

AKIS and advisory services in *Switzerland*

Report for the AKIS inventory (Task 1.3) of the i2connect project

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Executive summary

Swiss agriculture is characterised by small farms, but these are subject to continuous structural change. The Swiss AKIS is diverse, heterogeneous but strong. The description of the AKIS and the wide range of information on advisory services in this report were clarified and deepened by expert interviews and an online survey. In Switzerland research, training, advice and further education between forestry and agriculture are largely institutionally separate.

Agricultural Research, education and advisory services are to a large extent supported by public funds. Farmer-based organisations as well as the upstream and downstream industry play an important role. When it comes to solving problems, the actors in the AKIS are well networked.

Many factors influence the knowledge transfer between research and the agricultural practice and the reverse transfer of practical experience and needs back to advisors and researchers. It is important and very promising to focus on these questions in the i2connect project.

Agricultural advisory services have grown historically and are shaped by the federal structure of the Swiss cantons. Accordingly, they are decentralised, but have a common forum and an institutionalised, broad further education program for advisors. They are increasingly seeking synergies in supra-regional cooperation. In addition to the public advisory services, other institutions offer advisory service and contribute to the flow of knowledge in the AKIS. The following categories of advisory organisations participated in the online survey: public advisory services, advisory services from farmers' organisations, private commercial advisory organisations and organisations with NGO character. The advisory services have well trained staff with professional experience. The most often used methods of the advisory services are telephone, face to face on or outside the farm, **communication channels** and group advice outside the farm. Cooperation with public authorities, farmer-based and professional organisations is strong, and also quite strong with research institutions. Agricultural advisory services enjoy good public support, especially in view of the current challenges in the Swiss agriculture.

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Abbreviations

AKIS	Agricultural Knowledge and Innovation System
BfS	Federal Office of statistics
BFS / FVS	Swiss Advisory Forum
BLV	Federal Office for Food Safety and Veterinary Affairs
CHF	Swiss Francs
ETHZ	Swiss Federal Institute of Technology Zurich
FiBL	Research Institute of Organic Agriculture
FOAG	Federal Office of Agriculture
FOEN	Federal Office of Environment
HAFL	School of Agricultural, Forest and Food Sciences, Zollikofen
HES-SO	University of Applied Sciences and Arts Western Switzerland
IPS	IP Suisse
LBBZ	Agricultural education and advisory center
LDK	Conference of the Directors of Agriculture
SBFI	State Secretariat for Education, Research and Innovation
VET	Vocational education and training
VetSuisse	Vetsuisse Faculty, University of Zurich and Bern
ZHAW	Zurich University of Applied Sciences, Wädenswil

1. Main structural characteristics of the agricultural and forestry sector

1.1. The main structural characteristics of the agricultural sector

Agrarian structure and holdings (BfS, 2020)

The surface of Swiss farms is growing. The number of farms fell from 111'302 in 1975 to 50'038 in 2019. While the number of conventionally producing farms shrank, organic farming gained strongly in importance in the 1990s. The number of organic farms increased from 900 in 1990 to 7284 in 2019. In 2019, a farm managed an average of 21 hectares of agricultural land, which is more than twice as much as in 1975, and the number of farms with more than 50 hectares of farmland increased. These 2900 large farms (6% of all farms) farm almost 205'000 ha of agricultural land (20% of the total area).

Economy and income situation

The total output of Swiss agriculture in 2018 was CHF 10.7 billion. 48% of this came from animal production. Milk production alone accounted for 20% of total production (CHF 2.2 billion). Agricultural services and non-agricultural secondary activities contribute significantly more to the production value than in 1985. Agricultural income per farm in 2018 averaged CHF 70'600. Non-agricultural income accounted for about one third of household income. Household income was on average 20% and 29% lower in the hill and mountain regions respectively than in the valley region.

The earnings of family workers in agriculture are generally lower than those of employees: In the valley, hill and mountain regions, 67%, 53% and 48% respectively of the reference wage.

Employment and age structure

In 2018, 152 442 people were employed in agriculture. Between 2000 and 2018, the total number of people employed in agriculture fell by over 50 000. In absolute terms, the number of family workers fell by around 48 200 and the number of non-family workers by around 3200. Since 2000, the number of female farm managers among the family labor force has increased.

The average age of farm managers increased by three years between 2000 and 2018, from 47 to 50 years (Zorn, 2020). The median (50 % percentile) shows a similar trend, increasing from 47 to 51 years. This means that half of the farm managers are 51 years and older. There is a clearly decreasing share of young farm managers under 35 years of age. At the same time the proportion of farm managers who will exceed the age limit of 65 years for receiving direct payments in the next ten years is growing: from 21 % in 2000 to around 30 % of all farm managers in 2018. This could stimulate structural change in the coming years.

Use of chemicals in soil improvement

The nitrogen balance remains in surplus. In 2017, food in Switzerland will account for 24% of the greenhouse gas emissions of the entire economy, of which agricultural production will account for 14%. In the 1990s, there was a nitrogen surplus on agricultural land of over 80 kg/ha and year. Since then, it has been declining and in 2017 it was around 66 kg/ha.

In 2018 a total of 2050 tons of plant protection products were sold, which is about 10% less than in 2013.

Conclusions

- The number of large farms with at least 30 ha of agricultural land is increasing, while the number of smaller farms is decreasing.
- Structural change is proceeding more slowly in Switzerland than in neighbouring countries.
- Specialization in agriculture is increasing. Fewer and fewer farms keep dairy cows (< 20,000) and pigs. In crop production, the cultivation of root crops and vegetables is concentrated on fewer and fewer farms.
- In the next ten years 30% of farm managers will reach the age limit for receiving direct payments (65 years). This will lead to a generation change which will have an impact on structural change, in particular on the growth of the remaining farms.

1.2. The main structural characteristics of the forestry sector

General (WaldSchweiz)

- One third of the country's surface is covered by forest.
- This amounts to around 1.28 million hectares of forest or just under 1,520 m² per inhabitant.
- The forest area is increasing - annually by about the same amount as the Lake of Thun.
- The total stock of timber in Swiss forests is about 427 million m³.
- Every year, 10 million m³ of wood grow again in Switzerland.
- Without overexploiting the forest, 7 to 8 million m³ of wood could be harvested annually.
- Switzerland's annual wood consumption, including imported wood, is almost 11 million m³.

Working in the forest

- More than 700 forestry companies manage the forest. In addition, about 850 mobile, flexible forestry companies work on behalf of the forest owners. Thousands of private individuals (mainly farmers) use and maintain their forest.
- The forestry sector employs 6,200 people, and the raw wood processing industry employs around 7,500.
- The forestry and timber industry provides more than 100,000 jobs.
- Forestry work is dangerous, with almost 1,500 accidents every year.
- Around 4.5 million m³ of wood worth over CHF 380 million is harvested annually. Approximately two thirds of this is coniferous wood and one third hardwood.
- Gross value added in the forestry and timber industry CHF 4.5 billion/year
- The good access with approx. 30,500 km of forest roads enables forest maintenance and management.

Organization of the forestry sector

Codoc is a specialist unit of the Federal Office for the Environment FOEN (CODOC, 2020), which was founded in 1989 and operates throughout Switzerland. It is an information hub, teaching aid center and innovator. Codoc is an important contact

and information point for the entire forest industry. In collaboration with its partners - the Confederation, cantons, associations, training centers and schools - it promotes and supports the implementation, quality and further development of education and training in the forest. www.codoc.ch

Association of Swiss Forest Owners, WaldSchweiz: The network comprises the national association of forest owners, with its 22 cantonal associations. All forest owners in Switzerland and the Principality of Liechtenstein can join a regional and/or cantonal association. It represents the interests of some 250,000 private and public forest owners:

- Political representation in parliament and cooperation with federal offices, universities, research institutes, associations, etc.
- professional training and further education of forest experts
- Support of forestry enterprises through consulting and software products
- Supporting forest owners in marketing timber products and other forest services
- Information for the industry, including the publication "WALD & HOLZ"

Based on the national forest legislation, each canton has its own forest law and a forest ordinance. These govern various aspects of forest management, forest maintenance, forest preservation and many other issues. This gives rise to most of the rights and obligations of forest owners.

The Swiss forest belongs to around 250,000 different owners. Of these, 244,000 are private and almost 3,500 public forest owners. Public-law owners include municipalities, cantons and the Confederation, but also civic communities and corporations.

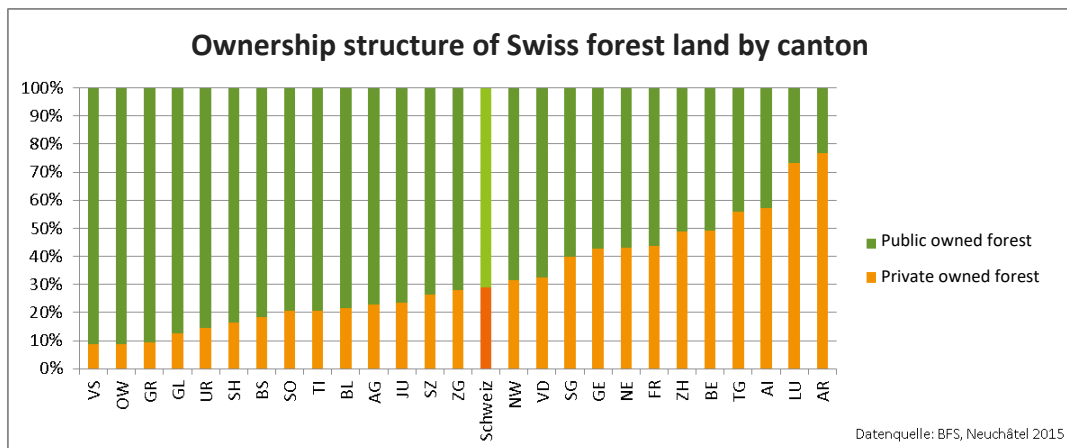


Figure 1: Ownership structure of Swiss forest land by canton

The ownership structure of forest areas varies considerably (BfS). In the canton of Valais, less than 10% is privately owned, while in the canton of Lucerne it is over 70%. On average in Switzerland, around 28% of forest areas are owned by private owners, 72% by the public sector.

2. Characteristics of AKIS

2.1. The Swiss AKIS diagram

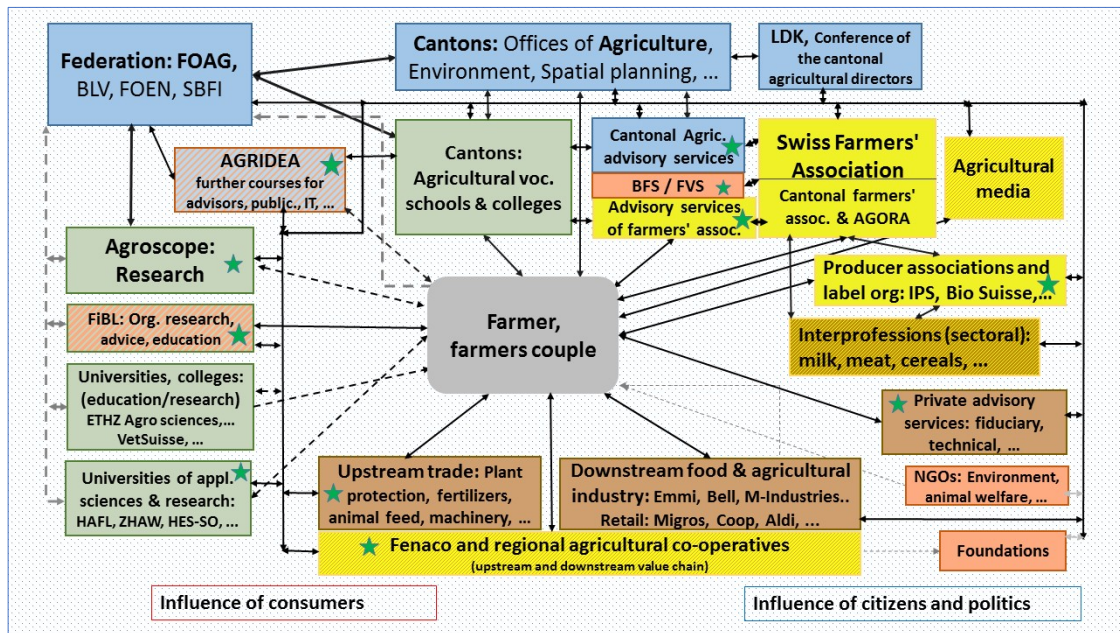


Figure 2: The Swiss AKIS diagram

- ★ Advisory organisations and organisations with an advisory component or other advisory support marked with a green star.
- Public authorities
- Research and education organisations
- Private sector (for profit)
- Third sector farmer/farmer-based organisations
- Third sector NGO (non-profit)
- Strong Linkage
- Weak linkage

2.2. AKIS description

2.2.1. AKIS actors and knowledge flows

The AKIS diagram of Switzerland was structured using the color code provided by the i2connect project. The focus of the presentation is on the interactive transfer of knowledge between research, advisory services and practical farms. Advisory

organisations and organisations with an advisory component or other advisory support were marked with a green star in the AKIS diagram.

The following public institutions (blue) are responsible for agriculture at national level: the Federal Office for Agriculture FOAG, the Federal Office for Food Safety and Veterinary Affairs BLV, the State Secretariat for Education, Research and Innovation SBFI and the Federal Office for the Environment FOEN, which is also responsible for the forests. Vocational education and training is subordinate to the SBFI. Agricultural research, however, is directly subordinate to the FOAG.

In the 26 cantons, the agriculture directors with their agricultural offices are responsible for agricultural matters, supplemented by the cantonal veterinarians, the cantonal food control authorities and others. LDK is the Conference of all cantonal directors of agriculture. The cantonal agricultural offices implement the agricultural policy with production requirements, direct payments etc.

Agricultural research and education (green) is funded by the federal government (Agroscope, ETH) on the one hand, and by the cantons on the other. The FOAG finances the agricultural research institute Agroscope and, with a performance mandate, partly also the Research Institute of Organic Agriculture, FiBL. However, FiBL is privately funded and also receives private funding.

The cantons are responsible for the universities (including VetSuisse) and the universities of applied sciences (HAFL, ZHAW, HES-SO, etc.). Both are active in the fields of education (training of agricultural, forestry, food and environmental engineers) and research. ETH Zurich (Agro sciences) is funded by the federal government and trains agricultural, food and environmental engineers at university level. The cantons finance the agricultural schools (agricultural education and extension centers) and higher agricultural training courses.

Since 2008, the cantons' public agricultural advisory services have been financed exclusively by the cantons. The cantons of Neuchâtel, Vaud, Geneva, Jura and Bern, as well as Zurich, award advisory mandates in whole or in part to the cantonal farmers' associations, which then operate the cantonal advisory services.

Private sector (brown) and non-profit organisations (orange) also play a role in extension services. AGRIDEA, for example, is run by an association (orange), on whose board the cantons have a majority since 2019 and determine the strategic issues. The services of the two AGRIDEA advisory centers are financed by a mandate from the FOAG. AGRIDEA provides the cantonal advisory services with further training courses, publications, IT solutions and other services, while for farmers it mainly provides publications and IT solutions.

Among the private or farmer-based advisory services (brown and/or yellow), the agricultural fiduciary services play an important role in the areas of accounting, business and tax advice. The Swiss Farmers' Association also runs a private consultancy center 'Agriexpert' on topics such as fiduciary services, legal issues, farm transfers, etc.

The farmers' organisations (yellow) under the national umbrella of the Swiss Farmers' Union play a very important role in the AKIS. Among other things, they are also responsible for the vocational training of farmers: The Vocational Training Organisation (OdA AgriAliForm) brings together 10 member organisations from the agricultural and equestrian sectors which are involved in vocational education and training. In this way it fulfils the objective "Vocational education and training is a joint task between the Confederation, the cantons and professional organisations". The organisation is the point of contact for questions relating to basic vocational education and training and higher vocational education and training in agriculture and the equestrian sector in Switzerland.

In addition to providing technical support to farmers, the farmers' organisations focus on representing their interests in politics, government offices, institutions and the public.

AGORA, the Association of French-speaking agricultural groups and organizations brings together political organizations, commercial co-operatives, professional branches and vocational education of the French-speaking part of Switzerland.

Farmers' organisations also include the national producer associations (milk, meat, cereals, potatoes, fruit, vegetables, etc.) and their cantonal sections. Important national label organisations such as Bio Suisse or IP-Suisse also are farmer-based and have cantonal sections.

Also important are the sectoral organisations (Interprofession milk, Proviande, Swissgranum, Swisspatat, etc.), which involve the players along the entire value chain from production to processing and marketing and play a major role in industry standards, market issues, representation of interests and sales promotion, among other things. In the sector organisations, farmers are only one of the groups of actors. These organisations are therefore not purely agricultural. The agricultural media play an important role in the transfer of knowledge between the AKIS actors and farmers. Among other things, they report on new products, practical application of innovations, practical examples, practical needs, important research results and important technical or agricultural policy topics. The most important ones are BauernZeitung (farmer-owned), Schweizer Bauer (private), Agri (farmer-owned, French-speaking Switzerland). Other publications

include agricultural research (Agroscope), cantonal farmers' association newspapers, newsletters, etc.

In the AKIS there are a number of thematic platforms and networks (national and regional) which play a major role in the exchange of knowledge, experience, networking and solving current problems. The platforms bring together mainly experts, researchers, decision-makers, multipliers and also farmers. AGRIDEA alone, for example, is involved in over 150 thematic platforms every year.

Looking at the entire agricultural and food value chain, the upstream and downstream value-added partners play a central role for agricultural enterprises. Upstream are the suppliers of plant protection products, fertilizers, animal feed, machinery, equipment and services who provide the inputs necessary for agriculture. Upstream suppliers are important intermediaries of innovation (progress) on farms.

Downstream is the whole agri-food industry as demander of agricultural products. A significant market position in the upstream and downstream value chains is held by the Fenaco agricultural co-operative association and its affiliated regional agricultural co-operatives. The agricultural cooperatives are run by farmers. Fenaco is an important supplier to the farms and the food industry with high market shares.

The consumers are also among the actors in the value chain, at the end of the chain, whose consumption behavior generates market changes and trends. In today's climate and environmental discussion this is of great importance.

The AKIS of Switzerland is very much influenced by politics and agricultural policy. As about 50% of Swiss agriculture is financed by public funds, it is also highly politicized and risks becoming the plaything of politicians and NGOs. The current popular initiatives to ban pesticides, ban intensive livestock farming, etc. can illustrate this. Therefore, the whole AKIS diagram of Switzerland is underlaid with a grid "Influence of consumers" and "Influence of citizens and politics".

International networking and the flow of knowledge thanks to the Internet (websites, applications, YouTube, social media, ...) represent a new dimension. These strong new developments will strongly accelerate and sustainably change the knowledge acquisition and knowledge exchange in AKIS at national and global level.

2.2.2. Knowledge flows

Knowledge is conveyed and exchanged in the AKIS through the following channels:

Education:

- Apprenticeship, professional certificate
- Professional training/examination for farm management,
- Engineer education at university and college level

Agricultural media:

- Traditional and digital publications

Advisory services (public and private):

- Individual farm advice
- Publications, leaflets, apps
- Further training courses, working groups, etc.
- Projects
- Own further training of advisors: Advisor introduction, specialist courses, method courses, etc.

Research:

- Farmer days,
- Publications and resources
- Pilot and demonstration projects
- thematic platforms
- Stakeholder surveys on research needs

Private sector suppliers

- Farmer days, courses, visits
- Tools, IT-tools

National and global transfer and exchange of knowledge between all actors

- - Internet (websites, apps, YouTube, social media, ...)
- - Internet video telephony: Skype, zoom, etc.

Knowledge transfer and exchange in AKIS among decision makers, experts, researchers, trainers, multipliers, etc:

- - Over 150 thematic platforms
- - Conferences and further training courses
- - Communication tools of the institutions

2.2.3. Policy framework at national level

Agricultural policy from the perspective of the cantons (LDK, 2018)

The Federal Constitution lays down the model of a multifunctional, rural agriculture whose mission is primarily to serve the domestic market. Today's system of agricultural support therefore focuses on multifunctional, rural agriculture. The level of education and the willingness to produce are high in agriculture. The will to earn an income on the market dominates. There is a robust demand for quality products, which is met by professional and innovative farms through existing market channels or directly.

On the other hand, the economic viability of agricultural activity is weak on many farms, which limits the ability to invest. Less and less of the consumer franc goes to the producers. The margins of trade and processing are increasing. Some agricultural markets are not functioning satisfactorily. Upstream and downstream industries have a major impact.

A future agricultural policy must primarily improve the profitability of agricultural activity. At farm level this is the task of the individual farmer. At the level of the individual agricultural markets, their functioning must be brought closer to the ideal of perfect market competition.

Swiss agriculture is well anchored in the population and supported by it. The population is increasingly committed to its living environment and healthy food. These are good conditions for providing public services and producing Swiss agricultural products of high quality. Product differentiation via strong links to origin can be developed further. Swiss consumers are prepared to pay a Swissness surcharge. This willingness also exists in export markets which are capable of expansion.

Agricultural policy is largely a federal matter. The cantons have many implementation obligations, but little decision-making authority. At the political level, the cantons' voice is barely audible when it comes to agricultural policy. Moreover, the cantons are often at odds with each other.

Nevertheless, the cantons are not only involved in enforcement of the agricultural policy. The cantons provide agricultural vocational training and advisory services, thus ensuring that farming families can meet the challenges. Through numerous promotion and incentive programs, the cantons seek to improve compliance with conservation objectives, facilitate investment in soil and infrastructure and increase the value added from agricultural activity and viticulture.

For future agricultural policy, the cantons will continue to focus on education and extension, improving the profitability of agricultural activity, limiting the negative effects of the agricultural treadmill, on quality strategy, and promoting and expanding sales in the domestic market and selected export markets, while maintaining border protection.

Research and Extension

From the LDK's point of view, research (Agroscope) and consultancy (AGRIDEA), which is substantially funded by the Confederation, should be integrated into the AKIS and managed thematically by a committee (Confederation / cantons / sector) (LDK, 2018). The aim is to master the current challenges in production (including value creation at farm level) in a timely manner and to contribute to the processing of Swiss quality in agricultural production into marketable goods.

Opportunities

- Sharpen agricultural measures, focus on greater impact and competition, Promotion of innovation and value added, market and sales promotion;
- Targeted orientation towards the future challenges facing agriculture. e.g. profitability, resilience to climate change, better resource efficiency, less crop protection;
- Good infrastructure, functioning authorities, high purchasing power;
- Basic conditions for innovation are in place (education, promotion, money and freedom of trade);
- Strong, dynamic, innovative, market-oriented food chain/sector, which must continue to focus on quality
- Cooperation (horizontal, vertical);

Challenge

- The workload is high, but profitability is weak: increasing pressure on farming families;

- An often low level of capitalisation makes investment (innovation, conversions, farm abandonment) more difficult. The economic viability of agricultural activity must be improved.
- The functioning of agricultural markets must be brought closer to functioning competition, with fair distribution of margins;
- Orient agriculture and the food industry more consistently towards quality strategy, innovation and the expansion of market shares for Swiss food products.
- The transfer of knowledge from research to practice and the dissemination of new knowledge in practice is too slow or suboptimal;

3. History of the advisory system

Introduction

In the post-war period, the primary objective of agricultural policy in Switzerland was to produce the largest possible quantity of food in the most efficient way. Under this productivist paradigm, the aim was to feed a growing population. Technological innovations created the conditions for a rapid increase in productivity in the agricultural sector. Parallel to the one-sided orientation of post-war agricultural policy, until the 1990s an AKIS developed, which was strongly characterised by a linear approach to innovation: New knowledge was generated in research and passed on to farmers via advisory services and education.

At the end of the 20th century, the paradigm of "multifunctional" and "sustainable" agriculture moved into the focus of agricultural policy. Agriculture was no longer only to produce food efficiently, but was to perform multifunctional tasks. These objectives are emphasised in the new agricultural policy. The promotion of innovation was also explicitly mentioned.

The system of linear knowledge transfer was no longer adequate for the new multifunctional challenges. At the same time, the complexity of sustainable development made it more difficult for research, education and advisory services to recognise the new needs of farmers and to adequately meet the changed requirements (Home, 2013).

History of advisory services

The roots of agricultural advisory services in Switzerland date back to the 1950s. The Ordinance on Agricultural Education and Experimentation of 1955 states that the task of the advisory service is "to inform farmers about all technical questions and questions of business administration and to keep them constantly informed of new practical and scientific knowledge and thus contribute to the rationalisation of farms, the increase of productivity ... with the aim of improving the economic situation of agriculture". An OECD study (1953) described Switzerland's agricultural education system as exemplary, but the advisory service as underdeveloped.

Now the cantonal agricultural schools began to work with local farmers' advisory groups (mainly on farm surveys and feeding plans). Agricultural teachers were also increasingly involved in extension activities. This also created the need for a supporting organisation of central services for the benefit of agricultural advisors. In 1959 the Swiss Association for the Promotion of Farm Advisory Services in

Agriculture, SVBL, was founded. The SVBL now formed the responsible body for the 2 advisory centers: The "Service romand des vulgarisation agricole, SRVA" (French-speaking Switzerland) and the "SVBL-Zentralstelle Küssnacht" (German-speaking Switzerland), opened in 1958. The latter was established in CH-Lindau from 1976 and renamed Landwirtschaftliche Beratungszentrale Lindau, LBL (Mürset, 1993). Since 2006 the two advisory centers have been operating under the joint name AGRIDEA. In 2010 they were merged completely and placed under a common management.

Changes in the cantons

As the number of farms decreased, the "institutional landscape" (the AKIS) in the cantons changed from around 2000 onwards. The number of agricultural VET centers was greatly reduced and their services were concentrated at fewer locations. Basic VET was harmonized with the non-agricultural VET school sectors. Advisory services were either reduced or kept at the same level through higher advisory tariffs. In some cases, advisory services were organizationally separated from VET, as responsibilities changed in the canton. In special topics, supra cantonal forms of cooperation were implemented.

As of 2008, the cantons no longer received financial support from the federal government (FOAG) for their agricultural advisory services. They had to finance their agricultural advisory services in the public interest on their own, but were relieved by the federal government in other areas (e.g. contributions to AGRIDEA). The FOAG took over the financing of AGRIDEA's advisory mandate on its own. This withdrawal of the Confederation from co-financing and the pressure to save in the cantons left their mark on the cantonal advisory services. The number of advisory staff tended to be reduced or their capacity reduced due to other administrative tasks. It became more difficult to provide a sufficiently diverse range of advisory offers that were tailored to needs. There was a lack of specialist skills and the advisory services were unable to develop important new services for farming families in time. The heads of the cantonal advisory services now had to combine the existing resources in the best possible way. In 2004 they therefore founded the Swiss Advisory Forum (BFS) / Forum La Vulg Suisse (FVS) as a common platform for the advisory services (Huber, 2005).

4. The agricultural advisory services

4.1. Overview of all service suppliers

Agricultural advisory services

As part of the Agricultural Innovation and Knowledge System AKIS, agricultural and rural-household advisory services in Switzerland are organised on two levels (Stöckli, 2020).

Stage 1: Direct advice for farming families is provided locally, primarily by the cantonal advisory services. The cantons are responsible for agricultural advisory services and their financing. The majority of the cantons have public agricultural advisory services. Several cantons award all or part of their extension mandates to the cantonal chambers of agriculture (the cantonal farmers' associations), which then manage the cantonal advisory services.

In some specific fields of knowledge, such as bees, poultry or alpine farming, advisory services are provided by agricultural organisations.

In some cantons, close cooperation between advisory services and education is facilitated by grouping them in so-called cantonal agricultural education and advisory centers (LBBZ) (Alfred Buess, 2011).

Stage 2: The AGRIDEA (agricultural advisory center), with its main sites in Lindau and Lausanne, supports the agricultural and rural home economics advisory services in the cantons and organisations. As a center of excellence for the exchange of knowledge and experience between practitioners and researchers, AGRIDEA networks players in agriculture and rural areas. It offers the cantonal advisors services such as further training courses, introductory courses for advisors, publications, IT solutions, etc. For farmers, it offers mainly publications and IT solutions.

Other players are active to varying degrees in providing advice and exchanging information: Agroscope, universities of applied sciences, FiBL (Research institute of organic agriculture), associations, media and the private sector (Stöckli, 2020). The international networking and the flow of knowledge thanks to the Internet (websites, applications, YouTube, social media, ...) are strong new developments that greatly accelerate and change the acquisition and exchange of knowledge at national and global level.

The importance of advisory services

The importance of agricultural advisory services co-financed by the public is recognized both at federal and cantonal level (Huber, 2005). The main strengths of the system are:

- Practical relevance
- A relationship of trust with the customers,
- holistic consulting approach
- Flexibility
- Professional and methodological competence, personal skills

The weaknesses are seen:

- In sometimes small structures
- In limited resources
- Partly in the challenges posed by new activities
- The fact that supra cantonal cooperation is hampered by different structures, financing, etc.

The Swiss Advisory Forum (BFS)

The Swiss Advisory Forum (BFS) / Forum La Vulg Suisse (FVS) was founded in 2004. It is the association of the agricultural advisory services of Switzerland and the Principality of Lichtenstein (BeratungsForum). Its members are mainly the cantonal advisory services which provide exclusively or partially extension services in accordance with the Agriculture Act and whose customers are mainly farms, rural households and farmers' organisations or institutions and bodies active in regional economics. The BFS represents its members and their concerns in the agricultural knowledge system and supports the further development of professional, customer-oriented agricultural extension services.

The BFS has promoted cooperation between the advisory services and created the conditions for making cooperation with AGRIDEA and agricultural research more binding. The existing knowledge and experience in advisory services could be used to make it available more quickly to farming families.

The BFS aims in particular to

- the promotion of advisory services and further training for sustainably managed farms and agricultural enterprises in rural areas, in production-related, business management, socio-economic and ecological challenges;
- to coordinate the activities of its members throughout Switzerland;

- to make optimum use of the strengths of the knowledge system of agriculture and rural areas, in close cooperation with AGRIDEA, research institutions and universities;
- to promote exchange of information and experience among its members;
- to represent their interests in working groups and organisations.

Agroscope

Agroscope, the agricultural research institution, has several types of services in the field of advice: Conferences, field days, publications and tools, pilot and demonstration projects, thematic platforms and stakeholder surveys on research needs.

FiBL, organic advice

FiBL offers training and further training for organic advisors and has organic advisory mandates in various cantons, where advisory services are offered to organic farmers.

HAFL Training for advisors

HAFL offers the agricultural course 'Teaching and Advice' (teaching diploma in part-time work). This training course is a preparation for the role as a teacher or an advisor in the agricultural, forestry or food sector.

Upstream and downstream value-added partners

Looking at the entire agricultural and food value chain, the upstream and downstream value-added partners play a central role for agricultural enterprises. Upstream are the suppliers of plant protection products, fertilizers, animal feed, machinery, equipment and services who provide the inputs necessary for agriculture. They are suppliers of various specific advisory services.

Downstream is the entire agricultural and food industry as a demander of agricultural services. The Fenaco agricultural co-operative association and its regional agricultural co-operatives have a significant market position in the upstream and downstream value chains.

Private advisors

Among the private advisory services, the agricultural fiduciary services play an important role in the areas of accounting, business administration and tax

consultancy. Other topics of private advisors are special crops, e.g. vegetables; pig farming, construction,...

Swiss Farmers' Union

The Swiss Farmers' Association runs a private advice center 'Agriexpert' on topics such as fiduciary services, legal issues, farm transfers, etc. In doing so, it regularly deals with legal issues that are of great importance to farmers.

4.2. Results of the online survey on agricultural extension

The i2connect online survey was carried out in October 2020 and a total of 12 institutions responded, including 6 organisations with an advisory component, 5 advisory services and one private advisory office. These 12 organisations can be divided into the following categories: 5 public advisory services, 5 advisory services from farmers' organisations, 3 private commercial advisory organisations and 2 organisations with NGO character. These organisations operate in the following geographical perimeters: 1 sub-regional, 5 regional, 4 national and 1 international. French-speaking Switzerland and Ticino are represented by one organisation each, German-speaking Switzerland by 8. One extension service operates internationally.

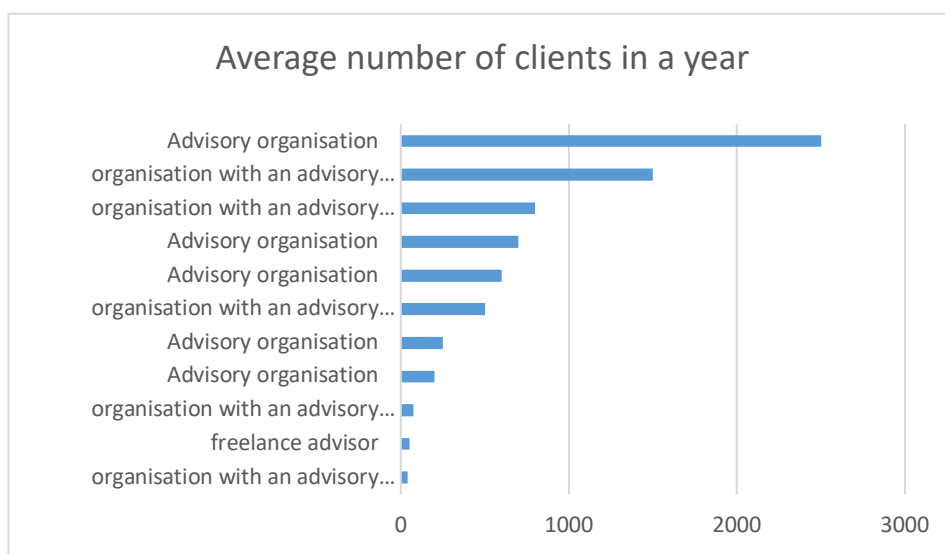


Figure 3 Average number of clients in a year

The advisory organization have about 850 contacts with clients a year, organization with an advisory component about 580.



Figure 4 Advisory organization's client groups

The most important client groups of advisory organizations are farmers with small/medium-scaled farms, part-time farmers, young farmers and women farmers.



Figure 5: Cross-cutting advisory topics most demanded by the clients

The most demanded topics by clients are entrepreneurship and farm management; rural development support and diversification; agri-environmental

stewardship measures and nature conservation; support with grant application and compliance with regulation and standards and tax and legal advice.

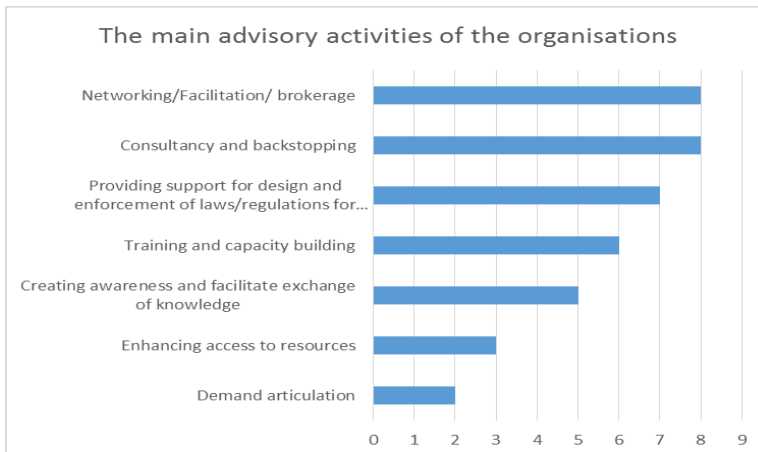


Figure 6: Main advisory activities

The main advisory activities are Networking/Facilitation/ Brokerage; Consultancy and backstopping; Support for design and enforcement of laws/regulations for agriculture (niche) innovation and Training and capacity building.

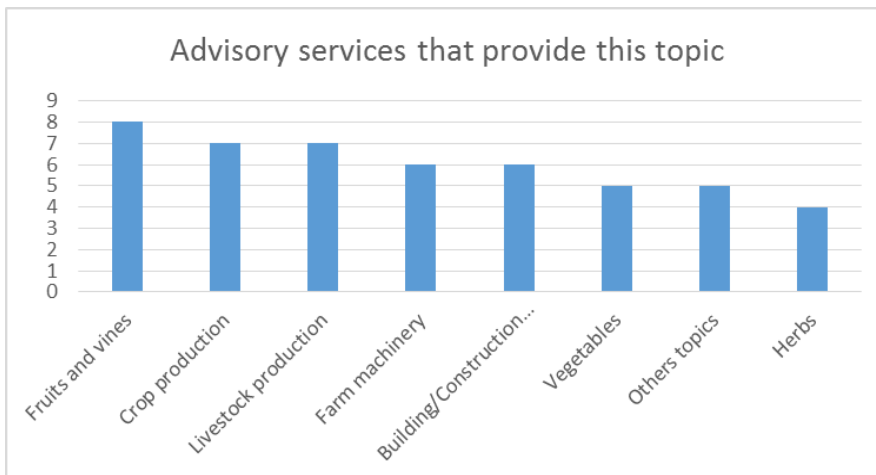


Figure 7: Advisory topics organizations provides

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

Federal financial resources for the advisory sector (Stöckli, 2020)

The Federal Government provides financial support to AGRIDEA and to some advisory services in specific fields of knowledge. It also supports preliminary studies for innovative projects. In addition, the FOAG can support projects which it puts out to tender. The cantonal advisory services are financed by cantonal contributions and the billing of services.

Federal expenditure on advisory services 2019

Recipients	Mio. CHF
AGRIDEA, Agricultural advisory center	7,9
Special advisory services from agricultural organisations	1,4
Preliminary studies on innovative projects	0,2
Competitive support for advisory projects	1,6
Total	11,1

Table 1: Federal expenditure on advisory services 2019

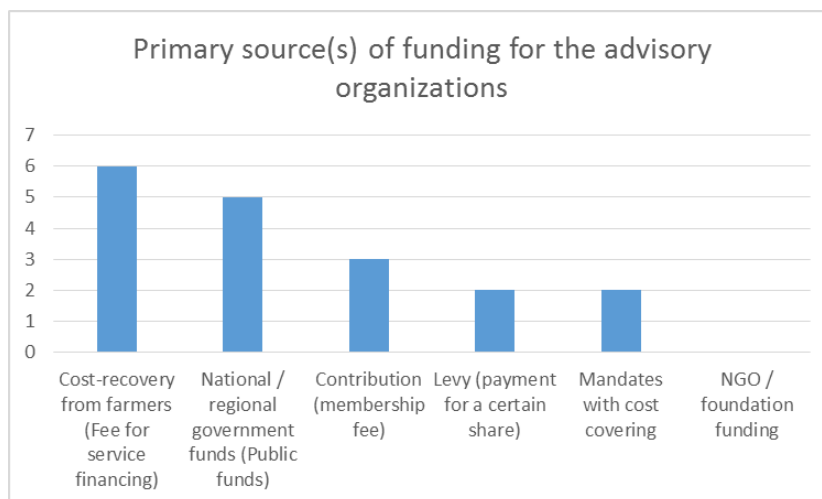


Figure 8: Primary source(s) of funding for the advisory organizations

Primary source(s) of funding for the 11 advisory organizations (multiple choice): 6 organizations enumerate cost-recovery form farmers, 5 are financed by national or regional government funds (public funds), 3 organizations enumerate contribution (membership fee), 2 enumerate a levy (payment for a certain share) and 2 are billing their mandates cost covering.

Funding of research and advice

The majority of the agricultural research and advice in Switzerland is publicly funded. About 80% of applied agricultural research is financed by the FOAG, the rest by public funds from other federal authorities. Agricultural extension is also 80% financed by public funds, only 20% by private funds (Home, 2013).

4.4. Human resources and methods of service provision

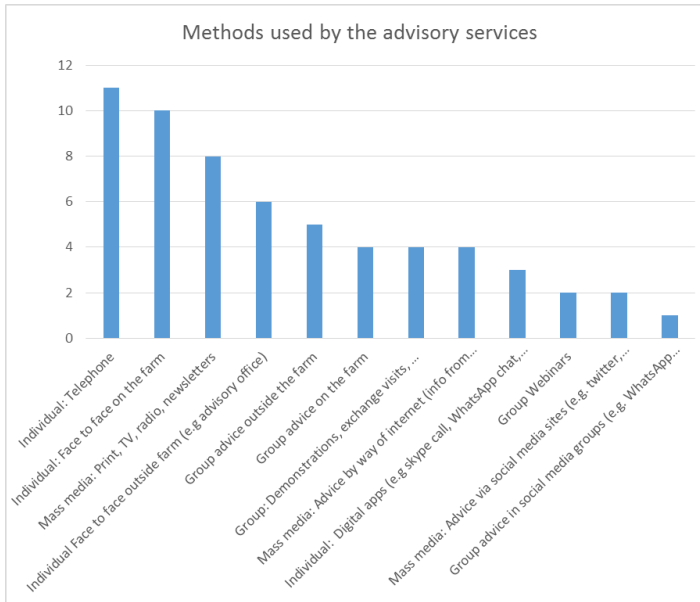
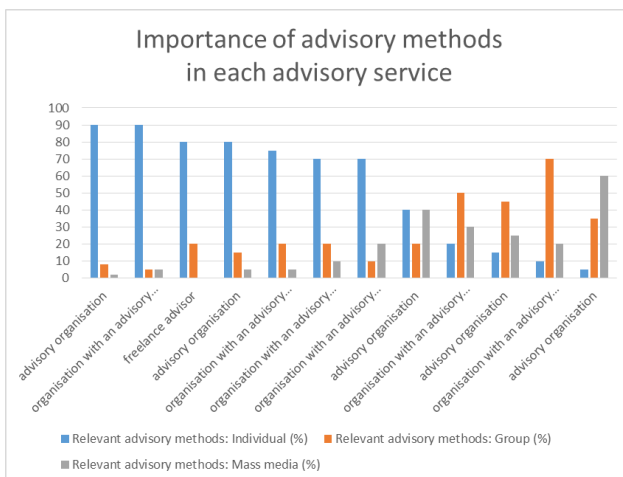
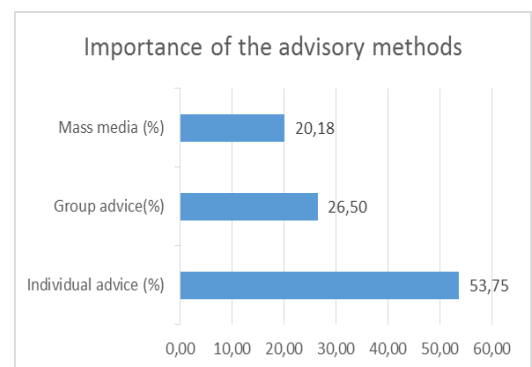


Figure 9: Methods used by the advisory services

The most often used methods of the advisory services are Telephone, Face to face on or outside the farm, Mass media (communication channels) and Group advice outside the farm.



Figures 10: Importance of advisory methods in advisory services



In 8 out of 12 advisory services individual advice is most important (Medium: 53,7 %). In 4 of 12 organizations Group advice is important (Medium: 26,5 %). The

importance of advice by Mass media (communication channels) is in medium 20,2 %.

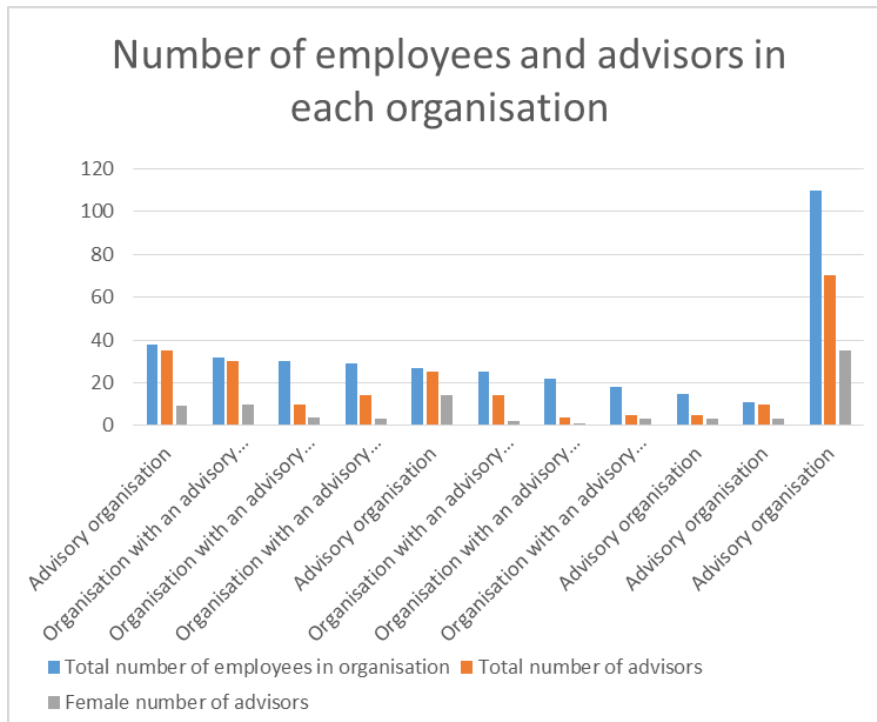


Figure 11: Number of employees and advisors in each organization

The number of advisors in the organizations ranks between 4 and 35 (70). From those between 1 and 14 (35) are female advisors.

In 4 advisory organizations the number of advisors increased in the last 5 years due to new needs and topics. In 5 advisory organizations it was stable. In 2 advisory organizations the number decreased due to lower demand or financial restrictions.

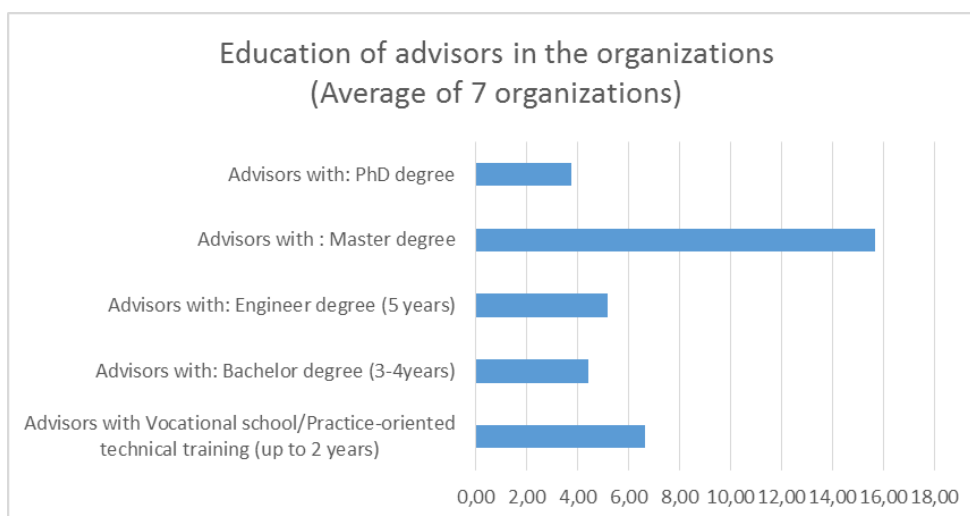


Figure 12: Education of advisors in the organizations

In the average of 7 advisory organizations this medium number of advisors have the following education: Master degree (15,7 advisors), Vocational school/Practice-oriented technical training (6,7); Engineer degree (5,2); Bachelor degree (4,4) and PhD degree (3,8).



Figure 13: Professional experience in advisory services (Average number)

The average of 9 advisory organizations shows the following professional experience of their advisors: 2.4 have 0 - 3 years, 5.6 have 3 - 10 years and 6.0 have more than 10 years of professional experience. So the fluctuation of employees seems to be quite stable.



Figure 14: Professional experience in advisory services (number of advisors)

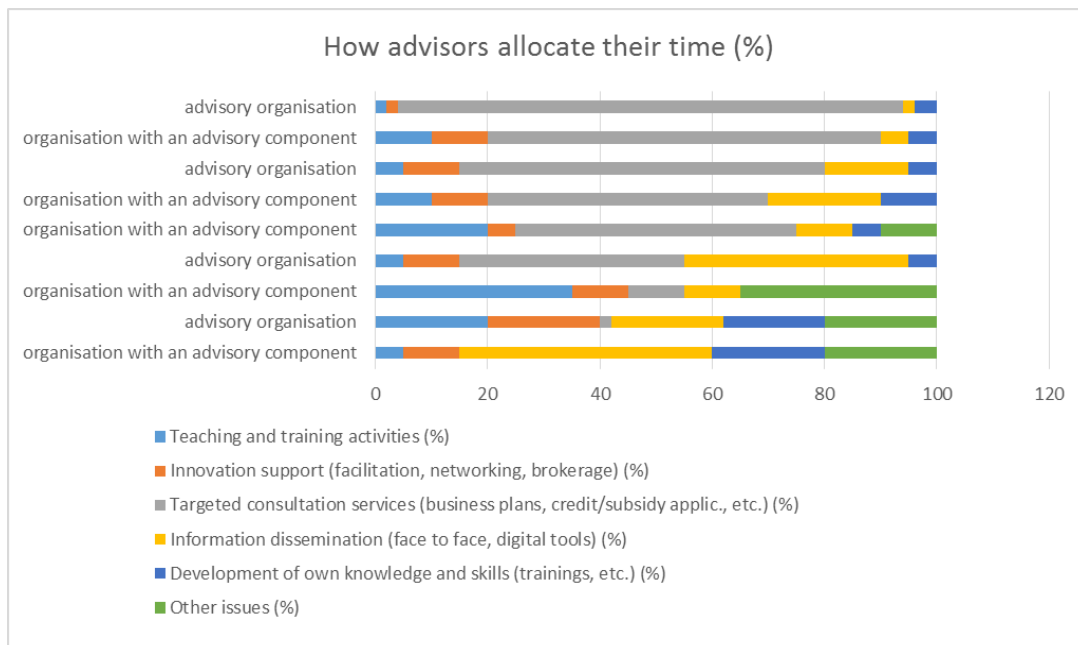


Figure 15: How advisors allocate their time (in %)

In the upper figure the time allocation of the different advisory organization is shown. The figure below shows the average of 9 organizations: Most important are Targeted consultation services; Other activities like articles, fact sheets, networking and coordination; Information dissemination and Teaching and training activities. Innovation support (facilitation, networking, brokerage) comes only in 5th place (with 9,7 % of the time).

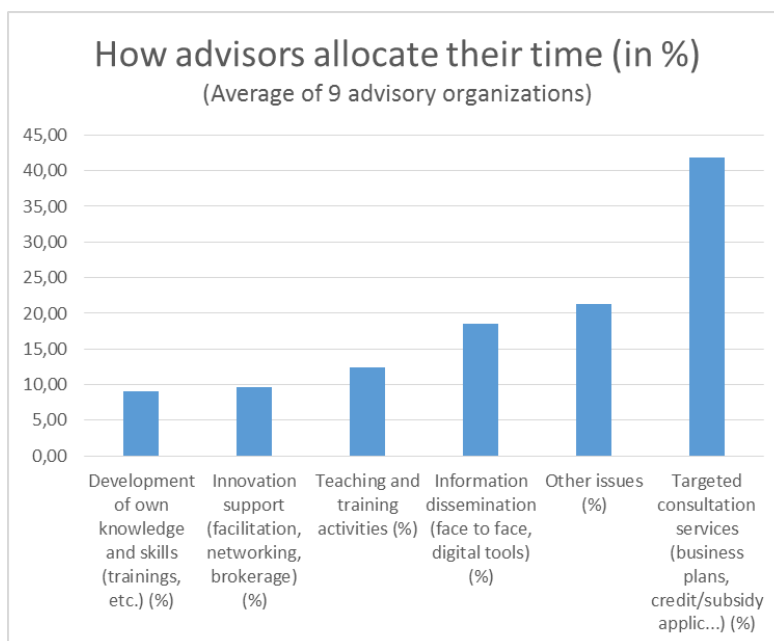


Figure 16: How advisors allocate their time (average in %)

4.5. Linkages with other AKIS actors/knowledge flows

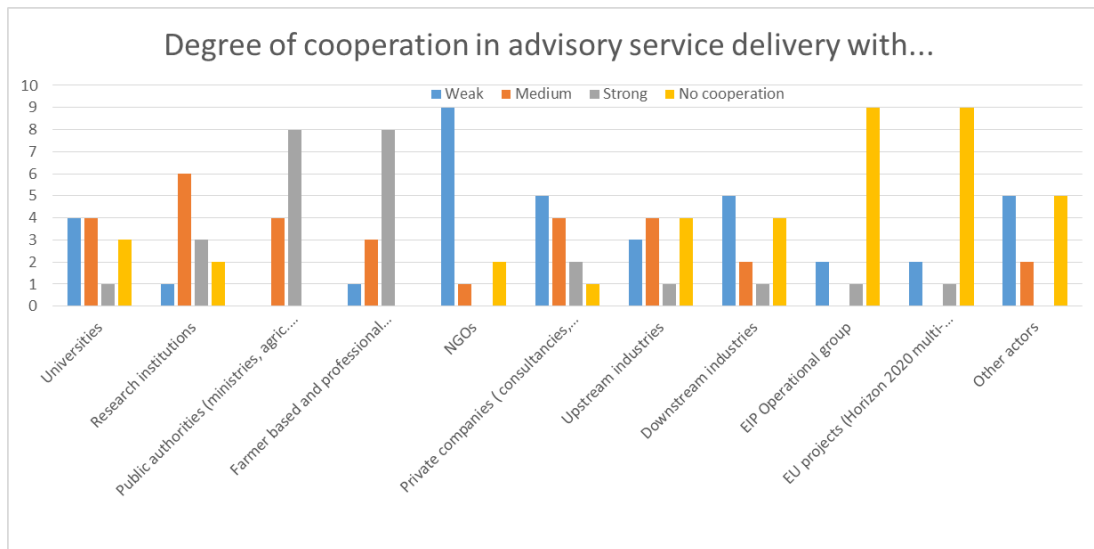


Figure 17: Degree of cooperation with institutions in advisory service delivery

The cooperation with Universities is low, with research Institutions it's medium to strong, with Public authorities and farmer based or professional organizations it's strong to medium. Weak is the cooperation with NGOs and downstream industries, it's a little bit stronger with the upstream industries. As Switzerland is not an EU member, EIP and EU projects are usually not relevant for the advisory services.

In AKIS there is a multitude of thematic platforms and networks (national and regional) which play a major role in the exchange of knowledge, experience, networking and solving current problems. The platforms bring together above all experts, researchers, decision-makers, multipliers and also farmers. AGRIDEA alone, for example, is involved in over 150 thematic platforms every year. Platforms and networks make it possible to react quickly to new needs and bring interested people together. The platforms play an important role in the cooperation between AGRIDEA and Agroscope (AGRIDEA, 2019).

The exchange of information between institutions in the AKIS, which are responsible for the implementation of laws and regulations, takes place regularly and is highly formalised. The meetings serve to facilitate the flow of information between the cantonal level and the federal level, which is necessary since agricultural policy is made at federal level but implemented at cantonal level. The

most important platforms and working groups each bring together the directorates, managers or representatives of the various relevant departments and divisions (e.g. Conference of Agricultural Offices, working groups at federal level on structural improvement, resource efficiency, direct payments, etc.). Representatives of the federal authorities are usually permanent guests in these groups.

The exchange of knowledge on technical issues (e.g. milk production or fodder production) takes place mainly in working groups, communication and cooperation platforms. These platforms primarily serve to exchange experience and discuss joint projects and technical developments in agriculture. More innovative projects are often supported by ad-hoc platforms and working groups and can be launched on the initiative of one or more AKIS institutions, cantons or individual actors (Home, 2013).

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

No comment on the Farm advisory system, FAS from Switzerland, as a non-member state of the EU.

5. Summary and conclusions

5.1. Summary and conclusions on sections 1 – 3

- The Swiss agriculture, which tends to be small-scale, is subject to continuous change. In the next 10 years, 30% of farm managers will reach retirement age and farms will tend to grow accordingly.
- Research, training, advice and further education are largely institutionally separate between forestry and agriculture.
- The Swiss AKIS shows the often historically grown structures and institutions which are common in many European countries, and which ensure the agricultural transfer of knowledge. It is regularly complained that this knowledge transfer between research and agricultural practice is progressing too slowly. Many factors influence this transfer and the reverse transfer of practical experience and needs back to advisors and research. So it is important to focus on this in the i2 connect project.
- The digitisation of information flows via the Internet enables new, more direct and also global transfers. This leads to new offers, changing information needs and ultimately to changing expectations of the existing AKIS actors. This has been a challenge for agricultural research for some time, but it is increasingly becoming a challenge for all other AKIS actors.

5.2. Summary and conclusions on section 4

The online survey covers the advisory services in German-speaking Switzerland and, with some cases, the advisory services in French-speaking Switzerland and Ticino. Public advisory services, advisory services of farmers' organisations, private, commercial advisory organisations and organisations with NGO character took part. The survey provides a valuable insight into the situation of agricultural advisory services in Switzerland without claiming to be fully representative.

- Advisory organisation in medium have over 700 customer contacts per year. The most important clients are farmers of small and medium-sized farms, part-time farmers, young farmers and women farmers.
- The most important advisory topics are business and farm management, diversification, agro-ecological measures and financing issues.

- When asked how the advisory services are financed in the first place, they mention cost-recovery from farmers, financed by national or regional government funds (public funds) and contribution (membership fee). Public extension services are financed to a significant extent by the cantons. The FOAG finances the advisory mandate of AGRIDEA.
- As agricultural extension is in the responsibility of the 26 cantons, it is in many cases small-structured, so especially small cantons look for synergies in the co-operation with their neighbor cantons. On the national level they are connected in a common forum for exchange and defense of interests.
- The most often used methods of the advisory services are telephone, face to face on or outside the farm, communication channels and group advice outside the farm. In advisory services the individual advice seems to be most important, followed by group advice.
- The advisory services have well trained staff, of which on average about 80% have more than 3 years of professional experience.
- As expected, cooperation with public authorities and farmer based or professional organisations is strong to medium, with research institutions it's medium to strong.

Agricultural extension services continue to enjoy good public support, especially in view of the current challenges, for example in the areas of nutrient and pesticide emissions, promotion of biodiversity and maintenance of income and value creation.

6. Acknowledgement of partners, information sources and gaps

For this report, regarding the AKIS, five special interviews were conducted:

- With the person responsible for agricultural extension at the Federal Office for Agriculture;
- With the Head of the Department of Extension, Education and Communication of the Research Institute of Organic Agriculture FiBL;
- With the HAFL lecturer for didactics and extension methodology and a long-time expert in agricultural extension;
- With the Vice-Director of the Swiss Farmers' Union, responsible for economics, education and international affairs;
- With the director and members of the management of AGRIDEA.

The information about the Swiss advisory services are based on different publications and on own long lasting experience in the field.

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