



Project no.
513705

Project Acronym
CEEK AGRI POLICY

Project title
**Agro economic policy analysis of the new member States,
the candidate States and the countries of the western Balkan**

Instrument Specific Support Action
Thematic Priority Scientific Support to Policies

D12-3 Fourth 6-monthly report
**RURAL TECHNOLOGY TRANSFER IN TRANSITION
ECONOMIES
IN SERBIA**

Start date of project: 01.05.2005

Duration: 24 Months

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Acknowledgement

This report forms part of the deliverables from a project called "CEEC AGRI POLICY" which has been awarded financial support by the European Commission under the 6th Framework Programme.

The project aims to establish a network of experts involved in agricultural policy analysis and rural development in the New Member States, in the Acceding Candidate Countries and in the countries of the Western Balkan. More detailed information on the project can be found at www.agripolicy.net.

DOCUMENT HISTORY

Date	Author	Description
January – March, 2007	Bozic Dragica	1 and 2
January – March, 2007	Bogdanov Natalija	3

CONTENT

1	INTRODUCTION AND BACKGROUND.....	4
1.1	INTRODUCTION TO RURAL TECHNOLOGY TRANSFER.....	4
1.2	AGRICULTURAL AND RURAL SKILL LEVELS.....	7
	ECHNOLOGY TRANSFER ISSUES	8
2.1	TRAINING PROVISION.....	8
2.2	EXTENSION AND ADVISORY SERVICES.....	11
2.3	OTHER IMPORTANT ISSUES.....	15
3	OVERVIEW AND PROSPECTS.....	16
3.3	TRAINING.....	16
3.2	EXTENSION.....	16
3.3	LINKAGES BETWEEN TECHNOLOGY TRANSFER AGENCIES.....	17
4	REFERENCES	18

‘RURAL TECHNOLOGY TRANSFER IN TRANSITION ECONOMIES’

1 Introduction and background

1.1 Introduction to rural technology transfer

In the past, agricultural extension was focused on supporting farmers in technical aspects of crop and livestock production. Even now, current extension services are primarily focusing on the provision of non-economic advice. Agricultural extension is not sufficiently available and often suffers from the non-availability of appropriate financing. The existing system of agricultural advisory service is primarily focused on plant and livestock production and the system is also out of date in information and usefulness to emerging farming enterprise.

Formal Extension in Serbia is the responsibility of the **Institute of Science Application in Agriculture** through its **Regional Agricultural Stations**. Its activities are limited to applied research in the form of field trials and testing (soil, seeds, plants, and livestock). It is heavily oriented to the needs of Agrokombinats, big farms, enterprises etc. Its capacity to provide advice on investment strategies or other farm business planning is limited, and it doesn't reach out to the majority of farmers. Agricultural Stations also conduct statutory control function services on behalf of the Ministry which is a conflict of interest and not conducive to the effective functioning of an extension service.

There is some advice provided by private individuals. A small private extension network has been developed by donors. Its long-term funding is still unclear and so far it only reaches a limited number of farmers. It could have had an important role to play in a competitive market for supply of advice to farmers, but that market has not developed yet. Most farmers have either insufficient financial means or insufficient appreciation of the value of an extension service to be willing to pay for it at present. Lack of agricultural education and training is also contribution factor.

Service is also provided by the staff of the **research institutes** or **Universities** or **NGOs** if financed by the MAFWM. A few input providers are also providing some advice. Staff of Agricultural middle schools (vocational schools) may also be providing limited advice and information. In general, the knowledge of the staff and quality of the service provided are unsatisfactory.

Both scientific and technological advances and a prompt dissemination within the system comprising agricultural education and training, including numerous vocational schools specialising in agriculture, research institutes, agricultural extension services and other institutions and modes of information transfer (TV, radio, journals, publications, internet providers) are of major importance for the improvement of agricultural and rural development.

Serbia has a comprehensive agricultural education system, which is organised through a number of agricultural schools and faculties of agriculture in the universities. The whole

system is under the authority of the Ministry for Education, which is responsible for the design and the implementation of the curricula.

1.1.1 Agricultural and rural training

In Serbia, there is a network comprising 34 vocational schools (specialising in agriculture) evenly distributed throughout the country. The agricultural schools seem to be geared mainly to the education and training of agricultural technicians for the agri-processing sector, semi-managerial positions in Agrokombinats and the public service. However, private farmers cultivate most of the land (under the reforms, all land will be farmed privately). There needs to be a reorientation of the curricula of the agricultural schools to serve the private farming sector. More emphasis should be placed on farm business management and practical farming skills. Programmes (day courses) should also be made available for existing farmers. As far as the form of extension is concerned, this should be the responsibility of the extension service rather than the Ministry of Education.

Serbia has 4 faculties of agriculture (Zemun-Beograd, Novi Sad, Cacaku and Kruševac), 3 advanced agricultural schools (Šabac, Prokuplje and Negotin) and a few private universities (Faculty for Biofarming-Sombor, Advanced Agricultural School in Backa Topola and a great number of their departments in various Serbian cities). These departments have developed special curricula meeting the needs of agricultural experts and their education and training requirements. There are Faculties of Veterinary Medicine in Belgrade and Novi Sad as well. The curricula of vocational schools specialising in agriculture should primarily be focused on an interdisciplinary approach providing additional knowledge from different standpoints of agriculture: marketing, management, planning, informatics, food safety and security and ecology).

In Serbia, foreign donations and programmes of support have contributed to the initiation of a considerable number of projects with the aim of training, educating and improving the overall skills of farmers and the rural population as a whole especially after 2001. These projects, initially projected as public welfare activities, were later focused on specific programmes for the improvement of production at farm level. The activities of NGOs, producer associations and institutions of local self-management were of major importance for the implementation of these programmes.

Knowledge dissemination on agricultural and rural development may also be attributed to:

- various specific events (scientific, competitive, touristic) organised by institutes, local communities and other organisations (Field Days organised by the Institute for Corn in Zemun-Polje, Institute for Field Crops and Vegetable Growing in Novi Sad, Grape Harvesting in Vršac and Aleksandrovac);
- Scientific, expertise, specialised publications, journals and papers (Poljoprivrednik, Dobro jutro, Selo, Naše selo, Savremeni farmer, Stocar,

Povrtarski glasnik, Glasnik Ministarstva poljoprivrede, šumarstva i vodoprivrede etc.);

- Radio and TV broadcasting dealing with agriculture and village issues on local radio stations and national networks. Some of them have a 35-year long tradition („Znanje-imanje” RTS Beograd, «Brazda»RTS Novi Sad, „Znanje na poklon” TVB92, „Agroinfo” RTS etc.)

1.1.2 Agricultural and rural advisory/consultancy services

Serbia has developed several parallel agricultural extension and consultancy services:

In Serbia, the agricultural extension service is provided by the network of 34 agricultural stations (AgS) and coordinated (until 2004) by the semi-autonomous **Institute for Science Application in Agriculture (ISAA)**. AgS employs about 250 staff, and is partly financed by MAFWM. There is need to review the management and funding arrangements, and separate the control, advisory and laboratory functions, but nevertheless this structure represents the biggest single resource of agricultural advisors. Scope of activities is focused on primary production and service is limited to large farms.

Scientific research institutes and faculties are in charge of dissemination activities of technical and technological knowledge. Within the scope of special programmes issued by the Ministry for Science, these institutions are involved in scientific projects of major national importance or with the aim of contributing to production in practice.

A number of **NGOs, private consultant groups, input suppliers and independent consultants** are involved in extension services initiated by donors e.g. USDA, FAO, UNDP and bilateral donors. Some of NGO services are developing as important nuclei of local advisors trained in modern farm management techniques, but private consultancy is only in an embryonic form.

1.1.3 Role of farmers' groups, including national or regional farmers' organisations

The well known production groups and associations in Serbia are:

- Association of swine breeders
- “Vilamet”, Association of raspberry producers
- Club 100 Plus – Association of Farmers
- Association of Vegetable Growers, etc.

The activities of these associations include workshop and lecture organisation, journal publication, overseas visits of its members with the aim of broadening knowledge and skills. These associations organise winter schools offering programmes for the specific needs and interests of its members.

Over the past few years, local self-management for agriculture and rural development has been encouraged. Municipality budgets have financially supported programmes strengthening mutual co-operation of local stakeholders in this field. Numerous training

courses and information and experience exchange programmes which were organised later may be attributed to their professional joint endeavours and co-operation with the NGO sector.

Agribusiness clubs for farmers, managers and consultants are organised by Agromreža (www.agromreza.org) (Agricultural network). Agromreža acts as the executor of the project “Development of Co-operatives in Serbia”, and organises co-operatives of farmers in different fields of agriculture. The aim of these pilot co-operatives is to contribute to a positive attitude of farmers in order to overcome the negative opinion of the past.

The Serbian Association of Co-operatives with its long tradition in education plays the key role. Over the past few years the Association of Co-operatives in co-operation with the donor programmes has contributed to reviving its function and is active in promoting joint ventures.

1.2 Agricultural and rural skill levels

The education structure of the rural¹ population over 15 years of age is unfavourable compared with the total Serbian population although the gap has been shortened between the two polls. In the structure of the rural population over 15 years the majority (36.9%) has secondary schooling, 27% has completed only elementary school and 28% are illiterate or without any formal education. Only 7% of the rural population over 15 has attended college or 5.2% of the rural working population.

Formal qualifications and specialist degrees attained by the rural workforce are insufficient indicators to gain an insight regarding the possibility of decreasing their unemployment rate. Nearly 50% of the rural working population at the age of 15-64 has completed secondary school. However, the previous secondary education system was rigid based on the needs of the former system of economy and does not meet the current labour market requirements. The problem regarding the needs to hire specialised labour in rural regions is solved by engaging urban labour (teachers, medical doctors, engineers, etc.).

Therefore, permanent education of adults is of major concern. In Serbia, permanent education programmes have been introduced. However, they do not focus on rural labour and enhancement of rural capacities. The need to develop an informal system of education in Serbia has emerged as the result of the need to offer a variety of new skills and qualifications to those currently unemployed helping them get a new job but also to contribute to sustainable permanent education and improvement of the quality of human resources imposed by modern economic and technological systems.

¹Rural is defined according OECD definition

technology transfer issues

2.1 Training provision

2.1.1 Quality and suitability of provision

According to the Act of Establishment, the activities of both the Institute for the application of Science in Agriculture, and the Republic Agricultural Service with regard to education are:

- to disseminate information on technological innovations and publish scientific expertise on advances in the field of agricultural production,
- advisory and consulting activities with regard to the improvement of agricultural production of both enterprises and other legal entities (for agricultural extension service users),
- to organise conferences and workshops in order to contribute to innovation transfer and enhance agricultural production, and
- to take part in the development of long-term and annual programmes for the improvement of agricultural production and monitor their realisation.

The scientific and research institutions involved in the activities with regard to food and agricultural production in Serbia are Centres and Institutes for vegetable crops (Smederevska Palanka), fruit research (Cacak), small grains (Kragujevac), forage crops (Kruševac), viticulture and enology (Niš) and potatoes (Guca). However, there are important activities at the Institute for Field Crops and Vegetable Growing (Novi Sad), Institute for Livestock Production (Zemun), Institute for Maize Research (Zemun-Polje), Institute for Agricultural Economics (Belgrade), Institute for Plant Protection and the Environment (Belgrade), Institute for Medicinal Plants (Belgrade), Institute for Soil Research (Belgrade) etc. The research data obtained are a way of knowledge dissemination used by big enterprises in the field of agriculture and food production.

Since 2001, **international support and donor programmes** have significantly contributed to the improvement of technological development of agriculture and the education of farmers:

IRD (International Relief and Development) – IRD supports activities for agriculture, growers and small and medium-sized businesses to increase the quality and competitiveness of their products in order to access domestic and foreign markets. Projects include training and certification in Quality Management Systems (QMS/ISO), food safety (HACCP), and other certification programmes to improve the quality and competitiveness of food projects, promote trade, marketing, strategic partnerships, and co-operation involving stakeholders along the supply/value chain.

AGRONET is a joint BSc agronomists and computer programming experts association established with the aim of database formation solely in the field of agriculture and food

industry expected to contribute to the promotion and representation of all economic entities linked with agricultural production and food industry. Among the priorities of the association is no doubt the need to provide a link with international organisations to promote agriculture and the food industry, using modern technology as applied abroad.

In co-operation with USAID, the task of Agromreža includes presentations of introductory seminars on the importance of introducing standards in agriculture. In Serbia, the **CRDA** programme contributes significantly to initiatives for the implementation of the HACCP/ISO standards, the prerequisites in the food processing industry and food exports, by introducing systematic programmes for food quality certificates.

In addition, through the **GASKP Association** (Branch Association for safety and quality in the field of food production), Agromreža participates in the development of the EurepGAP standard for Serbia. The completion of the training course for EurepGAP standards for fruit and vegetables has contributed to the formation of two working groups in charge of the preparation and implementation of training courses and writing EurepGAP regulations with the aim of applying them to local situations.

2.1.2. Availability and spatial issues

In Serbia, there are 34 regional extension services (organised according to the map enclosed). The activities of these services are harmonised with the needs of the regions. Depending on the structure of agricultural production of the region, both technical equipment and personnel training are provided.

The longest agricultural extension service tradition may be attributed to Vojvodina, known to be the developed agricultural region of Serbia. Huge agricultural combines had their own research institutes and experts providing advice and recommendations to farmers. Even today, this type of knowledge transfer has not been abandoned in Vojvodina. A contract obliges the processing industry to provide free-of-charge advice and recommendations on industrial crops (sugar beet, oil crops, tobacco), milk, vegetables in order to meet standards, contribute to risk decline, and increase competitiveness with respect to both price and quality.

Over the past few years, the Central Serbian producer associations for raspberries, vegetables, swine breeders etc. have organised lectures and courses educating their members on the new production technologies. However, these types of gatherings are insufficient in number and there is a great need for permanent education and knowledge dissemination. The comparatively unfavourable economic status of farms in the region, information and market inaccessibility impose the need to pool efforts in order to contribute to the improvement of this type of rural service.

Manpower coming from those parts of Serbia characterised by population decline (mountain regions) has an unfavourable education structure and lacks additional skills

and abilities for diversification of activities and income. Therefore, the need arises to improve current knowledge and skills of the population and thus contribute to the use of local development potential; traditional crafts and skills have been abandoned, traditional products in forestry, timber processing etc. have been lost. Over the past years, local authorities have strengthened co-operation with NGOs in order to contribute to the improvement of human abilities and skills in these regions and thus promote local communities.

2.1.3. Practical issues

Being a part of the public agricultural service, the **Institute of Science Application in Agriculture** has been entrusted with the following five groups of activities:

- organisation of an information system on the status, capacities and measures for the improvement of agricultural production,
- information on technological innovations and publication of scientific expertise on advances in the field of agricultural production,
- extension service and consultancy activities with regard to the improvement of agricultural production meeting the needs of enterprises and other legal entities (users of agricultural extension services),
- organisation of workshops and other modes of innovation dissemination with regard to agricultural production,
- participation in the development of long-term and annual programmes for the improvement of agricultural production and monitoring their realisation.

Regional agricultural services are entrusted with:

- selection, reproduction and artificial insemination in animal husbandry,
- plant selection and breeding and dissemination of new crop cultivars and hybrids,
- monitoring pest and disease incidence (extension service),
- conducting and demonstrating experiments under different ecological conditions,
- organising agricultural fairs and
- disseminating knowledge and technologies to the farmers and other producers.

2.1.4. Demand side issues

Currently, a series of reforms of the higher education system which are in progress in Serbia are expected to contribute to the harmonisation of the system with the Bologna Declaration creating an overall convergence at European level. These reforms include curricula harmonisation as well. According to the Act on Higher Education the evaluation of schools and faculties is expected by 2007 and 2008 respectively.

Farmers are mostly interested in the possibilities with regard to:

- accessing the financial market,
- marketing agricultural products,
- finding new forms of association
- technological innovations in the field of selection and artificial insemination in livestock production and breeding new crop cultivars and hybrids

- new technical and technological solutions in the field of agricultural machinery and technics, irrigation and in-door production of crops (plastic houses and greenhouses),
- starting additional businesses.

2.1.5 SWOT analysis

Training provision

Strengths	Weaknesses
<ul style="list-style-type: none"> - comparatively large number of institutions in the field of both education and research - reforms of the curricula and harmonisation at European level in progress - domestic research institutes given credit at the regional and international level for the results achieved 	<ul style="list-style-type: none"> - non-harmonised curricula and the possibility of adequate employment - lack of practical knowledge of experts - no activities focusing on additional training for those interested in agriculture and farming
Opportunities	Threats
<ul style="list-style-type: none"> - use of international funds and co-operation with international scientific projects - co-operation between research institutes and enterprises and other users 	<ul style="list-style-type: none"> - lagging behind in the implementation of international standards - productivity and competitiveness decline - ecological threats

2.2 Extension and advisory services

2.2.1 Public sector services

The current agricultural extension service in Serbia was established by adopting the Act on agricultural extension service in 1991 and was organised according to territories.

Agricultural extension in Serbia is provided by the network of 34 agricultural stations (AgS) and coordinated (until 2004) by the semi-autonomous Institute for Science Application in Agriculture (ISAA). AgS employs about 250 staff in 34 agricultural stations across Serbia, and is partly financed by MAFWM. ISAA employs about 30 staff; the most important activities of this Institute are not only to provide information, through special projects of MAFWM, but also to participate in research projects financed by the Ministry of Science and Environment. ISAA works also with medium- to large-scale private and State-owned farms with its activities being centrally planned and primarily commercial in nature. Services currently provided in Serbia (except in the case of some

crops like maize or sunflower, vegetable and fruit production) are not up to the latest know-how in agricultural technologies and there is little effort to acquire and adopt the technologies available in the global market to Serbian conditions in order to improve quality, productivity and competitiveness. The general capacity in agricultural economic research, policy and market research is weak and the impact on the agri-food sector and the farmers is limited.

The Institute of Science Application in Agriculture (Institut za primenu nauke u poljoprivredi) (ISAA) has two divisions: plant production and livestock division. There are 20 employees - 16 specialists, 4 PhD (crops, pigs, horses and IT – informatics), 3 MSc (fruits, plant protection, crops and poultry), 9 BSc Agronomists, 4 administrative workers.

The ISAA participates in Basic Projects (funded by MAFWM)

1. STIPS (System of Serbian agricultural market information): Coordination of STIPS, preparing of weekly and monthly Bulletins (web site of MAFWM – [HYPERLINK http://www.stips.minpolj.sr.gov.yu](http://www.stips.minpolj.sr.gov.yu) www.stips.minpolj.sr.gov.yu), preparing of weekly and monthly reports and analysis of market, analysis and data collection on prices of fruit and vegetables and livestock in EU and neighbouring countries, co-operation with foreign Marketing Info Systems: administration and data input in AgriMIS – East Europe for Serbia, dissemination of data, data/ price recording from 3 green, one wholesale and one livestock market, work with mass media (National television, local radio stations, specialised magazines)
2. Preparation, monitoring and reporting of spring and autumn field work in 2005. (sowing, harvesting): Preparation of methodology, education of extension workers on methodology, coordination of work in 34 regional Ext. Services in data collection and processing, reporting to MAFWM twice per week – crops and once/week fruit and grape wine; reports are available at MAFWM web site.
3. Special projects funded by MAFWM: farm accountancy, business plan in agriculture, monitoring on resources and rural development, work with farmers associations/organisations, education of extension workers and producers (New technologies in pig production, education of extension workers and producers of sheep (plus journal), livestock breeding in horse production, education of extension workers and producers of cattle), implementation partners of FAO – UN project “Management of Western Corn Rootworm”.

Also part of the Institute are the following 6 specialised agricultural institutions whose experts offer services to advisors and agricultural experts on the territory of the Republic of Serbia:- Institute for Plant and Environmental Protection – Belgrade, Institute for Soil Science – Belgrade, Institute for Dairy Production – Belgrade, Institute for Cereals and Flour Production – Novi Sad, Institute for Hops, Broomcorn and Medicinal Plants – Backi Petrovac and Station for Enology – Vršac.

The following Institutes offer expert services to advisors and agricultural experts on the territory of the Republic of Serbia, organise lectures, seminars and symposia, giving expert opinion on request, etc.:

- Institute for plant and environmental protection – Belgrade, extension service activities with regard to pest and disease incidence,
- Institute for Soil Science – Belgrade, soil fertility analysis, mineral and organic fertiliser quality control, as well as the control of harmful and dangerous material in both soil and irrigation water, development of organic food models and demonstration of experiments under different ecological conditions.
- Institute for Dairy Production – Belgrade, milk and dairy products quality control, applied and basic research in the field of milk production, purchase, processing and placing on the market,
- Institute for Cereals and Flour Production – Novi Sad, cereal and flour quality control,
- Institute for Hops, Broomcorn and Medicinal Plants – Backi Petrovac, improvement of the production, quality control and origin of hops, broomcorn and medicinal plants,
- Station for Enology – Vršac, quality control of food products (excluding cereals, flour, hops and medicinal plants).

2.2.2 Private sector services

In Serbia there are no private agricultural extension organisations and institutions. Also, there are no advisory associations and, according to the law, private entities involved in extension services are not to be issued certificates of any kind.

Private advisory services are provided by agronomists, veterinarians, researchers in the field of food production and processing. Income-earning farms - large farms or farms which produce capital intensive products (production of vegetables and fruits, plastic house production, viticulture, intensive livestock production etc.) are the users of such services.

Even private agricultural pharmacies offer similar advisory and extension services. Purchasers are given free advice or enabled to get in touch with the experts required. This type of extension service is meeting the needs of the producers (tailor-made) but it has to be paid for because of the very specific knowledge it offers. However, besides experts or researchers, this type of service can also be offered by the producers themselves who are well acquainted with the problem, having long been involved in a particular type of production.

Input suppliers – wholesale traders involved in the sale of seeds and nurserystock, agrochemicals, fertilisers, mechanisation equipment, irrigation equipment etc., organise gatherings in order to promote products, technologies and technical innovations.

2.2.3 Demand side issues

Extension services in Serbia have not been sufficiently institutionalised. The status of the Republic agricultural extension service (IASA) has not been precisely defined. Its position in relation to the MAFWM has not been legally solved including obligations and responsibilities emerging thereof. This issue has high priority and is expected to be solved following the adoption of the Agricultural Act. However, this service has also not solved its ownership status with regard to regional stations, equipment, distribution of the income earned from commercial services offered to various entities etc.

The training of advisory personnel has not been meeting the needs of the final user. Advisors had no permanent educational exposure and have been hampered by information inaccessibility, insufficient co-operation and lack of experience exchange between neighbouring countries.

There is a lack of advisors in the field of farming economy, marketing and financing. Some investigations in Serbia have shown the producers greatest interest is in this type of service. Insufficient experience in financial and organisational activities tends to limit credit, market purchase and sale accessibility, and it decreases competitiveness on the whole, especially of small farms.

Extension services can expect only a minor financial support (1% of the agricultural budget , 275000 Euro) from the government. For this reason the number of advisors has been cut by half over the past few years. Not only lack of habit but also limited financial resources have prevented private farms being willing and able to pay for such services.

2.2.4 SWOT analysis

Extension and advisory services

<p>Strengths</p> <ul style="list-style-type: none"> - Developed and well-equipped network of the Republic extension service - Life-long experience in the transfer of technical knowledge and innovations organised with the help of the Republic extension service and former agricultural combines - A great number of research institutes co-operate with large-scale producers 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Lack of capital – insufficient financial resources for the activities of the agricultural services - Lack of personnel with specific knowledge in the field of marketing and finance - Slow improvement of knowledge and insufficient information exchange
<p>Opportunities</p> <ul style="list-style-type: none"> - Use of foreign programmes for the improvement of the extension service - Inclusion of the NGO sector 	<p>Threats</p> <ul style="list-style-type: none"> - Technical and technological lagging behind, especially of smaller farms; ignorance of the standards - Market capital, service and goods inaccessibility - Competitiveness decline

2.3 Other important issues

The need to improve the extension service system and contribute to a dynamic knowledge transfer has been recognised through the international projects that played a major role in educating advisors. Some of the most important are:

STIPS 2004 in co-operation with the USDA has initiated a project on Information system marketing in agriculture known as the Agricultural market information system of Serbia STIPS. In the scope of the project, 30 experts were engaged on collecting data with regard to the prices of agricultural products on local markets in about 20 Serbian cities were trained.

In 2001, USAID initiated a programme for educating agricultural producers. One of the project programmes “Be better – learn how to plan” was realised in 2001/2002 whereby 300 lectures in the field of agriculture and veterinary medicine were held in 30 Serbian municipalities contributing to the education of a considerable number of producers. This was crucial for initiating AGROMREŽA, Beograd with its local info centres in 2002. (<http://www.agromreza.org>)

ADF's Community Revitalisation through Democratic Action (CRDA) programme funded by USAID/Serbia is working in 26 municipalities throughout the Vojvodina and Eastern Serbia. The aim of the project is to engage communities in improving local conditions through civil participation, infrastructure, economic development, and the environment. This training project provided the farmers with the following skills to improve farm management: assist members in analysing core elements of a business plan; assist members in completing SWOT analyses and preparing strategic plans for their farms and/or co-operatives; provide training on member roles and responsibilities in modern agricultural co-operatives, democratic control, marketing, management, and accounting. This project also resulted in the establishment of new Agricultural Development Committees in each municipality. (- www.adf.org.yu)

Project is supporting Western Serbia tourism activities to improve tourism sites, services, marketing, and mapping of activities for visitors. Activities are assisting village tourism households; training in tourism project development; and improvement of marketing for traditional handicrafts, hiking, fishing, historic sites, greenways and trails, and other attractive areas. Tourism strategies include resource mapping; market research; hospitality industry training; tourist guide training and certification; village tourism household quality assurance programme and certification, promotional and marketing materials (brochures, CDs, web sites, etc.); tourism promotion events and fairs. IRD's assistance to agricultural co-operatives helps them increase their internal capacities through integrated management, marketing, business partnerships with processors, and improved quality through training and technical assistance.

ACDI/VOCA (Agriculture Co-operative Development Initiative/Volunteers in Overseas Co-operative Assistance) – these activities include a few municipality centres in Serbia supporting co-operative development. (<http://acdivoca.org.yu>)

In the name of the Ministry for Agriculture, Forestry and Water Management, the public, State-owned agricultural extension service has a statutory role which contributes to the conflict of interests and impedes the efficiency of its activities. Basically, financial support is known to be derived from:

- extension service activities' earnings which vary depending on the station from 10 to 90% of the total station budget,
- user paid control earnings whereby most of the earnings come from seed quality control.

Therefore, it is necessary to make a clear distinction between advisory services and statutory control activities in the existing extension service.

3 Overview and prospects

3.3 Training

The agricultural extension service is expected to offer services to both the producers and those involved in the processing industry including marketing and in this way contribute to joint activities in the production chain: production, market information, production economics at farm level, production plants, trade, standardisation and protocols, environmental protection and animal welfare, business planning etc. Under the current conditions, agricultural stations are still insufficiently adapted to the emerging changes and processes of transition. Activities should be focused on creating opportunities in order to service users from agricultural combines to commercial producers, from production oriented agriculture to market oriented agriculture, from quantity production to quality production. However, the extension service needs to undergo considerable personnel and structural changes in order to meet the anticipated requirements in the EU accession process.

3.2 Extension

Government should establish a clear and long term strategy for the provision of new information and technology to meet the needs of the entire food chain i.e. producers, processors and traders (market). Serbia urgently needs to develop a functional agricultural advisory service with well trained and informed staff to assist family farms and agro processors to meet their entire needs for knowledge and information including production and value adding technologies, access to credit and markets, Government and EU policies, regulation, standards, environmental, food quality and safety requirements etc. It is important to choose a model appropriate to Serbia and it is suggested in an Agricultural Strategy document that *“the most appropriate model would be a combination of State and user funding with the majority of funding coming from the State in the short term, but at the same time to create conditions and help towards unrestricted growth of private services and competition”*.

Given the need for State funding, the main issue is how it is to be delivered. There are a number of different models.

- at one extreme, some say there should be a State extension service funded entirely by government;
- The other extreme is to introduce the discipline of the market from the start and encourage competition in supply of extension advice, and ensure the suppliers are responsive to demand.

In order to improve the competitiveness of Serbian agriculture, and the income of family farms, it is critical to improve the performance of all the three inter-related groups involved in the food supply chain:- the producers, the processors and traders (markets). The proposed advisory service should serve the information and technology needs of all the three groups. Now extension has to focus on the small and medium sized family farm sector. Furthermore, it should help small holders with little land and few prospects of becoming competitive farmers to find alternative employment and income opportunities (including first stage on-farm processing).

3.3 Linkages between technology transfer agencies

The current system in Serbia is not providing (except in the case of wheat, maize, sunflower, and crops production) the latest agricultural technologies and knowledge to emerging family commercial farms and there is little effort to acquire and test the technologies available in the global market for Serbian condition to improve their competitiveness. Capacity in Agricultural economics research and policy and market research is weak and there is little connection with the agri-food sector and little impact on farmer income.

The research-extension-farmer linkage is not strong and effective for technology transfer. They co-operate only on a temporary basis and occasionally. The link between researcher-extensionist is stronger than their co-operation with farmers.

In the forthcoming period, a more favourable organisation scheme, the development of the information system and of the services presently lacking are together expected to enhance coordination and link all the participants: Ministry for Agriculture, Forestry and Water Management, Republic and regional agricultural services as well as other entities: associations of agricultural producers, Serbian Association of Co-operatives and regional co-operative associations, co-operatives, associations of experts in the field of agriculture and food industry, agricultural associations of the Serbian Chamber of Economy and regional chambers of economy, institutions for educating agronomists especially faculties for agronomy, stock exchange market and information systems of agrobusiness marketing institutions (STIPS) including extension services of other countries.

4 References

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Annex

Table 1. Total number of advisors and their education structure in the agricultural extension and consultancy service
Ukupan

No.	Education	No.	Structure (%)
1.	PhD	25	6.5
2.	MSc	35	9.3
3.	Graduates, Agronomists	319	84.2
	- crop science	98	25.8
	- animal husbandry	64	16.9
	- fruit-growing and viticulture	31	8.2
	- plant protection	70	18.4
	- food technology	31	8.2
	- agricultural mechanisation	7	1.9
	- soil amelioration	11	2.9
	- agricultural economics	7	1.9
	Total	379	100

Source: Muncan,P., Bozic Dragica, Bogdanov Natalija, 2004., based on data of Ministry for Agriculture, Forestry and Water Management of the Republic of Serbia

Table 2. Indices of the budget financial support of agriculture and agricultural extension service (%)

Year	Share of agriculture in the GDP	Share of agriculture in the total budget	Share of agricultural extension service in the agro budget
2000	23.8	4.7	2.2
2001	25.0	4.7	1.2
2002	23.4	3.3	1.4
2003		3.0	1.1
2004		5.9	1.1
2005			1

Izvor: SG SRJ Savezni zavod za statistiku, Zakon o budžetu Repulike Srbije za navedene godine i obracun autora

Approx. % of population that is rural by:	
(a) place of residence	55 % (OECD definition of rural areas) 44% (official statistical definition)
(b) place of work	na
Approx. % of all workers in rural areas in:	
(a) agricultural employment	32 %
(b) non-agricultural employment	????
Number of universities and similar institutions with agricultural courses	4 Faculties of Agriculture, 2 Faculties of Veterinary Medicine, 3 advanced agricultural schools
Number of colleges and similar institutions providing agricultural training	

- CEEC AGRI POLICY -

Number of other training providers:	
(A) PUBLICLY FUNDED	%
(b) privately funded	%
Approx. % of agricultural personnel with:	
(a) degree or equivalent	6.95
(b) diploma or equivalent	
(c) certificate or equivalent	
(d) full secondary education	36.09
(e) less than full secondary education	26.69
(f) little or no formal education	28.19
Estimated level of demand for further training: (use A=high, B=moderate, C=low)	
Agriculture – arable/cropping production	C
Agriculture – livestock production	C
Business management	A
OTHER [PLEASE SPECIFY; ADD ROWS AS NECESSARY]	