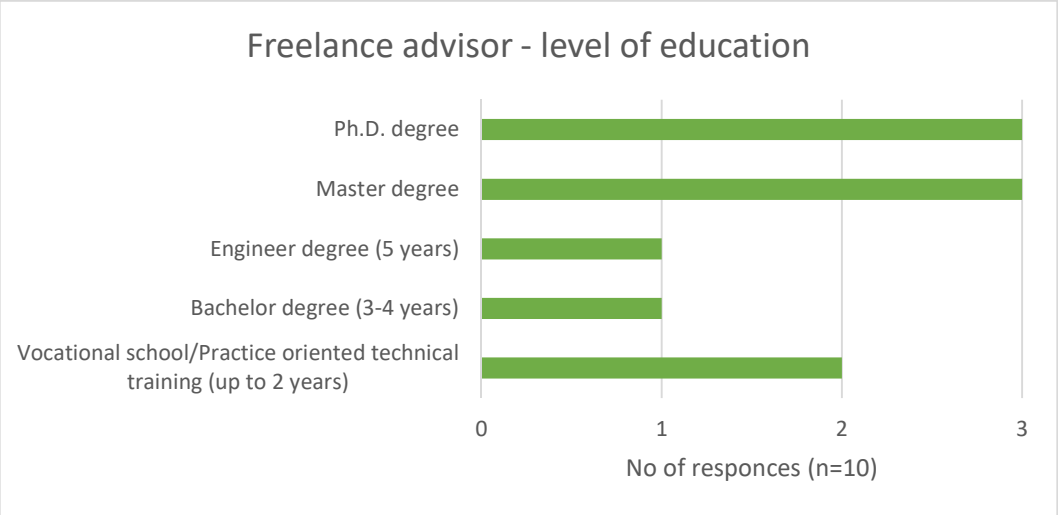
METHODS OF ADVISORY WORK

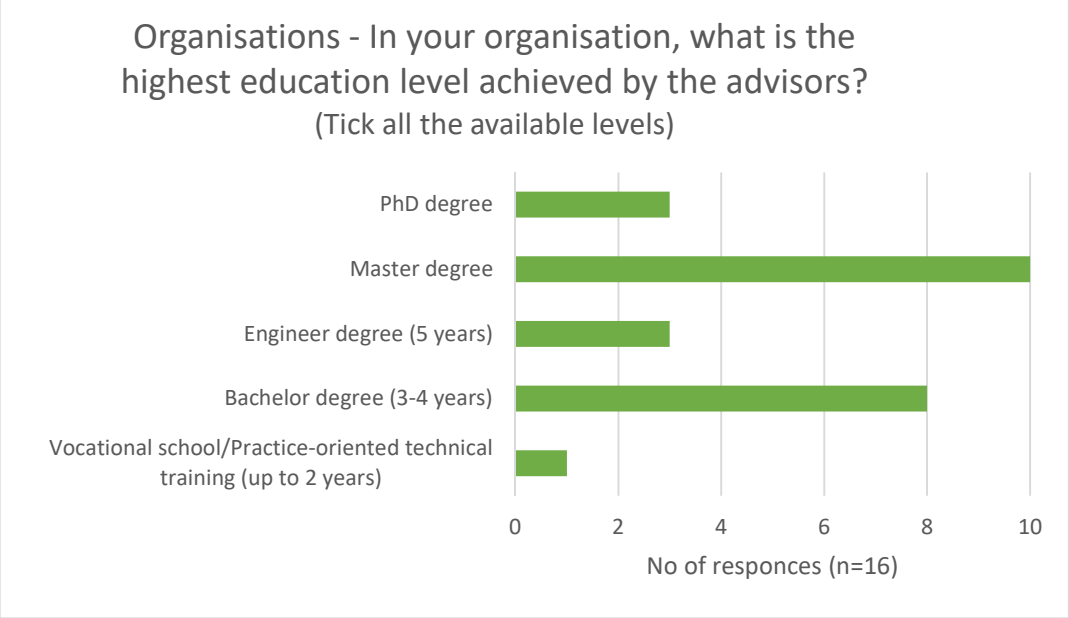
There's no clear picture on the preferred advisory methods. All depends on the profile of the organisation.

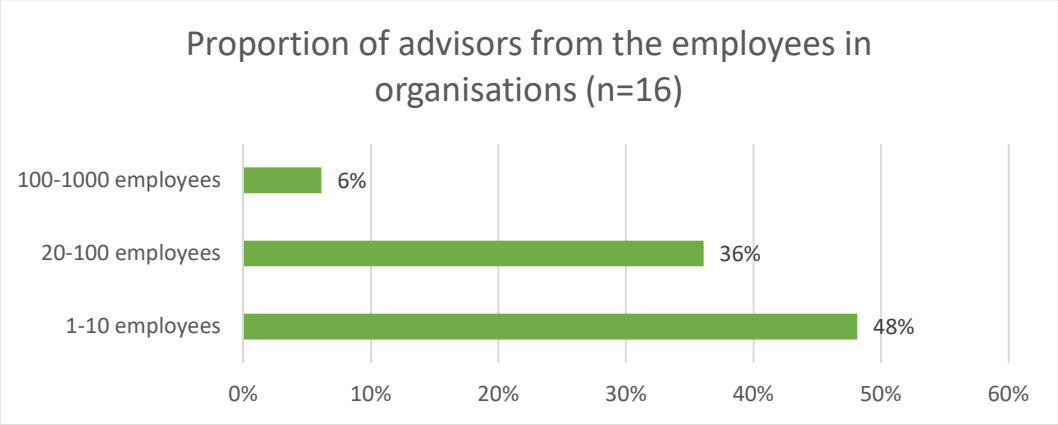




HUMAN RESOURCES







There was not enough answers to make conclusions regarding the number of advisors for each education level.

Years of professional experience, of the total number of advisors	Number of advisors	Percentage
0-3 years	7	4.3%
3-10 years	89	55.3%
More than 10 years	64	39.8%
Total number of advisors	**161**