



Prospects for Farmers' Support:
Advisory Services in European AKIS

AKIS and advisory services in the Slovak Republic
Report for the AKIS inventory (WP3) of the PRO AKIS project

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Executive summary

The main objective of the country report is to provide a comprehensive description of the Agricultural Knowledge and Information System (AKIS) in the Slovakian Republic, with a particular focus on agricultural advisory services. The description includes history, policy, funding, advisory methods and a section on how the Farm Advisory System (FAS) was implemented.

The establishment and foundation of agricultural extension in the Slovakian Republic, and its development during the course of transition of the national economy, during preparation for EU accession, as well as after accession itself was very diverse. From 1994 to 2000 all of Slovakian agriculture farms experienced negative economic results. Net profits were only achieved in 2005, the first year after EU accession. This trend continued up to 2008 but later as a result of the impact of the world financial and economic crisis and the extensive floods in 2010 total expenses rose higher than net profits. From 1990, the share of agriculture, forestry and fisheries of gross domestic product has continuously declined and in 2011 it was recorded to be only 2.69% (as a comparison, in 1990 this indicator was 6.60%). The same analogical trend was also noted for food processing, the share of which was 2.67% of the national GDP in 1995, while in 2010 it was only 2.00%.

In the Agricultural Knowledge and Information System (AKIS), people and institutions are interlinked in order to generate new knowledge, share experiences and transfer this among themselves with the aim of introducing them to agricultural and rural practices. This kind of system only functions well in a situation where farmers, teachers from universities and secondary schools, support services and vendors/mediators are well integrated, with the objective of obtaining new knowledge and information from different sources about more sustainable land management, sustainable use of natural resources, and for improving the living conditions of farmers and the rural populations.

Despite this, the integration of people and institutions in relation to research and extension, as well as links among the farmers' community, were not successfully developed during transition after EU accession. Regrettably it should be highlighted that this unfavourable situation continues and no significant changes have materialized with regard to the effectiveness of the agricultural extension system. The extension services are under supported or not operating at a satisfactory level in relation to the financial resources, space and mobility, and lack the capacity to orient themselves, in a flexible way, to the new challenges and be quick enough to obtain the most up- to-date information in a timely manner.

Due to financial limitations and uncompleted architecture, the extension services did not fully meet the expectations of agribusiness professionals. Following EU accession, the whole system was renovated in 2007 with the target of harmonizing it with the requirements of Cross Compliance.

Among the most challenging issues facing agricultural extension are the following:

- The need for more professional dissemination of information to meet the demands of different kinds of EU programmes/projects,
- Orientation of the sector towards a more dynamic, effective and competitive market with

respect to agricultural commodities; successful management of the negative impacts of climate change and assurance of sustainable management of natural resources; enhancement of measures to tackle the effects of the economic and financial crisis and to promote improvement of the overall performance of agricultural extension,

- Currently, the agricultural extension service is not playing as active a role as it should be in the EU environment. Moreover, it is not considered as a government priority, despite the fact that its role was substantially highlighted following accession of the Slovak Republic to the European Union, particularly in connection with utilization of EU financial resources,
- What is expected of agricultural extension is that it will become more market-oriented, which would help farmers to achieve a higher marketability for their products. Extension activities should be oriented towards strengthened vertical and horizontal integrating links alongside the commodity production chains,
- With regard to the new CAP a very important task is the establishment of procurement/sales cooperatives or associations. If they play their role in an effective way, they can have a positive impact on the sector avoiding the negative impacts of the volatility of price surges and supporting sector stability,
- Furthermore, the Government policies can greatly influence the costs and returns of extension. Price, trade, fiscal and exchange rate policies influence commodity prices. Commodity prices, in turn, significantly influence the rates of return to research investments in different areas or commodities and subsequently the nature of information that is available for dissemination. Commodity prices, as they influence farm enterprise incomes, will also determine the affordability of buying extension services. The nature of the Government's technology and regulatory policy will similarly enhance or restrict access to the technologies which can be introduced by extension agencies.

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List of Acronyms

AEA	Agricultural Entrepreneurs Association
AKIS	Agricultural Knowledge and Information Systems
APA	Agricultural Paying Agency
AWU	Annual work unit
CAP	Common Agricultural Policy
CC	Cross Compliance
CU	Cooperative Union
DESIPAP	Development of Extension Services to Improve Primary Agricultural Production
EIP	European Innovation Partnership
ESU	European size units
FAS	Farm Advisory System
FBO	Farmer-Based Organisation
FEE	Institute for Forestry Extension and Education
GDP	Gross Domestic Product
IFA	Individual Farmers Association
ISO	International Standardization Organization
LEADER	Links between the rural economy and development actions
LSU	Livestock unit
MOARD	Ministry of Agriculture and Rural Development
NGO	Non-Governmental Organisation
R&D	Research & Development
RDP	Rural Development Programme
RIAFE	Research Institute for Agricultural and Food Economics
SCAC	Slovak Commerce and Agricultural Chamber
SFCH	Slovak Food Chamber
SMEs	Small and Medium Size Enterprises
SMFs	Small and Medium Size Farms
SMR	Statutory Management Requirements
TAC	territorial advisory centres
UAA	Utilised agricultural area

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1. Main structural characteristics of agricultural sector of the country

According to the 2010 Census the population of the Slovak Republic is **5,404,322 citizens**. 2,192,500 of them belong to the active working population.

The agriculture sector is comprised of **444,000 employees** which represents – **4.38%** (2012) of the population. The number of employees has dramatically declined from 1990.

GDP per capita in the national economy achieved **8 900 EUR** (2012).

After EU accession the share of agriculture on GDP is sharply scaling-down by achieving **2.29%** in 2012.

The number of agricultural holdings in ESU is **68,989** (table 1.). The distribution according to the size expressed in ESU is expressed in table 1.

Table 1. The Number of Holdings in the Slovak Republic According of Economic Size thresholds [in ESU] 2007

The number of size according ESU	Total number of holdings
1 - less than 2 ESU	61 221
2 - from 2 to less than 4 ESU	2 909
3 - from 4 to less than 6 ESU	938
4 - from 6 to less than 8 ESU	505
5 - from 8 to less than 12 ESU	563
6 - from 12 to less than 16 ESU	396
7 - from 16 to less than 40 ESU	871
8 - from 40 to less than 100 ESU	602
9 - from 100 to less than 250 ESU	452
10 - 250 ESU or more	532

Source: SO SR

- 1.1.** According to the data, in 2007 the number of farms was 68,989. In 2010 the number of holdings dropped to 24,463, which represents a decline of about 64.5%.
- 1.2.** With regard of the age of agricultural holders the average age is about **45 years**. 16% of holders are aged 15 to 34; while 37% of holders are aged 35 to 49, and the highest share is in the group aged 50 to 59, represented by 41%, and those aged 60 and over represent 5% of holders.

Land and ownership titles to land

- 1.3.** In 2011, the area of utilized agricultural area represented 1,929,698 hectares from which the arable land is amounting 13,584,000 ha, 31,372,000ha belong to home gardens, 513,029 ha to meadows with pastures, while 23,468 ha are permanent cultures. The area of utilized agricultural area grew by 7,737 ha. The overall increase was influenced mainly by an increase in the area of permanent meadows and pastures by 5,201 ha and the area of arable land by 3,987 ha. The area of perennial crops dropped about 1,336 ha.

- 1.4. The average size of one agricultural holding is 205 ha (arable land – 179 ha) of agricultural land and in the agricultural enterprise – 1519ha (arable land – 996 ha). In total 2,845 individual holdings and agricultural enterprises are receiving the direct payments and the payments with EU and national top ups represent 257 EUR per ha (2011).
- 1.5. Altogether 516,000 people are working in agriculture from which 6,9000 are considered to be entrepreneurs, 444,000 are employees and the 3000 as family members working on the family farms.
- 1.6. In the year 2011, the agricultural output was 2,167.3 mil. EUR with net income 45,7 mil. EUR. The added value was 4,555 mill. EUR.
- 1.7. The production of crops is expressed in the table 2.

Crop production

In 2011, the area sown with agricultural commodities had increased by 0.9% to 1,329.5 thousand ha. From the main crops, planting areas have increased in the group of annual fodder (10.8%), cereals (3.3%), perennial fodder and sugar beet technical (2.2%). From the thickly planted cereals, sown area has grown in the groups of corn (8.4%), wheat (4.1%), and other cereals (15.6%).

The production has increased in almost all crops, most significantly in lentils (186.7%), potatoes (72.6%), edible peas (61.4%), corn (56.8%), barley (45.3%), and fodders on arable land (30.8%). Oilseeds production has increased by 14.8% of which sunflower by 33.7% and rape by 3.0%. The production of fodder root-crops has fallen by 49.3%, mainly due to the decrease in harvesting areas (58.9%). The production of sugar beet, as a result of higher yield per hectare, has increased (18.7%).

Table 2. Crop production in 2010 -2011 in the Slovak Republic [th. t]

Crop	2010	2011
Cereals total:	2554.2	3714.1
Wheat	1185.0	1631.1
Barley	361.4	525.0
Maize	921.3	1444.4
Sugar beet	977.7	1160.7
Potatoes	125.9	217.3
Oilseeds	500.7	574.6
From which: rape	322.5	332.2
Sunflower	150.3	201.0
Legumes	1.07	17.9
Fooder roots	21.8	11.1
Fruits	40.5	40.1
Vegetables	284.4	314.8

Source: SO SR-figures

1.8. Production of Vegetables is summarized in table 3.

Lower fruit production (1.0%) was affected by the decrease in the area of orchards (1.9%). Wine grape production has increased (131.4%) due to the significant increase in yield per hectare (90.0%). In vegetables the increase in yield per hectare (11.6%) increased the production (10.7%) despite the loss of growing areas (1.0%).

Table 3. Vegetable production in 2010-2011 in [th.t]

Crop	2010	2011
Fruits	40.5	40.1
Of which: apples	34.2	32.8
peach	1.9	2.9
Vegetable	284.4	314.8
Of which: tomatoes	36.5	45.1
Cabbage total	46.7	51.0
Wine grape	21.0	48.6

Source: SO SR-figures

1.9. The number of livestock is expressed in table 4.

The number of farm animals is represented in table 4. The highest share of farm animals per hectare in the Slovak Republic has dairy cows (11.31) and pig breeding fattening (3.09).

Table 4. Number of Farm Animals in 2010 in the Slovak Republic

Sort and Category of Animal	Farm Average	Per hectare
Calves up to 6 months	32,56	2,08
Beef cattle breeding from 6-12 months (rearing and fattening)	23,81	1,35
Bulls from 12 to 24 months (rearing and fattening)	28,04	1,00
Bulls over 24 months (rearing and fattening)	4,95	0,15
Heifer from 12 to 24 months (rearing)	59,48	3,52
Heifer over 12 months (rearing)	29,5	1,41
Heifer over 12 months (fattening)	8,27	0,03
Dairy cows	229,63	11,31
Other cows	70,92	1,96
Pig breeding up to 20 kg	9,99	0,18
Pig breeding fattening	141,64	3,09
Sow	32,36	0,71
Ewes	43,05	1,23

Laying hens	1455,74	1,47
Slaughter chicken	563,4	1,93

Source: SO SR-figures

1.10. Animal production is summarized in table 5

The decline in **animal production** was caused by the lower production of most slaughter animals. Compared to the previous years, an increase was only recorded in the production of slaughter pigs (1.8%). The production of cow milk has increased only slightly (1.1%).

Table 5. Animal Production in the Slovak Republic in 2009-2011

Commodity	Unit of measure	2009	2010	2011
Slaughter animal total	t.slau. w.	116 022	114 543	111 889
Of which: Bovine animals	t.slau. w.	27 999	26 319	22 246
Pigs	t.slau. w.	86 558	86 621	88 197
Sheep	t.slau. w.	1208	1 345	1 188
Goats	t.slau. w.	257	258	258
Slaughter poultry	t.slau. w.	79 088	87 998	72 253
Cow milk	T	957 327	917 977	928 315
Eggs	th.pieces	1 176 352	1 244 103	1 242 487
Sheep milk	T	10 415	10 553	10 293
Sheep wool	T	758	693	688

Source: SO SR-figures

- 1.11.** Number of organic holdings is continuously increasing. From total 454 farms individual holdings are representing **364**. In 2012 even **180,260.71** ha have been cultivated as organic ones, what represent from the used agricultural area **8.66%**.
- 1.12.** Number of producers groups in the meaning of producer associations achieved the value – 38-40.
- 1.13.** In 2011 fertilizers have been used on 89.6% of land (954 thousands of hectares). The use of the fertilizers per ha achieved 75.1 kg per hectare in 2011. In total there have been in total 3,553 tons from pesticides used and from this number the insecticides represented 196 tons, herbicides 2,092 tons, fungicides 730 tons and others – 535 tons.
- 1.14.** The percentage of rural areas in Slovak Republic has the upward tendency and in 2011 it was 45.22%.
- 1.15.** EA-32 emissions of NH₃ have declined by 28% between the years 1990 and 2010. Agriculture was responsible for 94% of NH₃ emissions in 2010. The reduction in emissions within the agricultural sector is primarily due to a reduction in livestock numbers (especially cattle) since 1990, changes in the handling and management of organic manures and from the decreased use of nitrogenous fertilisers.

Emissions of NH₃ are covered by the EU National Emission Ceilings Directive (NECD) (2001/81/EC) and the Gothenburg protocol under the United Nations Convention on Long-Range Transboundary Air Pollution (LRTAP Convention) (UNECE 1999). The NECD generally

involves slightly stricter emission reduction targets than the Gothenburg Protocol for EU-15 countries for the period 1990-2010. The Gothenburg Protocol entered into force on 17th May 2005, after ratification by 16 countries early in 2005. The 2012 revision to the Gothenburg protocol proposed emission reduction targets for 2020 relative to the 2005 reported emissions for all EU-27 member states, and some EEA-32 non-EU member states.

1.16. There is no exact data with regard to the area under management of best practices which potentially are supporting biodiversity. However, alongside of the above mentioned 180,260.71 hectares land used for organic farming, Slovakia is striving to maintain the share between the arable land and permanently cultivated land for pastures and meadows, on the level one third, respectively two thirds of the total area of agricultural land with the purpose to ensure the High Nature Value of Farmland.

2. Characteristics of Agricultural Knowledge and Information System (AKIS)

2.1 AKIS description

From the very outset of the transition period in agriculture as well as the main actors of agricultural extension, the following institutions are involved:

- Ministry of Agriculture and Rural Development,
- Research Institute for Animal Production at Nitra,
- Slovak Commerce and Agricultural Chamber,
- Agroinstitut at Nitra,
- Research Institute for Crop Production at Piestany,
- Research Institute for Food and Agricultural economics in Bratislava,
- Research Institute for Soil Sciences in Bratislava,
- Slovak Agricultural University at Nitra,
- University of Veterinarian Sciences at Kosice,
- Technical University at Zvolen,
- Institute for Scientific and Agricultural Information at Nitra,
- National Forestry Centre at Zvolen,
- Institute for Forestry Extension and Education,
- The Agricultural Paying Agency,
- The Rural Development Agency.

Except for the Ministry of Agriculture and Rural Development (MOARD) and Slovak Commerce and Agricultural Chamber (SCAC), all the other listed institutions are fulfilling the tasks of dissemination of knowledge and information, as well as the transfer of innovations and new technologies. They also deal with education and training activities.

- To coordinate the agricultural extension,
- To operate the internet portal – Agroporadenstvo (Agro- Extension),
- To take responsibility for organisation and administration of agriculture extension,
- To deal with education activities directed towards of advisors,
- To be responsible for accreditation of advisors and certification of extension service's agencies,
- It is taking care about Central Register of agricultural advisors and advisors.

The Institute for Forestry Extension and Education fulfils similar activities to the Agroinstitut except for Central Registry.

Other cooperating institutes are specialized research organizations, or specialized public agencies, universities, secondary professional schools, apprentice schools, farmers associations, NGOs and private extension service's organizations.

The receivers of the knowledge, information, education/trainings, innovations and new technologies are: individual holdings, agricultural enterprises (cooperatives, share-holding companies), food processing factories, farmers' associations and the other organizations dealing with farmer's activities and their needs.

The recent national structure of agricultural extension governance and coordination structures is expressed in the diagram (Picture1). From a legal and institutional point of view the main coordinator of agricultural extension is MOARD. All respective works are delegated to Agroinstitut Nitra or in the field of forestry to the Institute for Forestry Extension and Education (FEE).

Those responsible for the initiation and approval of legislative activities/documents are:

- MOARD,
- Government of the Slovak Republic,
- National Council of the Slovak Republic.

The important role played by the initiatives/ guidelines of the European Union should be noted in this regard. The key methodological and managerial activities including planning, programming, implementation of FAS, monitoring and evaluation are under the responsibility of Agroinstitut and IFEE. However in their respective areas with the analogical activities they are dealing with cooperating research, academic institutions and self – governing bodies, as well as advisors and agricultural extension agencies. Obviously, the target groups are farmers and other stakeholders in the agrifood sector.

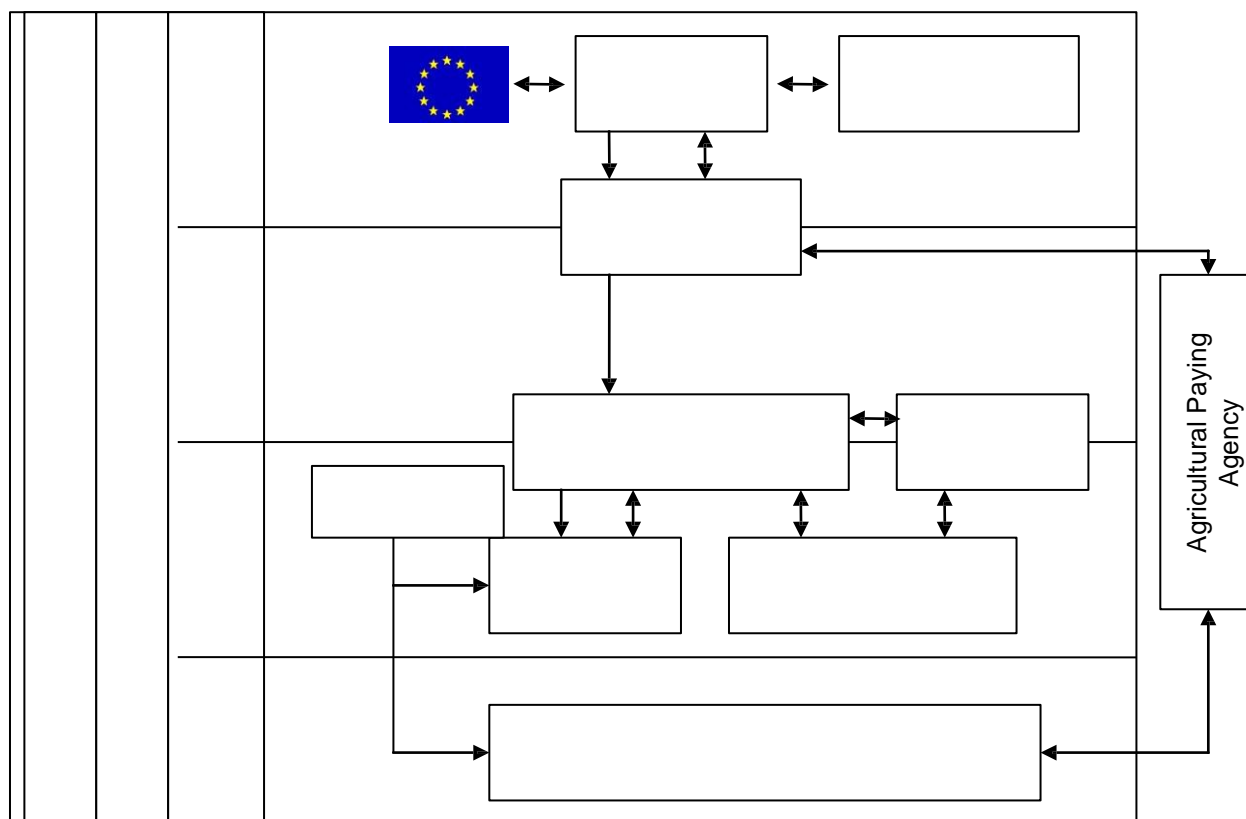


Figure 1. National Structure of Agricultural Extension in the Slovak Republic

Source: Ministry of Agriculture and Rural Development of the Slovak Republic, Internal material

The specific national agreements about knowledge exchange do not exist among the AKIS players. There are agreements on the targeted budgetary allocations of MOARD to individual AKIS institutions. Paragraphs which are referring to responsibility of respective institutions towards of support and facilitation of agricultural extension, knowledge and information exchange sharing and transfer of innovations and new technologies within the existing institutional frameworks are incorporated into these agreements.

2.2 AKIS diagram

The AKIS diagram is actually representing a triangle composed from agricultural science and research, agricultural education and agricultural extension. These main players are focusing their respective activities on farmers, owners of land (arable, grassland, forests etc.), food processors and other involved stakeholders.

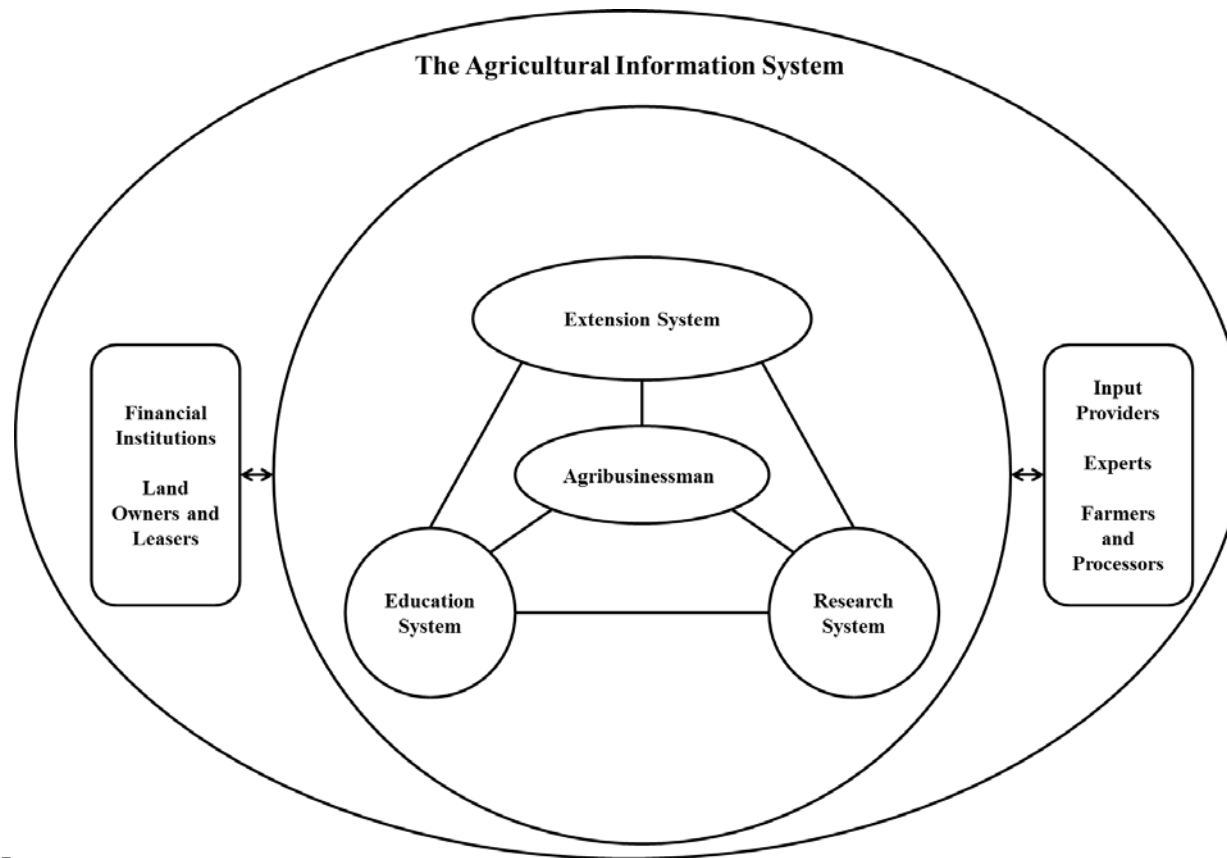


Figure 2. The Agricultural Information System

Source: Own result

Table 6. Overview of organisations creating the AKIS

Provision of service				Source of financing								
Status of the organisation	Type of organisation	Number of organisations	Number of advisors	Public funds			Farmers			Private	NGO	Other (specify)
				EU funds	National funds	Regional funds	Farmers' levies	Farmers' contribution	Billing services	Other products (inputs, outputs)	foundation	
Public sector	Advisory department of the Ministry of agriculture	0										
	Local/regional agencies	0										
	Other (specify)	0										
Research and Education	University	4	9	x	x							
	Research Institute	5	12	x	x							
	Other education bodies (specify)	2	4	x	x	x						
Private sector	Upstream industries	14	14					x				
	Downstream industries	9	12					x				
	Independent consultant	27	37	x	x			x				
	Private agricultural advice company	14	33	x	x			x		x		
	Farmers' owned advice company	0										
	Other (specify)	0										
Farmer based organisations	Farmers' cooperative	1	1	x	x			x				
	Chambers of agriculture	2	2	x	x			x				x
	Farmers' circles/groups	2	2	x	x			x				
	Other	0	0									
NGO		4	5	x	x						x	

3. History of Advisory System

3.1 Development of Extension Services up to 1990

Up to 1990, extension services in former Czechoslovakia were developed under the supervision of the national Ministries of Agriculture. In Slovakia, the main role in this regard was played by the so-called Institute for Systems Management in Agriculture. In addition, a significant function was undertaken by the sector's research institutions and universities, which collaborated first of all with departments of science and development, usually located next to large-scale production and economic units, e.g. Agrokomplex (agricultural production and presentation), Slovosivo (seed production company), or Velko-vykrmne Palarikovo (meat and crop production). Other institutes closely involved with extension were the Slovak University of Agriculture, Nitra; the University of Veterinary Sciences, Kosice; the Slovak Technical University, Zvolen; the Economic University, Bratislava, and others. The term extension was understood at that time as: "the transfer of knowledge into practice". The positive feature of this period was the comprehensive cooperation between science and education on the one hand, and large-scale agricultural enterprises on the other.

3.2 Development of Agricultural Extension in the course of the transition of Agriculture

In 1990, the year after the socio-economic changes, next the Livestock Production Research Institute at Nitra was established as the first agency dealing with agricultural extension entitled AGROSERVIS. This was actually the central leading agency for extension, coordinating all the research institutions acting in the field of agriculture. During the same period a new teaching subject, "Enterprises Consultancy", was introduced at the Slovak University of Agriculture, Nitra, and agricultural extension was also included within the framework of this new discipline. In 1991, British ADAS, in cooperation with the British Know-How Fund, organized a two-year intensive course on agricultural extension in former Czechoslovakia. As an outcome of this initiative, in 1993 twelve Slovak experts obtained graduation certificates from the intensive course focused on agricultural extension. Actually ADAS and the graduates from the course laid down the first basis for agricultural extension in the Slovak Republic.

From an institutional viewpoint, in order to achieve the next development stage regarding agricultural extension, the EU PHARE Development of Extension Services to Improve Primary Agricultural Production (DESIPAP) project was important. This project initiated institutional capacity-building of the agricultural extension services in collaboration with the Government. The philosophy and architecture of the Slovak advisory system stemmed from the experiences of EU countries, particularly of Great Britain, the Netherlands and Austria. In 1998, the public extension system was established. Within this system, 22 extension service centres have been created. Out of these, ten centres were placed next to research institutions, 10 next to regional seats of the Slovak Food and Agricultural Chamber and two were placed in private companies. From the very beginning, the Agroinstitut (a state institution responsible for lifelong education in the food and agricultural sector) was responsible for the education and certification of advisors. Despite this positive initiative developed by the Government and the EU, the activities of the above-mentioned centres have never been fully developed. Due to financial problems and overall

supply constraints, these centres were continuously compelled to interrupt their activities. It is important to note here that the extension activities undertaken during this period are now positively evaluated. This refers to the preparation of Slovak farmers on EU accession, to the successful utilization of SAPARD funds, to the transition from a centrally planned to a market-oriented economy, and to the development of the rural economy and organic farming. However, up to the time of accession to the EU, this system was never developed in real terms.

Table 7. Institutional Capacity-Building of the State Agricultural Extension System

INSTITUTION	FUNCTION
<i>Ministry for Agriculture</i>	Coordination.
<i>Slovak Agricultural and Food Chamber (SAFC – SPPK)</i>	Participation in the implementation of agricultural extension
<i>Agroinstitút, Nitra</i>	Centre for Lifelong Education
<i>UVTIP Nitra</i>	Provided information and operate the internet portal: AGROCONSULTING
<i>Regional Consulting Centres</i>	The organization of seminars, workshops, field days, field trips, excursions, exhibitions, agricultural machinery days, databases and consultants.

Source: Own results

In the pre-accession period, extension played an important role in the transition of agricultural cooperatives and state farms, in the quality enhancement of agricultural products and utilization of pre-accession funds (e.g. SAPARD programme). Furthermore, comprehensive support was provided to the preparation of human resources for the challenging new EU environment. Nevertheless, it should be underlined that the expectations of farmers and other stakeholders with regard to extension were great, however due to the non-completed architecture, lack of financial resources and absence of a single coordinating unit, the agricultural extension sector was not in a position to deal with all the challenging tasks, despite the fact that these undertakings were important for the establishment of a modern, competitive market economy in the agricultural sector.

3.3 Development of the Extension Service following EU Accession

Extension has become more important following the accession of the Slovak Republic to the European Union. This is connected to the requirement to meet the conditions for Cross-Compliance. According to Council (EU) regulation number 1782/2003, the agricultural extension system must be focused on the minimum requirements defined in the legal norms of production (Statutory Management Requirements – SMRs) regarding the maintenance of land in good agricultural and ecological conditions. Since this is linked to the direct payments system, this fact led to the new, however still not completed, architecture of the advisory system in 2007. It is characteristic that so far no single institute exists to deal with the structure and organizational management of agricultural extension. Such an institute would be in a position to

ensure the revival of the agricultural extension system, its modernization and its comprehensive institutional reconstruction in an effective way, with the aim that such a system would then fulfill all the functions which are expected from modern extension in the field of transmission of new knowledge and technologies into agricultural practices and to rural areas.

With the intention of establishing the unified agricultural advisory system which would be in line with EU standards, a new system was introduced in 2007. The following institutions and organisations are involved in the system:

- The EU administration with respective organs
- The National Council of the Slovak Republic
- The Government of the Slovak Republic
- Ministry of Agriculture and Rural Development with the Council for Agricultural Extension
- The Department of Science and Research of the Ministry of Agriculture and Rural Development
- The Agricultural Paying Agency (APA)
- The Agroinstitut Nitra – Lifelong Learning and accreditation of the advisors
- Regional Info-terminals
- The National Forestry Centre (The Institute of Forestry Extension and Lifelong Learning, Zvolen)
- Other sector institutions (research institutions)
- Accredited extension experts, acting individually or in extension agencies

4. The Agricultural Advisory Service(s)

4.1 Overview of all service suppliers

Among the agricultural extension services which are listed as suppliers of advice, educational/training activities, information, technologies etc. more than 100 organizations are listed. The largest group is formatted by research institutions followed by academic institutions/universities and secondary professional schools and apprentice schools. The third group is represented by public organisations under the supervision of MOARD (Agroinstitut, IFEE etc.). The fourth group is composed from self-governing organisations, such as the Slovak Commerce and Agricultural Chamber which plays a meaningful role within the Slovak conditions. Furthermore this group also includes Individual Farmers Association, Agricultural Entrepreneurs Association, Slovak Food Chamber, Entrepreneurs and Cooperative Union. The fifth group is comprised of suppliers of agricultural services, such as individual advisors, private extension organisations, including NGOs. The important role of services' suppliers is fulfilling the Association of the organic product producers entitled as EKOTREND.

4.2 Public policy, funding schemes, financing mechanisms

In order for agricultural extension systems to operate effectively it is important to be responsive to the current needs and requirements of farmers. If it is envisaged that agricultural extension should have innovative dimensions to its services and effectiveness, then it is clear that governments will be compelled to pay greater attention to such services and take into consideration the decisive impact of agricultural extension on more effectively dealing with today's needs and challenges.

In the Slovak Republic significant challenge is given by the inadequate recognition given to current agricultural system. The country's level of extension is lagging behind the EU-12 states and there is a significant difference in comparison with the EU-15. From the government side moderate support to agricultural extension is provided. For this purpose the MOARD provides to Agroinstitut and IFEE an annual budgetary allocation on the limited mode. This also refers to the Slovak Commerce and Agricultural Chamber, Research Institute for Food and Economics and to Research Institute for Animal Production.

Nowadays, it is expected that Slovak farmers will pay almost in full for services provided despite the fact that they have had little opportunity to adapt themselves to this kind of treatment. It should be underlined that in the current climate of economic development of worldwide and in domestic agriculture, agribusiness-men are not prepared to participate in a cost recovery system with payment of additional fees for services, which have no tangible nature, unless they are mandatory.

In summary, there is no special funding scheme in Slovak Republic, a part from the co-financing farmers or rural businessmen, in addition to the provided EU funds. The support from this funding may be granted to farmers if the services cover SMRs, GAECs and occupational safety standards based on Community legislation as a minimum (art 24 of Council Regulation (EC) No. 1698/2005). The Slovak Government through the Agricultural Paying Agency has earmarked 8.57 mil. EUR for farmers in planning period for 2007-2013. As it was already

mentioned, the national coordinating units for agricultural extension are Agroinstitut Nitra and for IFEE. Both of these institutes are intensively cooperating with research and academic institutions, professional organizations and unions, as well as with commercial advisory agencies and certified agricultural advisors.

4.3 Methods and Human resources

Ranking of methods used in cooperation with targeted groups are as follows:

1. Workshops
2. Vocational trainings
3. Face- to- face meeting,
4. Field/farm days
5. Agro portal – web page information about legislation, new projects/ programme calls, professional information, new varieties of seeds, fertilizers and other chemicals, feeds, animal genetic resources, quantitative measures, information about seminars, conferences trainings, new technologies etc.
6. Info terminals
7. Phone helpline
8. Field schools
9. Helpdesk for individual questions through website
10. Publication (leaflets, etc.)

One of the most important prerequisites of a well-functioning agricultural extension system is that advisors are good professionals; they are competent in communicating with their clients and have a positive approach towards them. These two pre-conditions are essential requirements for the establishment of a market-oriented extension system. The concept of extension stemming from demand is based on tasks, direction of the service and quality of communication. Applied research requires impetus from farmers and other stakeholders in order to know which fields should be explored. On the other hand, for extension it is important to know what kind of information and knowledge are needed for its clients. Alongside this, both consultants and researchers should know that they should use clear and understandable communication language. The acceptance of the advice provided by the consultant depends, to a great extent, on his/her communication skills. Furthermore, extension services have to take into consideration the fact that different groups of clients would require diverse types of information and agricultural and food technologies.

From the beginning of the 1990s, professionals have shown considerable interest in being active in agricultural extension. This was linked to the expectation that the Government would support this activity in a meaningful way, and that extension would belong among state priorities following EU accession. Moreover, extension was seen as the profession where capable experts could initiate business in the various disciplines of the agricultural sector. During this period, such experts were employed in universities, research institutions, or worked for the state

administration. In 2000, 300 experts and 100 extension agencies, of a private nature, were registered in the database of advisors with an agricultural background. Surprisingly, with the accession of Slovakia to the EU, the number of advisors declined, as a consequence of the requirements stemming out of Cross Compliance linked to extension services. The certification of advisors became, in substance, a more demanding process. In 2012, 131 advisors were registered, of these 77 are qualified as generalists and 54 are listed as specialists. In this respect, there is an essential distinction between Slovakia and other EU countries. Furthermore, out of 75 non-certified advisors, 30 are generalists and 45 are specialists. This situation is obviously irrelevant to the requirement to ensure a more effective and high quality agricultural and food processing sector. Moreover, it is not ensuring a sufficient absorption capacity for utilization of EU funds which are assigned for agricultural extension, rural development and for other fields.

In this regard, it should be pointed out that the Slovak Republic is significantly understaffed with regard to the numbers of advisors. A single advisor is covering 9,370.38 hectares of agricultural land and 44 entrepreneurial units. Another problem affecting extension services in the Slovak Republic is the high average age of advisors. 56 advisors are older than 51 years. This fact is a further confirmation that insufficient attention is being paid to agricultural extension; moreover that there are evidently missing functional links with regard to the coordination of the state administration, clients and extension services. From 131 of certified advisors are 38 of them specialized for forestry extension service and 93 for agriculture. From all certified advisors 33 are women.

4.4 Clients and topics / contents

Clients are represented by individual farmers, managers of cooperative farms, shareholding companies, food processing enterprises, rural leaders and other stakeholders operating in the field of primary production, food processing and in countryside. Farmer's needs are moving targets which are changing from one year to another according to market developments or weather impacts. More stable are needs connected to the CAP or national agricultural, food and rural development policies which are bridging the period of 4-7 years. Recently the farmer's needs are focused on the requirements of upcoming CAP 2014-2020, enhancement of organic production and renewable sources of energy, mitigation of negative impact of climate changes, information about the development of commodity prices and the market requirements.

The extension agencies present in Slovakia usually provide advice and consultancy in the following fields:

1. Cross-compliance
2. EU project design
3. Rural development
4. Organic farming
5. Livestock nutrition
6. Crop nutrition
7. Animal breeding and livestock registry
8. Horticultural production
9. Financial, taxation and accounting consultancy
10. Education, training, skills courses in agriculture, food processing and rural development

11. Information technology
12. Development of farm and rural tourism
13. Development of human resources
14. Inputs and outputs quality standards
15. Fruit production
16. Quality standards and finalization of products
17. The development of agribusiness activities
18. Formulation of marketing strategies and others.

Small commercial farms are using advice and consultancy in the following fields:

1. Livestock nutrition
2. Crop nutrition
3. Rural development
4. Cross-compliance
5. EU project design
6. Organic farming
7. Animal breeding and livestock registry
8. Financial, taxation and accounting consultancy
9. Fruit production
10. Horticultural production
11. Information technology
12. Development of farm and rural tourism
13. Inputs and outputs quality standards
14. Quality standards and finalization of products
15. The development of agribusiness activities
16. Development of human resources
17. Education, training, skills courses in agriculture, food processing and rural development
18. Formulation of marketing strategies and others.

Medium commercial farms are using advice and consultancy in the following fields:

1. Cross-compliance
2. EU project design
3. Formulation of marketing strategies and others
4. Animal breeding and livestock registry
5. Livestock nutrition
6. Financial, taxation and accounting consultancy
7. Crop nutrition
8. Rural development
9. Organic farming
10. Fruit production
11. Horticultural production
12. Information technology
13. Development of farm and rural tourism
14. Quality standards and finalization of products
15. Inputs and outputs quality standards
16. The development of agribusiness activities
17. Development of human resources
18. Education, training, skills courses in agriculture, food processing and rural development

Large commercial farms are using advice and consultancy in the following fields:

1. EU project design

2. Cross-compliance
3. Quality standards and finalization of products
4. Formulation of marketing strategies and others
5. Animal breeding and livestock registry
6. Crop nutrition
7. Livestock nutrition
8. Financial, taxation and accounting consultancy
9. Organic farming
10. Rural development
11. Fruit production
12. Development of human resources
13. Horticultural production
14. Information technology
15. Inputs and outputs quality standards
16. Development of farm and rural tourism
17. The development of agribusiness activities
18. Education, training, skills courses in agriculture, food processing and rural development

4.5 Linkages with other AKIS actors / knowledge flows

The coordinating bodies for dissemination of information and announcements are Agroinstitut Nitra and IFEE for their respective fields. For this purpose an internet portal operates- www.agroporadenstvo.sk. The basic task of Agro portal is organisation, processing and distribution of information for the use of agricultural extension and food production. The technical operations and information security are carried out by operator.

The database is providing following information:

- Information about legislation of agricultural extension – focused on the methodological aid to the advisors and clients of agricultural extension services,
- EU legislative information,
- List of accredited organizations/certified advisors,
- Database of the advisory activities of organisations operating in sector about their extension activities and target groups,
- Professional information which serve the advisors and beneficiaries of the advisory services, the news from the science and research, new technological procedures, crop cultivation and animal rearing trends,
- Information in the form of articles and publications grouped into individual categories: crop production, animal production, machinery and equipment, economics, food processing etc.,
- Simple databases systems (machineries, agrochemicals, feeds, medicines etc. with opportunities to obtain the full wording.
- Weather forecast,
- Important role is played by **Advisory forum** which is the dialog among the users of system on the one side and on the other side with representatives of sector's research institutions, organised during the exhibitions, conferences, field days etc..

Furthermore, an important role is played by **Info-terminals** in the frame of **Central**

Agricultural Advisory System. The mission of the Central Agricultural Extension System is to ensure a qualified and high standard of agricultural extension in Slovakia. Info terminals are working places equipped with computers, which are situated in all regions and some districts of the country. They are accessible to potential users. The info terminals are also furnished with so-called info desks, equipped with printed materials (leaflets, guidebooks, legislation, information sheets, etc.).

In meetings of the farmers/clients requirements play meaningful tasks in all research institutions and agricultural institution agencies. Each of them is receiving the required services, process them and provide with advice, formulate the projects/ programmes, prepare the strategies/concepts etc. Public institutions are responsible for their respective field, however there could be potentially and practically overlaps among research institutes and public organisations on one hand and academic institutions on the other hand, since they are managed from two different Ministries. In addition to this, it is noted the significant upward trend of the services provided by commercial organizations focused on such activities as inputs of seeds, agrochemicals, new technologies, machineries and equipment, feeds, animal genetic resources, or land reclamation and irrigation.

4.6 Programming and Planning of advisory work

The programming and planning of advisory work depends a great deal on the planning period. The most important and frequently used is the planning per annum. This is initiated by MOARD and has the upward-downward direction alongside the institutional vertical. During this process financial resources are allocated to the individual AKIS players / suppliers and the concrete tasks are expressed as the purchase order. The research and agricultural public organizations/institutions are upon of the budget and tasks allocation preparing their annual plans with concrete activities, methods and communication with target groups.

The second kind of programming and Planning concerns a 7 year time period in connection with CAP for the given time horizon 2007-2013, the FAS with purpose to use advisory services by farmers, or to establish them and last but not least there is the Concept for Agriculture and Rural Development. This is usually formulated for the period in which it matches with the implementation of CAP. The agricultural extension is its organic part.

The system described here is valid for public organizations under the supervision of MOARD Academic institutions and Commercial organizations are not part of this planning system, despite that their representatives are delegated to the working teams for the elaboration of concepts/ programmes.

The monitoring and evaluation of the implementation of programming process is realized through the so called Green report which is prepared by MOARD the year following the implementation period. This report is submitted for the approval to the National Council of Slovak Republic.

5. Characteristics of Farm Advisory System (EC Reg)

5.1 Organisations forming FAS

In accordance with implementation of Cross Compliance in the agri-food sector, the agricultural extension services are becoming more important. The entire agricultural services in the FAS in the Slovak Republic are involved in activities such as renewable energy sources, organic farming, sustainable development of agriculture, forestry and regional development.

Main actors of FAS in Slovakia are:

National Council for FAS situated at the Ministry of Agriculture and Rural Development. The Council is composed of positions such as Director General of concerned departments at the Ministry, representatives of Agriculture Paying Agencies, researchers, academics, administrators from coordinating public institutions and from the actors of operational groups.

Actors of the Operational groups are as follows:

- Programming authorities
- Academics
- Researchers
- Advisors and extension services
- Farmers and other sector' stakeholders
- Agricultural and Food Processing Enterprises.

The advisory services are in the field of agriculture coordinated by Agroinstitut Nitra and in the field of forestry by IFEE. This task is delegated to both the institutions by MOARD. The main tasks for coordinating bodies are knowledge sharing, accreditation of advisors and certification of advisory organisations.

The education system related to advisory services compresses mandatory education connected to the elaborated project oriented towards a selected field which represents the organic part of the accreditation process and then the supplementary education programme of a periodic nature. The second part of the accreditation process is composed of general and technical elements. The education model continues with a course founded on personal communication. The outputs of the advisor's work are evaluated on a reference basis related to quality of provided services, number of prepared and implemented EU projects, and according to other criteria. In total, 27 educational models for advisors have been accredited by the Ministry of Education, Science and Sport. Among the accredited programmes, there are, for example, the following models: thematic focus: 101 Environment, 102 Public Health, Crop and Animal Health, 2000 Economics, 300 Management and Marketing, 400 Livestock Production and Crop Production etc.

In Slovakia the accreditation of extension services became a more demanding process after 2007. In total 131 advisors are registered and 102 advisory agencies are certified which are having first of all the commercial nature.

The controlling process of the operation of FAS is ensured by three forms. The first one is connected to evaluation of the annual Green Report's activities of coordinating bodies and collaborating institution. The second level is via Agricultural Paying Agency (APA), through the control of the use of allocated resources for FAS.

The third level is monitoring and evaluation of advisory activities by farmers and other beneficiaries of extension services. The evaluation is assessed by the coordinating bodies. The quality of the whole system is evaluated according of International quality standard ISO 9001:2008.

5.2 Evaluation of implementation of FAS

The coordinating bodies in frame of FAS are organizing knowledge sharing activities among the all actors, farmers, other stakeholders and advisors. The other function is also to enhance the synergies between the various instruments such as advice, training, information, extension services and research.

Agoinstitut and IFEE at Zvolen, are organising basic and regular follow up training for each advisor. The best practices are provided to users of agricultural extension services through the internet portal: Agroporadenstvo.

The list of accredited advisors and certified organisations with contact details are provided on the webpage of Agroinstitut IFEE, Slovak Commerce and Agriculture Chamber, as well as on the web page of the Research Institute for Agricultural and Food Economics.

With regard to financing there is the basic problem that national co-financing is very moderate. In 2012 the total public expenditure for advisory services was 87,230.26 EUR of which 65,425.70 Euro was financed from EAFRD and of which 21,808.56 EUR was financed from state budget. A significantly higher allocation is going on vocational training. In 2012 public expenses represented 3,725,889.54 Euro of which 2,790,946.74 EUR were EAFRD and of which 939,942.80 Euro have been provided from state budget.

The main challenge is to encourage a young generation of advisors to be actively involved into the agricultural extension, otherwise the generation of recent advisors will leave the advisory stage due to the high age. Having this in mind, the government has to consider the extension service as the priority, in order to increase the competitiveness of agricultural sector, increasing productivity and ensure sustainable management of natural resources, to adapt on impacts of climate change and to contribute the faster transfer of knowledge from research to practical farming and ensuring feedback on practical needs to science.

6. Summary and conclusions

6.1 Summary and conclusions on section 1-3

The establishment and foundation of agricultural extension in the Slovak Republic, and its development during the course of transition of the national economy, in preparation for EU accession as well as after accession itself, was very diverse. From 1994 up to 2000 all of Slovakian agriculture farms experienced negative economic results. Net profits were only achieved in 2005, the first year after EU accession. This trend continued up to 2008 but later as a result of the impact of the world financial and economic crisis and the extensive floods in 2010 total expenses rose higher than net profits. From 1990, the share of agriculture, forestry and fisheries of gross domestic product has continuously declined and in 2011 it was recorded to be only 2.69 percent (as a comparison, in 1990 this indicator was 6.60 percent). The same analogical trend was also noted for food processing, the share of which was 2.67 percent of the national GDP in 1995, while in 2010 it was only 2.00 percent.

In the Agricultural Knowledge and Information System (AKIS), people and institutions are interlinked in order to generate new knowledge, share experiences and transfer these among themselves with the aim of introducing them into agricultural and rural practices. This kind of system only functions well in a situation where farmers, teachers from universities and secondary schools, support services and vendors/mediators are well integrated, with the objective of obtaining new knowledge and information from different sources about more sustainable land management, sustainable use of natural resources, and for improving the living conditions of farmers and the rural population.

Despite this, the integration of people and institutions in relation to research and extension, as well as links among the farmers' community, were not successfully developed during transition after EU accession. Regrettably it should be highlighted that this unfavourable situation continues and no significant changes materialized with regard to the effectiveness of the agricultural extension system. The extension services are under supported or not operating at a satisfactory level in relation to the financial resources, space and mobility, and lack the capacity to orient themselves, in a flexible way, to the new challenges and be quick enough to obtain the most up-to-date information in a timely manner.

Due to financial limitations and uncompleted architecture, the extension services did not fully meet the expectations of agribusiness professionals. Following EU accession, the whole system was renovated in 2007 with the target of harmonizing it with the requirements of Cross Compliance.

6.2 Summary and conclusions on section 4+5

Among the most challenging issues facing agricultural extension are the following:

- The need for more professional dissemination of information to meet the demands of different kinds of EU programmes/projects,
- Orientation of the sector towards a more dynamic, effective and competitive market with respect to agricultural commodities; successful management of the negative impacts of

climate change and assurance of sustainable management of natural resources; enhancement of measures to tackle the effects of the economic and financial crisis and to promote the improvement of the overall performance of agricultural extension,

- Currently, the agricultural extension service is not playing as active a role as it should be in the EU environment. Moreover, it is not considered as a government priority, despite the fact that its role was substantially highlighted following accession of the Slovak Republic to the European Union, particularly in connection with the utilization of EU financial resources,
- What is expected of agricultural extension is that it will become more market-oriented, which would help farmers to achieve a higher marketability for their products. Extension activities should be oriented towards strengthened vertical and horizontal integrating links alongside the commodity production chains,
- With regard of new CAP a very important task is the establishment of procurement/sales cooperatives or associations. If they play their role in an effective way, they can have a positive impact on the sector avoiding the negative impacts of the volatility of price surges and supporting sector stability,
- Furthermore, the Government policies can greatly influence the costs and returns of extension. Price, trade, fiscal and exchange rate policies influence commodity prices. Commodity prices, in turn, significantly influence the rates of return to research investments in different areas or commodities and subsequently the nature of information that is available for dissemination. Commodity prices, as they influence farm enterprise incomes, will also determine the affordability of buying extension services. The nature of the Government's technology and regulatory policy will similarly enhance or restrict access to the technologies which can be introduced by extension agencies.

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8. Appendices

8.1 List and contact of organisations forming AKIS

Name of organisation (in English)	Address	Website	Status (public/R&E/private/FBO/NGO)*
Research Institute of Agricultural and Food Economics	Trenčianska 55, 824 80 Bratislava	www.vuepp.sk	public
Regional Agrarian Chamber	Korzo Bélu Bartóka 789/3, 929 01 Dunajská Streda	www.aksds.sk	public
Slovak Agricultural University in Nitra	Tr. A. Hlinku 2, Nitra	www.uniag.sk	public
Technical University in Zvolen	Technickej univerzity vo Zvolene Ul. T. G. Masaryka 2117/24 960 53 Zvolen	www.tuzvo.sk	public
State Veterinary and Food Administration of the Slovak Republic	Botanická 17, 84213 Bratislava	http://www.svps.sk/english/	public
Agroinstitút	Akademická č. 4, 949 01 Nitra	http://www.agroinstitut.sk/	public

* confer table 2 (page 7), first column

The central register of private advisors is available at the web page: <http://www.agroinstitut.sk/centralny-register-poradcov/>

Information is only provided in Slovak language, therefore the register is only in Slovak Language.

8.2 The list of questionnaire addresses:

Name	Address	Website/ email contact:
B-Prokeko, s.r.o.	90061 Gajary	bukovska.elena@gmail.com
Regional Agrarian Chamber	Korzo Bélu bartóka 789/3, 92901 Dunajská Streda	www.aksds.sk aksds@aksds.sk
Varju Consulting, s.r.o.	Školská 20, 949 04 komárno	www.varju.sk varju@varju.sk
Reserach Institute of Agricultural and Food Economics	Trenčianska 55, 824 80 Bratislava	www.vuepp.sk vuepp@vuepp.sk

8.3 List of the most important publications on AKIS with brief abstracts

Kadlečíková, Mária a i. 2012. Agricultural extension in EU countries. 1. edition. Nitra : Slovak Agricultural University in Nitra , Slovak Republic, 2012. 113 pg. ISBN 978-80-552-0933-3. Note: The first publication at the university level dealing with agricultural extension in the selected EU countries focused on the agri-food production and rural development.

Kadlečíková, Mária - Filo, Michal - Veselá, Adriana - Kapsdorferová, Zuzana. 2012. *The Current State and Perspectives of Agricultural Extension in the Slovak Republic* Acta oeconomica et informatica (online), vol. 15, 2012, Special no. (2012). Pg. 15 -20. ISSN 1335-2571

Abstract: The objective of this article is to deal with the establishment and mission of the agricultural extension in the Slovak Republic, to deal with its development during the economic transition and preparation for the EU accession, as well as for the after accession period. The extension service in the Slovak Republic was established on its institutional basis in 1998. Due to the lack of financial resources and not fully completed architecture of the whole system, the agricultural extension was not in position to fulfill the expectations of the agribusinessmen. After the accession of Slovakia to the EU, in 2007, this system was innovated in order to meet the conditions of Cross Compliance. In the Slovak Republic, 131 extensionists have been recently certified, 77 of them are considered to be generalists and 54 are specialists. The one extensionist services 9 370.38 ha of agricultural land and 44 farms. To the most important challenges of the Slovak extension service belong the improvement of the information dissemination about the possibilities of using the EU funds, the focus of the agro-food sector on more effective, dynamic and competitive market with agrarian commodities, the adaptation of agriculture on climate changes and on the sustainable management of natural resources in the agriculture.

Kadlečíková, Mária - Kapsdorferová, Zuzana. 2012. The impact of food price volatility and global economics crisis on development of agrifood sector in eastern Europe and central Asian countries. In *Journal on Law, Economy & Management*. Vol. 2, no. 1 (2012), s. 3-7. ISSN 2048-4186.

Abstract: The agrifood sector is facing from 2006 threefold crisis, which commenced with the crises of the soaring food prices, continued with financial and global economic crises. In addition to this due to the low yields caused mainly with natural disaster and the increased price for the energy, the sector is facing new kind of crises, which effects are likely to be felt long after the most immediate signs of the financial and economic crisis have passed. The papers address the impacts of the risky economic environment in agrifood sector, by integrating the effects/causes into the four groups (political, social, market and agribusiness side). Furthermore upon the analysis of the data and developing trends are proposed the actions/measures for sector in order to be more effective in its resilience towards of future unpredictable and unstable future, including of the financial crisis as well as to the predicted climate change. To its end of this paper is suggesting several actions for enhanced international cooperation in the Eastern Europe and Central Asia in order to be better prepared for future eventual financial crisis and also to

deal more effectively with shocks caused by surges of the volatile prices.

Kadlečíková, Mária - Kapsdorferová, Zuzana - Filo, Michal - Malejčíková, Alexandra. 2012. Trends in Food Prices, Food Production and Consumption in selected countries and in Slovak Republic. In. *Agricultural Economics*. Vol. 12, n. 2 (2012), pg. 41-51. ISSN 1335-6186.

Abstract: The access to food in a sufficient quantity and quality is for all inhabitants of every country very important in terms of ensuring their subsistence. Food is according to Maslow one of physiological needs. This means that only after satisfying this need we can start with fulfilment of the needs placed on higher levels of the pyramid. In addition on to this factor in case of food we also have to consider the development of its prices, since the price level is significantly influencing the purchasing power of citizens. Stemming out of this, the submitted paper is dealing with of food prices in the Slovak Republic and in food production, food consumption and international trade with agricultural commodities as well.

Global problems and ethics aspects in food chain.

Kapsdorferová, Zuzana -- Dobišová, Mária -- Pogranová, Zuzana

In *Acta oeconomica et informatica*. Vol. 15, Special n. (2012), s. 10--14. ISSN 1335-2571.

Abstract: Globalization brings to the food chain new challenges and risks relating to health and consumer interests worldwide. On the other hand, farmers have been in a long-term perspective challenging climate changes and reforms; they face high entry costs and the purchasing power of supermarket chains. Among the priority issues there have been brought issues of food security, improving the economic viability of farmers and their position in the food chain in order to provide a dynamic and competitive agricultural sector. Current development point out the need to increase world food production, as the demand for food is supposed to be increased by seventy percent in 2050. Undoubtedly, the most important aspect which is necessary to be realized is that the future of the agricultural sector lies not only in production and economic function but also in environmental and social functions. The aim of this paper is to analyze the current problems in the world agriculture sector and to highlight the ethical issues associated with their solution.

Others:

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