

# AKIS and advisory services in *Serbia*

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

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## Executive summary

The public extension service in Serbia has a long history, and its 34 agricultural stations cover the entire country and contain a wide variety of expertise of use to farmers. However, operating with limited budgets and in a bureaucratic structure, the majority of farmers in Serbia are not able to receive the services of the extension services.

Agricultural production in Serbia is mostly organized on small family farms (FFs), which are characterized by poor production results and non-profitability, which again influences Serbian agriculture to act as undeveloped and non-competitive. Agricultural advisory and professional services (PSSS/FAS/FAS) are an important link in the agricultural development chain. In Serbia, advisory services are organized and funded by government, with the task of knowledge transfer to agricultural producers, in order to increase profitability on FFs and improve the competitiveness of agriculture.

Knowledge transfer in the field of agriculture is carried out through the system of formal education (from secondary education to doctoral studies), through various types of training organized by educational and research institutions and organizations, Farm Advisory Service (FAS), media, etc.

In addition to formal education, in Serbia, the transfer of knowledge through non-formal education of agricultural producers and others interested in the field of agricultural production is very important.

The Institute for the Application of Science in Agriculture (IPN) from Belgrade has a significant role in this type of education. IPN as a scientific research institution and authorized organization for training and development of agricultural advisors and agricultural producers and other interested individuals and legal entities organizes education with the aim of transferring new knowledge and technologies that are the result of research by scientific institutes and universities in agriculture and agro-economics.

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## Abbreviations

MAFWM	Ministry of Agriculture, Forestry and Water Management
MoEST	Ministry of Education, Science and Technological Development
IF	The Innovation Fund of the Republic of Serbia
IPN / ISAA	Institute for Science Application in Agriculture
PA	Directorate for Agrarian Payments (Payment Agency)
FAS	Farm Advisory Service
PSSS/ PSS	Agricultural Advisory and Expert Services/ Stations
CECRA	Certificate for European Consultants in Rural Areas

## 1. Main structural characteristics of the agricultural and forestry sector

Serbia's regional trade opportunities are expanding rapidly, driven by economic recovery in the post accession countries, a proliferation of bilateral free trade agreements and plans for WTO accession and an EU Stabilization and Association Agreement. In order to capitalize on these trade opportunities, in late 2000 the Government of Serbia launched an ambitious reform program to improve the business environment and create a vibrant private sector. The program is producing the desired results and the country was recently voted the world's number one overall reformer on a variety of measures relating to business regulations and their enforcement.

Serbia has significant comparative advantages in agriculture. The country has large amounts of agricultural land, high quality soils, a strategic trading location, and an educated workforce. Almost half of Serbia's population of 7.5 million lives in rural areas. Agriculture sector performance has been mixed in recent years mainly due to highly varying weather conditions, with growth in two of the last five years. Although agriculture share of GDP is declining due to the rapid rise of the services sector, it nevertheless remains an important part of the economy, accounting for 11 percent of GDP in 2005. With agro-processing, its contribution rises to over 15 percent of GDP. About 66 percent of Serbia's total area is agricultural land<sup>1</sup> (5.1 million ha), including about 3.4 million ha of arable fields, 0.3 million ha of permanent crops (orchards and vineyards), 0.6 million ha of meadows and 0.8 million ha of pastures. A further 25 percent of Serbia's total area is under forests (1.9 million ha). About 0.6 million ha (15 percent of the total cultivated area) is comprised of large corporate and cooperative farms, most of which have been partly privatized as shareholding "mixed enterprises." The remainder consists of small private farms which may be commercial or subsistence level. There are about 700,000 private farms, including about 600,000 mostly subsistence farms under five ha in size with fragmented holdings and limited market-oriented production. These households depend heavily on non-farm income. The emerging group of about 100,000 commercial family farms, predominantly located in central

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<sup>1</sup> Agricultural land includes cultivable areas, pastures and fish ponds. Cultivable area consists of arable land and gardens, perennial crops (orchards and vineyards), and meadows.

Serbia, tends to be involved in mixed farming of high-value crops (berries, orchards and vineyards) and animal production and account for about forty six percent of the total arable land.

There is significant regional variation in production systems and products. For example, agriculture in the low-lying and fertile Vojvodina region is dominated by field and industrial crops, notably wheat, maize, sugar-beet and sunflower, as well as the production of pigs, cattle and poultry, mainly in large, partially privatized and/or employee-owned Agro-kombinats. Producers in this region are more strongly market-oriented than in the rest of the country. By contrast, Central Serbia is characterized by hilly topography, small farms and diverse farm production systems, with fairly intense production of high-value fruits and vegetables. Livestock production in the Central region is dominated by dairy cattle. Southern Serbia, the poorest and least developed of the three regions, has mountainous geography and is characterized by small, fragmented arable areas and extensive pasture and forest. It is most suitable for extensive or semi-intensive production of ruminant livestock, but in recent decades, government policies have promoted intensive production of cattle and pigs. This can provide high short-term yields but is not environmentally sustainable over the long term.

The GoS Agricultural Development Strategy prioritizes enhancing Serbia's access to, and competitiveness in, international markets, particularly the EU. Gross Agricultural Output (GAO) has risen about 10% since 2000, with about 40% growth in plant output and static livestock output. The crop sub-sector, however, is vulnerable to climatic variations, which in turn makes agricultural production depended on weather conditions, as implied by declines in GAO in drought years (2000 and 2003) and floods (2005)<sup>2</sup>. At the same time, cultivated areas of most crops are not increasing substantially, which points to improving productivity. Fruit (especially plums, sour cherries, and peaches) and industrial crops (mostly sugar beet, sunflower, industrial paprika, and soybean) have significant increases in total production. Decreasing livestock numbers (as much as 30 percent decrease since 2000) combined with static levels of total livestock production also indicate improving animal productivity (especially eggs and cow milk), although to a lesser degree than for crops.

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<sup>2</sup> Over the observed period (2000-2005), Serbia has experienced *overly* dry (2000, 2002, 2003) and humid years (2005). To reduce the sector's weather dependence the government has recently started to implement project focusing on irrigation and drainage rehabilitation.

Despite increasing productivity, however, yields still remain below EU levels, largely due to low levels of fertilizer and agro-chemical use (in 2004, fertilizer use was half the EU average), the often poor quality of domestically produced seeds and outdated on-farm technologies. This is especially true for such major field crops as wheat, maize, and sugar beet. Yields for these crops are 30-40 percent lower than the EU average, while yields for sunflower seeds, sour cherries, plums, and raspberries are comparable or higher. As with crops, animal productivity is low compared to EU levels, with meat and milk productivity, for example, about 20 and 60 percent respectively lower than in the EU. Low productivity levels suggest that better input use and investments in agriculture and animal husbandry are necessary to bring agricultural productivity in line with EU levels.

Agri-food exports accounted for about 20 percent of total exports. Serbia's main export commodities are cereals (maize, wheat), raw and processed fruit (frozen raspberries, prunes), refined sugar and some livestock and meat products. Agro-processing accounts for about 80 percent of total agricultural exports. The key trade partners for Serbia are the EU-25 and its neighboring countries (mostly Bosnia and Herzegovina and FYR Macedonia). Although agriculture has decreased as a share of total exports recently (down from 25 percent in 2002), in real terms it grew by an impressive 71 percent between 2002-2005 and has the potential to grow further by taking advantage of expanding regional trade opportunities. During the same period agricultural imports grew at a slower pace in real terms (40 percent) and played a smaller role in total imports (about 7 percent in 2005). The faster growth of agricultural exports compared to imports resulted in Serbia's first agricultural trade surplus in 2005<sup>3</sup>. Numerous free trade agreements are contributing to the positive agricultural trade balance, but the surplus is largely driven by import protection rates of up to 30 percent, and even higher effective rates for many key agricultural products including dairy and pork. Further trade liberalization and removal of tariffs will require significant improvement in sector competitiveness in order to sustain the positive trade balance.

**Positive trends in Agri-food:** Serbia's foreign trade in the first half of 2017 amounted to about 17 billion euros and is higher by 13.2% than in the same period last year, and expressed in dollars, the exchange was 18.5 billion, an increase of

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<sup>3</sup> The agricultural trade surplus of US\$150 million obtained for the first time in 2005 contributed to reversing the trend of ever-growing economy-wide trade deficit (in 2004 at its highest US\$7.5 billion).



9.6 %, (RZS). Exports of goods had a value of 7.5 billion euros and were higher by 13.6%, and in dollars the increase was 10%, to eight billion. It was imported for 9.6 billion euros, which is an increase of 12.9%, while in dollars the import was worth 10.4 billion and is higher by 9.3%. The coverage of imports by exports is 77.7% and is higher than the coverage in the same period of previous year, when it amounted to 77.2%. Serbia's main foreign trade partners in exports were Italy (\$ 1.2 billion), Germany (one billion), Bosnia and Herzegovina (615 million), Russia (470 million) and Romania (415 million). The main import partners were Germany (\$ 1.3 billion), Italy (one billion), Russia (827 million), China (809 million) and Hungary (480.8 million). Foreign trade was the largest with countries with which Serbia has signed free trade agreements. European Union member states account for 64.9% of total trade. The second most important partner are the countries of the CEFTA region, with which Serbia had a trade surplus of 943 million dollars, which is the result mainly of exports of agricultural products (cereals and cereal products and various beverages).

Exports dominated by commodity groups:

- fruits and vegetables, with exports of \$ 806.4 million, and a 5.4 percent share of total merchandise exports, and
- cereals and cereal-based products, worth \$ 699.9 million, with a 4.7 percent share in total merchandise exports and a realized surplus of \$ 616.2 million.

According to the realized value in imports, they are the most represented

- fruits and vegetables with an import value of \$ 297.9 million, with a share in total imports of 1.5 percent and a trade surplus of \$ 508.6 million, as well as
- coffee, tea, cocoa and spices worth \$ 191.1 million, with a share of total imports of one percent.

The indicators draw attention to the fact that the export orientation of agriculture is focused on certain groups of products, which have been successful on the international market for a long time and can serve as one of the indicators of the competitiveness of these products on the world market.

Trade in agri-food products is based on the exchange of primary agricultural products, which participate in the structure of exports on average with about 79%, and in imports with about 65%.

Although the results are positive, they indicate a lack of added value in agricultural production.

Serbia is not efficient enough in turning good innovative ideas into products and services for the market.

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## 2. Characteristics of AKIS

### 2.1. AKIS description

The agriculture sector is supported by a publicly funded extension service delivered primarily by 34 contracted, socially owned Agricultural Stations but also some private and NGO providers. Under the 1991 Law on Agriculture Departments, the Institute for Science Application in Agriculture (ISAA) is tasked with coordinating extension management, however, the Ministry of Agriculture, Forestry and Water Management (MAFWM) has fulfilled this role in recent years. In 2006, MAFWM extension contracts valued at about US\$3 million US\$ financed extension agent and farmer capacity building, a market price information service and statistical reporting. Extension contracts are milestone based and, increasingly, contestable, however there is no formal stakeholder participation in extension planning or management. Agriculture research is primarily funded by the Ministry of Education, Science and Technological development (MoEST) through 4-year contracts for basic research and technology improvement projects and 6-12 month contracts for technology innovation. Total public research funding, however, is very low, with salaries absorbing up to 90% of funding and most research stations relying on income from product sales and service contracts for their survival.

#### 2.1.1. AKIS actors and knowledge flows

Agricultural Knowledge creation / research in Serbia is conducted by:

- Research Institutions (Institutes, SME's...)
- University (Faculties, Institutes linked to University...).
- Agricultural Knowledge creation / research in Serbia is funded by:
  - Ministry of Education, Science and Technological Development of Republic of Serbia
  - The Innovation Fund of the Republic of Serbia
  - Ministry of Agriculture, Forestry and Water Management of Republic of Serbia
  - Donor funds
  - International projects (EU funded primarily).

## 2.1.2. Policy framework at national level

Ministry of Education, Science and Technological Development of Republic of Serbia ([www.mpn.gov.rs](http://www.mpn.gov.rs)) is Funding projects within biotechnological research, based on Law on Scientific and Research Law.

The Innovation Fund of the Republic of Serbia (<http://www.inovacionifond.rs>), has established an independent governance structure, with a robust international peer review system and a distinguished Investment Committee that includes international and diaspora professionals experienced in managing technology firms, scientific research, commercialization, and the investor community.

Ministry of Agriculture, Forestry and Water Management of Republic of Serbia ([www.minpolj.gov.rs](http://www.minpolj.gov.rs)), is funding Applied Agricultural Research projects through annual calls for projects, implemented by Directorate for Agrarian Payments (PA), as a part of the Ministry of Agriculture.

## 2.1.3. Coordination Structures

**Ministry of Education, Science and Technological Development of Republic of Serbia** ([www.mpn.gov.rs](http://www.mpn.gov.rs))

- Funding projects within biotechnological research, categorised as
  1. Basic / Fundamental research
  2. Technological development research
  3. Integrated Interdisciplinary research

**The Innovation Fund of the Republic of Serbia** (<http://www.inovacionifond.rs>)

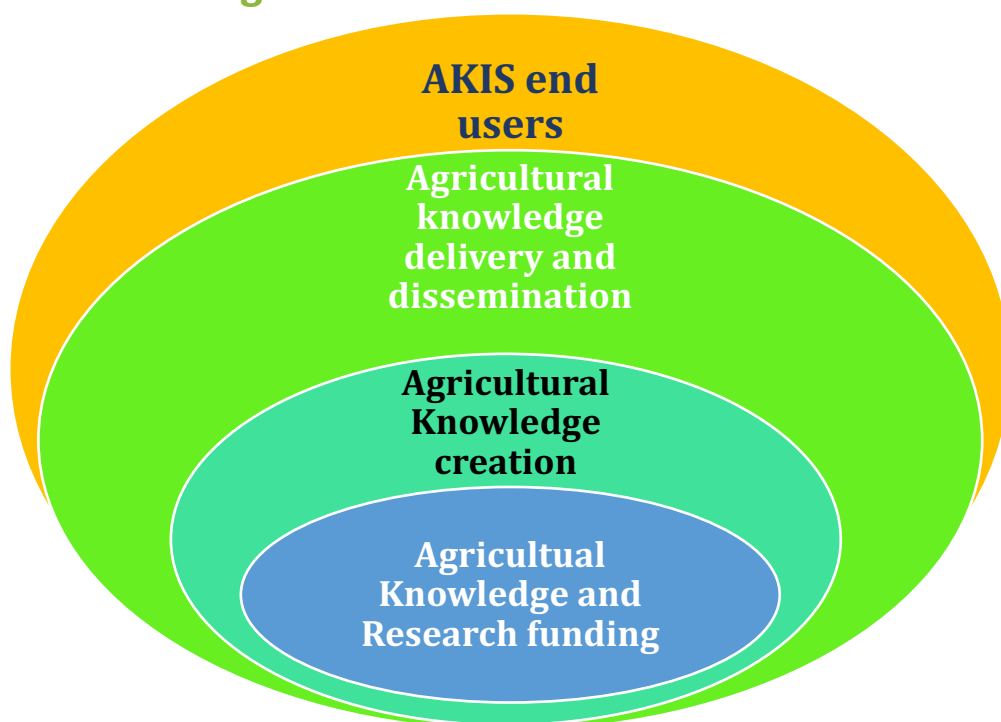
- The Innovation Fund has established an independent governance structure, with a robust international peer review system and a distinguished Investment Committee that includes international and diaspora professionals experienced in managing technology firms, scientific research, commercialization, and the investor community.
- The **EU's support** for the Innovation Fund has been instrumental in advancing Serbia's innovation financing and promoting better integration between the research and private sectors. The Fund is thus an important step towards closer links between Serbia's and EU's research communities and innovation ecosystems. It enables

the positioning of Serbia as a leader in the region and the establishment of links with the EU and global markets. So far, the EU has allocated around EUR 15.8 million from the IPA funds to the Innovation Fund.

**Ministry of Agriculture, Forestry and Water Management of Republic of Serbia ([www.minpolj.gov.rs](http://www.minpolj.gov.rs))**

- Funding Applied Agricultural Research projects through annual calls for projects
- Pre determined topics for each call
- Implemented by Directorate for Agrarian Payments (PA), as a part of the Ministry of Agriculture. PA is a necessary institutional framework set up to enable not only use of the IPA pre-accession funds, but also further integration of the Serbian agriculture into EU Common Agricultural policy (after the full membership into EU), namely European Agricultural Guarantee Fund (EAGF) and European Agricultural Fund for Rural Development (EAFRD).

## 2.2. AKIS diagram



*Figure 1 AKIS diagram in Serbia*

**Agricultural Knowledge and Research funding:**

- Ministry of Education, Science and Technological Development of Republic of Serbia
- The Innovation Fund of the Republic of Serbia
- Ministry of Agriculture, Forestry and Water Management of Republic of Serbia
- Donor funds

#### **Agricultural Knowledge creation**

- Research Institutions (Institutes, SME's...)
- University (Faculties, Institutes linked to University...).

#### **Agricultural Knowledge delivery and dissemination**

- Research Institutions (Institutes, SME's...)
- University (Faculties, Institutes linked to University...).

#### **Agricultural Knowledge End users**

- Formal: students, pupils
- Informal / Lifelong: FAS: Farmers, advisors, Cooperatives, SMEs, public..

### 3. History of the advisory system

Serbia has had an agricultural extension service since 1922. The current system of regional Agricultural Stations was developed in the Socialist Federal Republic of Yugoslavia to advise a few hundred cooperative farms and kombinats that reported to the Ministry of Agriculture. Since the dissolution of Yugoslavia, privatisation, restitution and a new policy direction have replaced this client group with almost 630,000 private family farms and 3,000 legal enterprises, so an Agricultural Station originally established to serve around 20 large social-sector farms may now be faced with 20,000 small private farms all in need of advice. Meanwhile, great strides in information and communications technology have created entirely new possibilities for generating advice and delivering it to farmers in areas that range from ration formulation to rapid warning system for plant pests and diseases. Additionally, Serbia has embarked on its journey towards the European Union, which carries implications for agricultural, environmental and rural development policy.

The beginning of agricultural counseling in Serbia dates back to the formation of the State Economy in Topčider (1851), the Livestock Institute in Dobričevo (1852) and the Agricultural School in Topčider (1853), where 200 agronomists were educated.

The Society for the Field Economy was formed in 1869, and in 1881 it was renamed the Supska Agricultural Society with the aim of spreading new knowledge about agricultural production among the peasants. The company was highly valued and respected and had great financial support from the state and numerous benefits. It stopped working in 1946.

During the Kingdom of Yugoslavia, agricultural stations were established with the task of modernizing Serbian agriculture by introducing new knowledge and innovations in that sector of importance for the entire country.

Agricultural stations were established by the Law on Agricultural Experimental Control Stations in 1922 (February 12), published in the Official Gazette of the Kingdom of Serbs, Croats and Slovenes by amending the Ordinance of the same name of November 10, 1919. This Law clearly defines the task, arrangement, jobs, specific duties and salaries of employees in agricultural stations.

After the Second World War, agrarian reforms and socialization of agriculture in terms of dividing the land into landless people and fragmenting plots, in 1952, first the Regional Plant Protection Stations were formed, and then the District Agricultural Stations in 1956. On the territory of the SFRY, at that time, there were more than 100 agricultural stations with a strong personnel structure and great financial support from the then state institutions.

District agricultural stations were transformed into agricultural stations in 1965, and in the early 1970s they were integrated into factories, where they were more oriented to commercial than to individual agricultural producers, which affected the lower level of improvement of agricultural production on agricultural farms.

The Law on Agricultural Service was adopted in 1991 ("Official Gazette of RS" 61/91) and on the basis of the same, agricultural stations and institutes and agro-institutes under the common names "Professional Agricultural Service" were entrusted with professional tasks of improving agricultural production from by the RS Ministry of Agriculture, Water Management and Forestry. This Law defines the conditions, manner of work and financing of services and determines the supervision of services.

Professional and advisory work is performed on individual and other farms in order to improve agricultural production. Significance is given to direct advisory work with farms, instead of forced group methods until then. The notion of selected farms is introduced.

The control of the work of the services was then performed by the IPN in front of the Ministry of Agriculture, and at the beginning of 2000 in AP Vojvodina, that role was taken over by the Secretariat for Agriculture of AP Vojvodina.

At the beginning of 2008, the Conclusion of the Government of the RS in the then Socially Owned Enterprises (SOEs) - agricultural stations determined the share of state capital of 100 percent and thus the RS took over the founding and management rights in proportion to the state capital. The main reason for this transformation is the protection against possible bad privatization of agricultural stations and their preservation with staff and equipment due to their importance for the development of agriculture in Serbia.



At the end of 2008 and the beginning of 2009, the RS Government, based on the Companies Act and the Government Law, passed individual Decisions on Amendments to the Founding Act of Agricultural Stations, which changed the name of agricultural stations as social enterprises to Agricultural Professional Services, Limited Liability Companies. The same Act regulates the status of a company as a legal entity that operates with state-owned assets, as well as all other provisions that regulate the manner of business, activity, capital, bodies and acts of the company.

Based on the aforementioned Decision and the established status, the Agricultural Advisory and Expert Services (PSSS/FAS) in Central Serbia and the Agricultural Expert Services (PSS/FAS) in AP Vojvodina still function on the same basis.

In Serbia, there are agricultural services distributed according to the regional or district principle.

- There are 19 PSSS/FASs in Central Serbia, founded by the Republic of Serbia, and three private services.
- There are 12 regional PSS/FAS operating in AP Vojvodina.

Approximately 195 advisors are employed in the services in Central Serbia, and 84 advisors in the services in Vojvodina, in final score with cca 300 advisors in Serbia.

## **4. The agricultural and forestry advisory service(s)**

### **4.1. Overview of all service suppliers**

The front-line units for delivering advice to farmers are 34 “Agricultural Stations”, of which:

- 12 are in Vojvodina
- 22 are in Central Serbia

The network of Agricultural Stations was established in the Socialist Federal Republic of Yugoslavia, where they each had the structure of “socially-owned enterprises”. Privatization of these stations was begun in 2003, following the model used for other socially-owned enterprises, but was then halted in recognition of their special character and public-good function after just one station (Loznica) had been privatized with 2-3 newly established private regional services. After some discussion the remaining 33 were transformed into separate state-owned companies, following the alternative legal model then available for the transformation of the former social sector. This specific history explains why the extension service currently comprises 34 largely independent legal entities.

Within Central Serbia, strategic management is exercised by the Department for Extension of the Sector for Rural Development in the Ministry of Agriculture and Environmental Protection.

Day-to-day management and monitoring, together with training of advisors and a number of other specific functions, are assigned to the Institute for the Application of Science in Agriculture (usually known by its Serbian acronym “IPN”). Funding comes from the state budget.

Within Province of Vojvodina, a department within the Provincial Secretariat exercises both strategic and tactical management, and funding comes from the Province budget.

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

The primary legal basis for extension work throughout the Republic of Serbia is the *“Law on providing advisory and specialised services in the field of agriculture”*. It sets out the objectives, tasks, institutional structure and funding of extension in Central Serbia, but for Vojvodina devolves each of these functions to the government of the Autonomous Province of Vojvodina.

The law, adopted in 2010 to replace the previous law from 1999, covers four main issues:

- 1) It defines agricultural advisory services and their objectives, as well as “expert services” such as plant pest forecasting and soil testing, and says that advisory services can only be carried out by legal entities registered for this purpose, that they may not also sell or promote agricultural inputs or machinery, and that all that advisors must be licensed, registered and employed in an advisory service. These provisions apply to all advisors, whether in the state system or private sector, and the law specifically includes the possibility for Local Governments (Municipalities and Cities) to provide advisory services.
- 2) It establishes an *“Expert council for advisory work and applied research in agriculture”*. In principle this is responsible for all forms of advisory work, though in practice its main role is strategic management of the state advisory services in Central Serbia and in Vojvodina.
- 3) It defines mechanisms for training advisors from all parts of the system, public and private, and assigns responsible to an “authorised research organization”, i.e. to IPN.
- 4) It defines mechanisms for planning, management and funding of the state extension service and allocates responsibilities between the responsible department in the Ministry of Agriculture and the “authorised research organization” - IPN.



Figure 2 Map of Regional FAS offices in Serbia (300 advisors, 34 offices).

### 4.3. Human resources and methods of service provision

Approximately 200 advisors are employed in the services in Central Serbia, and less than 100 advisors in the services in Vojvodina, in final score with cca 300 advisors in Serbia.

- There are 19 PSSS/FASs in Central Serbia, founded by the Republic of Serbia, and three private services.
- There are 12 regional PSS/FAS operating in AP Vojvodina.

#### METHODS OF SERVICE

The basic legal regulation for performing advisory work on the entire territory of the Republic is the "Law on performing advisory and professional work in the field

of agriculture", which was passed in 2010. This Law defines primarily advisory, but also professional work in agriculture, their goal and states that advisory work in agriculture can be performed by companies founded by RS and registered under certain activity codes, but also other legal entities registered under the same codes, if they have one employed advisor. According to the same Law, companies that perform consulting activities cannot produce or advertise producers of inputs and mechanization in agriculture.

The law lists advisory activities in agriculture, as follows:

- 1) providing professional assistance in the application of scientific achievements and new technologies;
- 2) provision of expert advice and services, transfer of practical knowledge and skills of technological - technical improvement of production;
- 3) acquainting agricultural producers with good agricultural practice;
- 4) conducting demonstration experiments in various areas of agriculture;
- 5) training of agricultural producers for the management of agricultural holdings and keeping accounting records of the holding;
- 6) assistance to the affirmation of rural development;
- 7) application of advice on plant protection on the basis of data from the forecasting and reporting service;
- 8) encouraging interest associations and entrepreneurship in agriculture;
- 9) providing advice and giving proposals for the expansion of economic activities as additional activities on the farm;
- 10) giving recommendations in the field of animal husbandry;
- 11) giving advice and recommendations on rational land use;
- 12) providing advisory assistance in other areas in which agricultural producers express interest. "

Advisory jobs in agriculture are defined by the same Law, as jobs of interest to the RS and they can be performed by legal entities and entrepreneurs who perform advisory work. An agricultural advisor may not perform professional tasks at the same time as an advisory one, according to this Law.

The Law also stipulates that advisors must be licensed, registered and employed in the counseling service. It is planned to form an "Expert Council for Advisory Affairs and Applied Research in Agriculture", which the Minister will establish as a special working group - the Expert Council.

Council is responsible for all forms of advisory activities, gives proposals, opinions, and evaluates proposed acts and has a major role in the strategic management of advisory services in Serbia.

The Law defines the mechanisms of education of advisors, public and private, and prescribes the "authorization of a scientific research organization" (IPN) and the Education Center for the same as responsible institutions.

The main goals of advisory work in agriculture, based on the "Decree on determining the medium-term program for the development of advisory work in agriculture for the period from 2011 to 2015" are to raise the knowledge and information of agricultural producers to achieve the following:

1. increase the competitiveness of production, through adjustment to market requirements, increase revenue and product quality standards;
2. harmonization of production and processing with EU rules, in order to be competitive on the EU market;
3. use of loans, subsidies and funds from EU pre-accession funds;
4. development of entrepreneurship;
5. interest grouping;
6. conservation of natural resources;
7. environmental protection and
8. rural development.

The manner of conducting activities based on the Medium-Term Program is done by applying individual and group methods, mass media and monitoring, data collection and dissemination.

Individual methods of advisory work imply the provision of all types of advice and assistance of advisors through direct, direct contact with agricultural producers and on the basis of this method the achieved effects of advisory work can be monitored. In addition to the main goal of this method to raise the level of knowledge and information of agricultural producers in all spheres of agricultural production, to increase competitiveness and farm incomes, individual advisory work enables the formation of an adequate database of selected farms with all structural and economic factors.

The result expected by applying this method is primarily an increase in economic effects based on gross margin in selected farms.

Group methods of advisory work include contact of advisors with groups of agricultural producers, in order to increase the total number of users of advisory services. They are based on holding lectures, workshops and seminars, on organizing forums and field days, as well as on direct contact with representatives and members of associations and informal groups.

By applying this method, a mass of agricultural producers is expected to apply the acquired knowledge and gain trust in advisory services.

The broadest information of agricultural producers is achieved by using the media in advisory work such as television, radio and other electronic and print media.

Other bylaws, in accordance with the Law on Advisory and Professional Affairs in the Field of Agriculture are:

- Rulebook on the content and manner of keeping the Register of Agricultural Advisors ("Official Gazette of RS" No. 67/14),
- Rulebook on the form and content of the identification card of the agricultural advisor, as well as the manner of its use, issuance and annulment ("Official Gazette of RS" No. 72/14) and
- Rulebook on detailed conditions for issuing a license for performing advisory activities in agriculture ("Official Gazette of RS" No. 80/14).

These Regulations are in the function of mandatory licensing of advisors and apply equally to the advisory board of Central Serbia and AP Vojvodina. Serbia has adopted a number of strategic documents. These documents, in some of their chapters, contain parts related to agricultural advisory, which again gives importance to this topic when it comes to Serbian agriculture and its development.

The umbrella document is the Law on Agriculture and Rural Development, which prescribes that "agricultural policy and rural development policy of RS be implemented through the implementation of the Strategy of Agriculture and Rural Development, the National Program for Agriculture and the National Program for Rural Development."

Within the key principles of the Strategy of Agriculture and Rural Development of the RS, and in accordance with its vision, two principles are of special importance for the advisory service, namely:

1. growth of productivity of the agricultural sector in accordance with technical - technological progress and innovation of products and solutions
2. modernization of institutions - bodies and organizations of the Ministry of Agriculture, Forestry and Water Management for the purpose of efficient

management of public policy with the aim of availability of EU pre-accession funds and harmonization of agricultural policy with EU standards.

The main goal of advising is to raise the productivity of agricultural production, and in order for advisory work to be more efficient, modernization should be carried out - reform of advisory services.

In accordance with the principles, the strategic goals of the Strategy have been determined, and several pillars of reforms have been identified for their implementation, of which "establishing more efficient and operational systems for implementing existing and creating new knowledge and its transfer" is of particular importance for the agricultural advisory system. The first links in the chain of knowledge transfer directly to agricultural producers.

Within the part of the Priority Areas of Strategic Changes of the Strategy, "improvement of the knowledge transfer system and human resources development" is stated as one of the priorities that is important for increasing the competitiveness of agricultural production through harmonization of new knowledge and technologies with real needs of farmers.

The importance of agricultural services was emphasized in this segment of the Strategy, with a suggestion for stronger cooperation between faculties and institutes with the Ministry and PSSS/FAS, in order to make the transfer and adoption of knowledge by producers more efficient.

The strategy, in this part, emphasizes that advisory work should be more focused on groups of farmers due to the small number of advisors and that in that sense it should enable the commercialization of advisory activities, ie the participation of private advisors.

#### **4.4. Clients and topics**

The most important clients and activities related to FAS are as following:

- Visits to "chosen farms" accounts for 25.7 % of all points, more than twice as much as the next-highest activity (workshops, 12.3 %) and almost three times as high as visits to other farms, at 9.0 %. It is also very variable, with some advisors spending up to 44 % of their time visiting chosen farms;
- Visits to "other farms", the most powerful way in which advisors can respond to individual farmers' needs, now account for less than one tenth of total time input. Whilst there are good arguments for limiting the share of resources given to this relatively time-consuming private-good activity, it seems as though



this may have been taken too far, leaving advisors with insufficient resources to address serious needs when they arise;

- Lectures, workshops and Winter Schools – all forms of structured education for groups of farmers – account for 24.3 %. The idea of a “thematic farmer group”, where farmers with similar interests meet regularly to learn from each other with the advisor’s support, has not yet been developed in Serbia;
- Public policy discussions) where advisors present and discuss new regulations and support measures, account for 6.2 % of advisors’ time, which seems perhaps a little high;
- Field days and visits to demonstration farms together account for just 4.0 %; given the amount of resources that can go into a demonstration farm or field trial, and the “seeing is believing” impact these can have, it might be worth putting a little more time and effort into bringing more farmers to see these activities;
- Of the 18.8 % spent on mass information, attention might be focused on the 5.0 % spent on writing texts for Agricultural Stations’ monthly bulletins: there is a lot of repetition in these texts (i.e. similar information being printed by different Stations) and the circulation is generally small (according to the regulation, the normal circulation should be equal to the number of chosen farms plus 20 %, i.e. a few hundred);
- The time input for the “STIPS” market information system and the “FADN” farm accountancy data network together averages 2.9 % of the advisors’ time, but with a lot of variation between advisors and between Stations (some of which are not involved in STIPS at all);
- Reporting to the Ministry on arable and fruit production (a task that in most western countries would be carried out by the Statistical Office) accounts for 1.1 % of time.

## 4.5. Linkages with other AKIS actors/knowledge flows

IPN - ISAA – Institute for Science Application in Agriculture, Belgrade is engaged in research and experimental development in the field of biotechnical sciences, applied and development research in the multidisciplinary field of agriculture and rural development. The Institute has employed experts from all areas of agriculture

ISAA is an authorized organization for conducting training and development of agricultural extension agents and agricultural producers according to the decision of the Ministry of Agriculture.

This model of work of ISAA is a model of effective knowledge transfer system.

Transfer of scientific research achievements in all fields of agriculture towards agricultural advisers and farmers was carried out in cooperation with:

- Ministry of Agriculture and Environmental Protection of the Republic of Serbia,
- Ministry of Education, Science and Technological Development
- International Donors,
- a number of educational and research institutions in our country, continuously conducting training agricultural extension agents and farmers.

Since 2019, IPN/ISAA is Authorized CECRA training provider.

## **4.6. Programming and planning of advisory work**

In Central Serbia, the Department of Agricultural Advisory and Rural Development at the Ministry of Agriculture, Forestry and Water Management is in charge of the service management strategy, programming and planning.

Control and monitoring of the work of services, organization of training of advisors and other activities related to advisory work are performed by IPN.

In Vojvodina, strategic management, programming and planning is performed by the Department for Agricultural Advisory at the Provincial Secretariat for Agriculture, while the "mirror" organization to IPN is the newly established "Education Center" in Sremski Karlovci.

Planning documents, Medium-Term and Annual programs for the development of advisory activities in agriculture are also defined by this Law. They have the form of a Decree, as a bylaw. The medium-term program, in accordance with the strategy of agriculture, determines the goals of the development of advisory

activities, as well as the manner and deadlines for their realization. It predicts the expected results and defines the method of financing.

The medium-term program is adopted by the Government of RS for Central Serbia, and the competent body of AP Vojvodina for Vojvodina for a period of five years.

Based on the Medium-Term Program, every year the Government of the RS and the Competent Authority of AP Vojvodina adopt Annual Programs which regulate specific activities in the areas where advisory work is performed. The programs contain the scope, deadlines, manner of implementation and manner of control over the implementation of activities as well as the source, manner and schedule of use of funds.

PSSS/FAS, founded by RS, submits a request for getting the right to use funds to perform advisory work, and legal entities and entrepreneurs in areas where the Government has not established PSSS/FAS participate in the competition.

The Decree on Determining the Annual Program for the Development of Advisory Affairs regulates the Annual Program for the Development of Advisory Affairs in Agriculture for each year.

The Annual program must be in accordance with the Law on Performing Advisory and Professional Affairs in Agriculture, the Medium-Term Program, the Law on Incentives in Agriculture and Rural Development, the Law on RS Budget and the Law on Government, ie their members related to agricultural advisory.

The Annual program determines the areas in which advisory work is performed in agriculture, the number and area of advisors in each area and the PSSS/FAS, which will perform advisory work in those areas.

In accordance with the "Rulebook on the manner of performing advisory work in agriculture", as a bylaw, the annual program defines specific activities, their scope and scoring them by advisor or by service, depending on the type of activity. In that way, the minimum number of points that each of the advisors should achieve in order to achieve the plan for the current year was determined for each year.

The Annual program for each type of planned activity defines its number, frequency and duration per advisor or service, as well as the territorial distribution of individual and group activities according to the area of work of the advisory

service. The same Program also envisages certain topics for individual, mostly group activities, which are current for the year for which it has been determined. The Annual program is a document on the basis of which the source, schedule and manner of using financial resources for the implementation of advisory work in the year for which it was adopted have been determined. Funds for the implementation of the Annual Program for Central Serbia are provided in the RS budget, and for the implementation of the Annual Program for Vojvodina, in the budget of AP Vojvodina. The total amount of funds provided in the RS budget is distributed to individual amounts according to the purpose and user of funds.

The beneficiaries of the funds are PSSS/FAS and the Authorized Organization. PSSS/FAS purposefully uses funds for advisory work, for the work of advisors and other costs that accompany advisory work and part of the funds allocated for the development of PSSS/FAS, ie for strengthening the capacity of PSSS/FAS by supporting the improvement of investment conditions in PSSS/FAS.

The Annual program for the improvement of advisory work in agriculture in AP Vojvodina is adopted by the competent body of AP Vojvodina - the Provincial Secretariat for Agriculture, Water Management and Forestry (Secretariat) and within the same the Rulebook on the work of advisors for the same year. In Central Serbia, the Rulebook is a bylaw that is not adopted annually.

The program consists of Basic and Special programs. The basic program determines: programs and projects based on advisory activities, which are intended for agricultural producers for PSS; equipping PSS and setting up experiments in accordance with the adopted methodology; education of advisors and agricultural producers; equipping and developing the Training Center; enga training of new advisors in PSS and laboratory analysis in PSS and Oenological Station.

Special programs refer to the implementation of advisory work and projects intended except for public and private advisory services and to the implementation of projects intended for faculties and agricultural schools from the territory of APV. The realization of projects on the basis of special programs is preceded by a competition announced by the Secretariat.

The scope, manner and realization of advisory work and advisory activities in APV are specially regulated in the Rulebook which is in accordance with the Annual Program.

The main differences in the essence of the Annual Programs of Central Serbia and AP Vojvodina, when it comes to advisory work are as follows:

- the work program of advisors in Vojvodina is oriented to the project tasks of each advisor, which include all types of activities, unlike Central Serbia where the activities are listed according to a certain number,
- advisory work in Vojvodina is based on a closed circle of project activities for a particular farm and is more focused on determining the economic parameters of the farm's business based on agro-economic production indicators, which is not a priority in Central Serbia,
- control and reporting, as well as the work of advisors, are carried out on the basis of GPS data and GPS system codebook established by the Secretariat, on the basis of which the work of advisors is evaluated in accordance with the Rulebook.
- the influence of the Authorized Organization in Vojvodina is not as important for these activities as in Central Serbia,

**Knowledge transfer** in the field of agriculture is implemented through a system of formal education at all levels (from secondary education to doctoral studies), through various types of training organized by educational and research institutions and organizations and institutions, PSSS/FAS, private companies and project units, media etc. (RS Agriculture and Rural Development Strategy for the period 2014 - 2024, 2014).

The main role of agricultural advisory services in Serbia consisted mainly in collecting information, innovations and knowledge from research and educational institutions in agriculture and transferring them to agricultural producers, and in order to increase production and productivity and introduce innovations in agricultural practice. The activity and advice of advisors were mostly based on biological and technical - technological knowledge in agriculture.

The development of a market economy with an emphasis on the economic and organizational aspects of the production of consulting sets the task to move from the production to the market and development mission.

Increasing the competitiveness of agricultural production and training farmers for more successful agricultural production and farm management are a priority of advisory work and activities of the PSSS/FAS.

The same tasks are defined as priorities by the Law on Performing Advisory and Professional Affairs in the Field of Agriculture, 2010.

In order to develop advisory services in the direction of adequate knowledge transfer and improve the competitiveness of the agricultural sector in Serbia, since 2010 IPN organizes training of agricultural advisors with increased intensity of participation in agro-economic topics (modules).

- IPN prepares annual plan of training of extension agents and agricultural producers (GP / ATP).
- Annual training plans are developed on the basis of regular assessments of the needs of advisors, farmers, agribusiness and agricultural sector.
- The modules are implemented in a period of 1 to 5 days, combining theoretical and practical work.
- Theoretical classes are held in Belgrade in the ISAA.
- For modules related to modernization of knowledge (modern technology) are also planned activities in the field, in order to better recognition of problems, and refer to the modern technologies in the field of farming, animal husbandry, horticulture and plant protection.
- For the practical part IPN/ISAA provide locations with adequate facilities, closely related to theoretical classes.

#### **4.7. Advisory organizations forming the FAS and evaluation of their FAS implementation**

The Annual Program defines the manner of reporting on performed advisory activities, which is preceded by the PSSS/FAS Advisory Work Plan submitted to the Ministry and the Authorized Organization (IPN). The manner of reporting to the advisors on the performed activities is envisaged, as well as the quarterly report of the PSSS/FAS in electronic and written form, as well as the reporting deadline.

Within the annual program, the Authorized Organization is in charge of reporting to the Ministry on a quarterly and annual level on the implementation of advisory activities as well as to monitor and evaluate the effects of the work of advisors based on established methods.

The authorized organization purposely uses funds for monitoring and evaluating the effect of the work of advisors for the salaries of a certain number of executors and the costs that accompany them for the development of PSSS/FAS, for training advisors and making materials, organizing an annual seminar of consultants and for developing the PSSS/FAS portal in Serbia.

The participation of the Authorized Organization in the use of total funds for the performance of advisory activities in Central Serbia is approximately ten percent in each year.

Control, reporting and evaluation of work and evaluation of activities are also regulated by the Rulebook.

The program envisages the number of professional services and the number of hired advisors by services, as well as the source, manner and schedule of used funds for the basic and special program.

## 5. Summary and conclusions

### 5.1. Summary and conclusions on sections 1 – 3

The Agricultural Knowledge and Information System (AKIS) model describes how knowledge generation functions, and how it is disseminated and applied.

The actors at the knowledge policy level are the Ministry of Agriculture and the Ministries of Science and Education.

The knowledge generation level encompasses research institutes and institutes of higher education.

Serbia has a comprehensive agricultural education system, which is organized through a number of agricultural schools and university faculties. The whole system is under the authority of the Ministry of Education, which is responsible for the design and the implementation of the curricula. Secondary schools provide basic agricultural knowledge but course are little practice oriented. Agricultural faculties (*e.g.* Belgrade, Novi Sad, Cacak) provide comprehensive and multidisciplinary agricultural studies.

In the Western Balkans, current agricultural extension structures have been developed mainly within the last two decades with the help of international donors (FAO 2011). Serbia is an exception as agricultural extension service started its initial development during the 50s of the last century. In fact, in the period 1953-1960 was sat up a network of agricultural stations. During this period was formed the Centre for the Improvement of Agricultural Production and the Department of Livestock Breeding. Nowadays, the legal successor of the Centre and the Institute is the Institute for Science Application in Agriculture.

As for the institutional setup of public extension, Serbia has a national structure with direct field branches at the regional level. These cover a number of municipalities. The network of professional extension services in Serbia is coordinated by the Institute for Application of Science in Agriculture, which is under the auspices of the Ministry of Science. About 300 field advisors and administration staff are employed by the Serbian public extension. Agricultural extension and advisory system in Serbia is composed by public extension and private advisory services.



The development of advisory services in the Western Balkans started after the years of crisis and war with the strong support of international donor projects. Donor projects are still active at national level in Serbia (*i.e.* World Bank project). The common strategy of all donor projects was to establish and support advisory structures (public and private) in order to select and train advisors and to provide them with the necessary tools and materials for their everyday work. In almost all cases the establishment of potentially workable extension structures can be called successful. Extension agents have been provided with a sound base of technical (and partially methodological) knowledge and skills, before being left on their own.

Support for public services in agriculture (*e.g.* extension service, veterinary and phytosanitary services, etc.) in Serbia is provided but the share of agricultural budgetary funds dedicated to these services is small. Within the general services sector, the greatest proportion of support funds is directed to extension services or to financing agricultural expert service (34-56 %).

Extension organisations emerged from the former extension systems for state owned and individual farms. The majority of the field staff within the system are agricultural experts from the former system. In fact, the majority of advisors are over 40 years. This strengthens two biases: the strong focus that is still directed towards production techniques and the relative preference given to large farms with respect to small and medium holdings.

Until 2010 no systematic training was on offer for Serbian field advisors. The ISAA performed practical training courses to extension agents but they were not regular and to a large extent production technology oriented. The Serbian Transitional Agriculture Reform project (STAR) takes up training activities in 2010 preparing for the provision of an advisor training program. The Institute for Science Application in Agriculture started educational activities of extension agents – with the support of World Bank project and the Ministry of Agriculture, Forestry and Water Management of Serbia – and become a national training and support institute for agricultural advisory services.

As of 2011 (FAO 2011), Serbian extension agents needed training sessions mainly on the following issues: extension methodology; farm economy, farm management and whole farm development; marketing, market development and value chains; national rules and regulations; EU regulations relating to production,

marketing and product quality; supporting farmer groups and associations; specific computer programs; and foreign languages. The Institute for Science Application in Agriculture (ISAA) started in 2010 training activities dealing with most of these issues in the whole country.

Monitoring of advisory work is fairly advanced in Serbia, having a considerable database on advisors' activities, farmers' needs and the results of on-farm research. However, monitoring is more about examining the activities of advisors than documenting the impacts of advisory work. Moreover, the data that is collected is not used to its full potential for supporting the advisory system management.

## **5.2. Summary and conclusions on sections 4**

Transfer of scientific research achievements in all fields of agriculture towards agricultural advisers and farmers was carried out in cooperation with:

- Ministry of Agriculture and Environmental Protection of the Republic of Serbia,
- Ministry of Education, Science and Technological Development
- International Donors,
- Educational and research institutions in our country, continuously conducting training agricultural extension agents and farmers.

ISAA is an authorized organization for conducting training and development of agricultural extension agents and agricultural producers according to the decision of the Ministry of Agriculture. Since 2019, IPN/ISAA is Authorized CECRA training provider.

This model of work of ISAA is a model of effective knowledge transfer system.

AKIS in Serbia in future will give special attention to the transfer of research results to the end users, in accordance with the concept of the European Innovation Partnership (EIP), trying to keep involvement of all relevant stakeholders in agriculture in the joint action whose aim is to transfer knowledge to farmers and processors.

## **6. Acknowledgement of partners, information sources and gaps**

A very special thanks for support to all SEASN partners, i2connect coordinators and partners, IALB and EUFRAS.

## References

Personal records

Reports from World Bank funded project – Serbian Transitional Agricultural Reform Project (STAR)