

# **Macedonian Agricultural Research and Extension System Country Report**

## **Overview**

The basic goals of the Republic of Macedonia's economic development programme include economic growth and development, active involvement in regional and global integrative processes, maintaining macroeconomic stability and continuous structural reforms, especially targeted at promotion of small and medium-sized enterprises (SMEs) and attracting foreign direct investments (FDI) which would lead to economic growth, as well as help reduce unemployment and poverty.

### *Role of the Agriculture Sector in the National Economy*

Agriculture and industry are the two most important sectors in the economy, with a significant growth of the service sector in the past few years. In 2004, the biggest share of added value went to the manufacturing industry with 15%, and agriculture, forestry and fishery with 11.3%. Compared to 2003, the biggest nominal growth in added value in 2004 was recorded in the trade sector (wholesale and retail) and the services sector (due to the growth of the financial sector).

Agriculture has traditionally been one of the most important sectors in the economy. The agriculture sector plays a key role in the successful implementation of structural reforms in the country, due to its social role in providing food and stable income for approximately 20% of the able-bodied population.

Without reducing or losing its important role, the share of the agriculture sector in the overall GDP (nominal and real) has remained relatively stable, contrary to the experience of most economies in transition.

The stable share of agriculture in the national GDP is due to the moderate pick up in the growth of the sector, but also to the big reduction of activities in the industrial sector and the overall drop in the GDP. Given the reduced activity in the industrial sector, agriculture has served as a shock-absorber for the socio-economic and structural changes in industry and other sectors of the economy.

## **1. Policies and strategies**

Official Ministry of Agriculture, Forestry and Water Economy (MAFWE) approach toward extension and advisory policy is characterized by still clearly undifferentiated responsibilities between the two existing service providers under its management; MAFWE regional offices and the National Extension Agency (NEA). MAFWE offices have acquired increasing importance in extension activities over time. However, the MAFWE regional offices remain understaffed and poorly equipped. On the other side, MAFWE reduced the involvement of NEA in implementation of its policies in field activities especially after structural reforms in late 90s when the most of previous support measures of direct type were either gradually reduced or fully terminated. As a result NEA was progressively more oriented to provision of advisory services, well equipped by a World Bank (WB) project but failed to build or reform human capacity respecting

beneficiaries' needs in a rapidly changing environment. Squeezed scope of responsibility and inadaptability to objectively limited demand for services created an impression of underemployment of NEA, additionally reinforced by failure to replace a part of budget funds with incomes from services sold to farmers - an expectation imposed by WB reforms. In fact MAFWE never evaluated or commented about the quality of extension activities delegated to and done by NEA. At the same time there was collaboration between MAFWE and NEA in the planning of future activities.

Recently MAFWE embarks on advisory improvement reforms supported by the Macedonian Agriculture Advisory Support Program (MAASP), the SIDA funded program that commenced over two years ago. Their efforts over the past year have been primarily directed at 'setting the stage' for institutional changes and changes in attitudes. At the national level MAASP has been primarily focused on facilitating discussions on the future of NEA as it is integrated into MAFWE. An infrastructure for engagement at municipal level through 5 pilots has been established and initial activities have begun which are providing a base for collaboration among municipalities, NEA, private sector and farmers associations through advisory groups. This field work should provide basis for identifying a sustainable and demand driven agriculture service provision identifying priorities, stimulating interest, leading actual implementation and organizing monitoring.

### **Strengthened links in the transfer of knowledge chain**

The advisory services are intermediaries in knowledge transfer between the knowledge suppliers and users. Advisory Committee established by relevant stakeholders has to set priorities, improve coordination and strengthen the mutual links in terms of easier knowledge transfer to final beneficiaries in line with their needs.

### **Support of pluralism of advisory service**

Apart from services of public interest mainly subject to provision by NEA, the options for contracting out service delivery to the private sector have to be considered especially in areas where NEA lacks expertise. Large market oriented agro-food companies are not NEA target group so there is still room for private more profit-oriented advisors and consultants businesses. The private advisors have also to be included in training and other capacity building assistance organized by the government for implementation of its strategic objectives as well as to participate in coordinative bodies and committees. Any reforms with different demand driven models have to be left for the period when the public services in Macedonia will have optimal capacity to perform their basic activities successfully from the farmers and government point of view. Gradual introduction of changes in institutional structure and funding should be based on attained quality improvements that will guarantee successful implementation of such reforms in certain future period of time.

### **MAFWE Institutional capacity in Advisory services**

Current MAFWE training or educational activities performed through MAFWE programs have to become integral part of overall MAFWE advisory and training policy developed and monitored by dedicated *MAFWE capacity/unit for Knowledge and Advisory*. Their representatives should define and monitor MAFWE delegated mandate to public and private advisory services as well as participate in Advisory Committee.

## **Development of advisory certification system**

Development of an advisory certification system is a necessity. Due to its multidisciplinary approach, the system has to be organized and performed within those research and educational institutions which carry out such activities professionally. Official verification of overall achievement of advisory status can be done by MAFWE (or even Advisory Committee) but after confirmation for successfully completed skills assessment and examination process managed through the appointed professional institutions.

## **Links with EU *acquis***

According to the TAIEX mission report there are no relevant EU rules in this area where early harmonization would be appropriate. The country has to assure that an efficient system is in place. Otherwise the consequences of penalties due to failed application procedures as a part of IACS system or weak producer base will be borne by the country and stakeholders in the sector. The need for any specific assistance at the present time can be accomplished by the MAASP project and other relevant bilateral donor assistance.

## **2. Structure – stakeholders**

### ***2.1 National Extension Agency (NEA)***

NEA was established by the Law on NEA (the Official Gazette no.3/98), on the basis of the advisory service reforms in Macedonia, supported by the World Bank project for support of the private farmers and in accordance with the Republic of Macedonia agricultural development strategy for 1995 - 2010. By this, the previous individual Development Centers were transformed into a single national advisory institution, thus creating preconditions for higher quality advisory services in agriculture. In 2005, in agreement with the Government's conclusions for rationalization of the public administration, NEA was transformed into a second line budget user with closer relations with MAFWE, at the same time, maintaining the individual character of the institution. In order to provide the necessary closeness with farmers, NEA's headquarters are in Bitola. Its organizational structure consists of 30 working units grouped into 6 regions, with a total of over 130 employees in the whole country. The activities of the Agency and its organizational structure are based on specialized sectors of agriculture production: crop farming, livestock breeding, vine and fruit growing, vegetable growing and agro economics.

NEA provides direct advisory assistance to independent individual farmers, by providing practical implementation of certain technologies, that is, providing technical information related to the agricultural production process compiled as technical responses to questions, aimed at increasing the quality and quantity of agricultural production. The Agency seeks to tailor these services to the actual demand of the individual farmers and their associations.

Also, the Agency implements measures in line with Agriculture Support Development Program and other activities on request of MAFWE; it maintains and upgrades the Farm Monitoring System which is a source for information about profitability and economic efficiency of agricultural production within the advisory service, and also for the needs of other interested institutions.

In order to provide constant education and professional growth of the Agency advisors, it conducts training and consultations in different specialized areas covered by the NEA's activities, and supported by different bilateral and multilateral donors, such as Sida, GTZ, and EAR.

In accomplishing the planned activities, NEA has been assisted by several projects funded by Sida, such as MAASP in increasing the functional value of the advisory services; the Project "Improvement of Agricultural Statistics", implemented by the Swedish Statistics focused on the further development of FMS and its approximation to the standards of the European Farm Accountancy Data Network (FADN), as well as the Project SFARM - Support to Farmer Associations of the Republic of Macedonia, which helps in conducting training for the advisors and the farmers. With the adequate activities in the development field on the basis on FMS, the Agriculture Structural and Legal Reforms Project of the MAFWE, which is funded by EU and managed by EAR, is also included.

## **2.2 Research and Science stakeholders**

In accordance with the social and economic changes, the priority has been placed on developing a production model to improve the quantity and the quality of agricultural production. On the basis of the Law on Scientific Research, funds are allocated on programs proposed by the research institutions. In conditions of prioritizing the economic growth, the education and the research institutions are facing smaller and smaller budgets and lesser possibilities to seek funds for scientific development projects, especially in the agricultural sector, and on the other hand the Euro-integration processes demand active support from the scientific institutions to be able to follow and strengthen the EU accession process and all the obligations deriving from it.

The research and development institutions which engage in research to support development of agriculture and forestry are the following: the Institute of Agriculture, the Institute of Livestock Breeding, the Institute of Tobacco in Prilep, the Institute of Southern Crops in Strumica and the Veterinary Institute. The agricultural research institutions at the moment have about 300 employees; about 40% are senior scientists – doctors of sciences. Besides the institutes, a smaller amount of agricultural research is carried out in the institutions of higher education.

**The Institute of Agriculture** carries out its research in the field of plant production on about 360 hectares of arable land. The experiments are focused on scientific research; however, there is not sufficient evidence or linkages between the research and the application of the results in the field. The largest portion of the work of the Institute of Agricultural Research is seeds and seedlings production and their sale. The other services include soil testing and diagnoses related to plant health protection, as well determining quarantine diseases.

For some of its activities, such as: maintenance of a gene bank, production of certified virus-free seedling materials, analyses and testing of plants for diseases and pests protection, etc., the Institute receives financial support from the Agriculture Support Development Program. This scientific institution, one of the oldest in the country was established in 1927. Living and working in a dynamic society, the Institute supports the development of modern and sustainable agricultural production in the country through its team of more than 40 scientists, researches and support staff.

The Institute of Agriculture undertakes applied research within a wider domain of plant production. Its mission is to provide high quality scientific and applied research using methods that are financially, environmentally and socially sustainable. The Institute is dedicated to contribute to the solution of current problems of the Macedonian agriculture and to the introduction of latest technological methods and approaches into the agricultural practice.

The Institute of Agriculture is composed of:

- Department for Field crops and Vegetable Production
- Department for Fruits and Orchards
- Department for Viticulture and Wine production
- Enology Department “sorry don’t know this”
- Plant protection Department
- Soil and nutrition Department
- Department for Economical Analysis and Project Planning

***The Institute of Tobacco*** is one of the best equipped and the most powerful research institution in the Republic of Macedonia, because the development of tobacco production is of strategic interest. The Institute engages in research, but often plays an advisory role organizing open days on its experimental fields and inviting tobacco producers, firms and the members of the Association of Tobacco Producers.

***The Institute of Livestock Breeding*** has introduced an electronic marking and tracking system. In order to expand this activity further, there is a proposal to set up a central office equipped with computers and database operators who would enter details for each farm on a regular basis. The Institute participates with 25 annual research projects and transfer of technology, aimed at increasing profitability of small farmers in different kinds of enterprises, including grapes ? “is this correct” and meat production enterprises.

All the institutes are internationally connected and receive support from international projects. The donor network of funds with the neighboring countries (Sida, regional statistics), or training in production of dairy and meat products (USAID, with NAPMDP as a training camp for technicians), and organizations of producers (Sida, the Macedonian National Organization for Agriculture with the Swedish Agricultural Union).

### **2.3 Education and agriculture research stakeholders**

***Agricultural secondary schools*** In the country, there are state agricultural secondary schools. For the school year 2003/2004, the Ministry of Education and Science announced vacancies for 1,190 new students in six different divisions of the agricultural secondary schools based in 10 towns in the Republic of Macedonia. Higher education in agriculture is not especially attractive to the younger generation, thus each year more than 30% of the vacancies are not filled. The largest numbers of students who register in the secondary agricultural schools come from the rural areas. About 10%-15% of the registered students do not finish their education studies.

***University education in agriculture*** There are four higher education institutions in the country in the area of agriculture: the Faculty of Agricultural Science and Food, the Faculty of Veterinary Health, the Faculty of Biotechnological Sciences and the Faculty of Forestry. The institutions of higher education are going through a phase of improving their educational standards and programs in order to become compatible with similar education institutions in the EU. Their process of development includes cooperation with other educational institutions to strengthen their education programs, staff and student exchanges, scholarships for students to continue their further education abroad, etc. The education activities at the faculties are partially funded by the Ministry of Education and Science, while the larger share of about 60% of the total amount of € 4.4mil. spent in 2005, comes from their own sources. In 2003, the higher education system was subject to reforms to modernize the curriculum and other educational activities. The faculties introduced a new organization and structure in their departments, studies, study groups and study programs, as well as a credit transfer system in accordance with the European credit transfer system. These changes should produce the necessary number of new specialized professionals, needed on individual farms, the small and medium size enterprises in the food industry, and for scientific research in the specialized institutions.

***The Faculty for Agricultural Sciences and Food (FASF)*** - Skopje is a member of the University Ss Cyril and Methodius, the largest university in the Republic of Macedonia. FASF was established in 1947 and along with other two faculties was one of the founders of the University.

Since its establishment FASF has undergone numerous reforms aimed to follow the global transition tendencies in agriculture development and educational systems. Five years ago FASF was among the first five members of the University in Skopje that has introduced ECTS (European Credit Transfer System) system according to Bologna Declaration.

FASF is the biggest leading educational and scientific research institution in the field of agriculture and food in the Republic of Macedonia, with 137 employees, out of which 69 PhD holders, 14 M.Sc. holders, 9 B.Sc. holders and 15 laboratory technicians.

FASF transfers its knowledge and professional experience on broad scope of users starting from the students, through general public, farmers, various NGOs, organizations, companies, extension services, up to the decision makers.

**The Faculty of biotechnological sciences – Bitola.** The Faculty is a member of the University st.Kliment Ohridski in Bitola. It is founded in 1960/1961. The faculty has BsC and MsC Programmes in the field of Processing animal products, Farm production, Management in Biotechnology. This is only high level institutiton in the field of biotechnology in Macedonia.

In the year 2007 is established a new **University “Goce Delcev” in Stip.** Within this University it is planed to open new Faculty for Agriculture (starting from October 2007) with 4 departments (general department, Agro management, Processing of agriculture products and Integrated agricultural production).

### ***Non-formal education in Agriculture***

As part of activities aimed at conforming and keeping pace with the contemporary trends in agriculture, rural development and environment protection, the Institute of Agriculture founded a separate unit to deal with agricultural education – **the Foundation Agro-Centre for Education (FACE).** FACE is non-profit organization, founded in 2006 by the Institute of Agriculture-Skopje.

The approaches that FACE takes in this work are:

- ✓ New themes in the curricula for the education in agriculture

The extent of scientific advances in the fields of biotechnology, computers and communications allows shorter assimilation periods. In a global economy, food processing, storage and marketing are aspects of the production process that have become increasingly important to agricultural producers, and thus to agricultural education. Agricultural education and training needs to take into account new subject areas and their socio-economic consequences. The increasing concern with environmental protection and the preservation of natural resources makes research and teaching on subjects such as crop protection and integrated pest management, rational use of fertilizers and soil and water conservation more pressing. Students need to have the knowledge, skills and attitudes required for sustainable agricultural and rural development.

- ✓ Link between education and research

With few exceptions, in Macedonia, the relationships between agricultural education and training institutions and agricultural research services were inadequate. In many countries, this is the result of the deliberate separation of research and education. Agricultural research is generally conducted in research stations and laboratories, the majority of which are not linked with universities, although cases of collaboration between staff exist.

FACE is focusing on the following three segments:

- Development of non-formal education through trainings, courses and seminars;
- Development of formal education through introduction of postgraduate studies; and
- Capacity building for FACE as an institution, as well as for its managerial and administrative staff.

Other issues that FACE is focusing are:

- Relationship of agricultural education and training to extension
- The use of community-based resource persons in training and education
- Joint programs of education at university level
- Cooperation with (west European) programs and
- Adjusting training to employment needs and entrepreneurship
- From public service needs to the needs of the private sector and self employment
- Relationships with regional and international organizations
- Inter-institutional co-ordination and co-operation

Target groups will to great extent depend on the type of activity, but mainly target group is Extension officers (Advisors), Farmers, Food industry managers, Civil servants from state and local government bodies, Private and NGO experts , Students graduated from the faculties of agriculture, economics, law etc.; Teaching and administrative staff.

Regarding training curricula, FACE have already introduced several.

Provide Training in Adult Learning Methodologies for Training-of-Trainers-Program within the Institute of Agriculture. The target group was 15 experienced researchers from the Institute and few from Faculty of agriculture in Skopje.

Provide training in GAP (Good Agricultural Practice) in relation to European GAP standards to Advisors.

Provide training in First Aid in Agriculture in relation with GAP standards to Advisors.

Provide Entrepreneurship skills training modules for private advisors and young potential Advisors.

Provide technical training for NEA Advisors in practical implementation of the National Rural Development Program (application for financial support) of MAFWE.

***Agricultural Investment Support Unit, within the Agricultural Financial Services Project - IFAD***

The goal of the Agricultural Investment Support Unit, in the framework of the Agricultural Financial Services Project – IFAD, is to support the credit process in agriculture and efficient employment of investments, in order to reduce loss-making and unsustainable investments. The main activities of the Unit are focused on:

Developing advisors' network to provide services for the potential and the existing IFAD credit-line users; preparing business plans; providing assistance in collecting the documentation necessary for credit applications, and providing economically sustainable advice after credits have been granted;

Training credit users to increase their capacity to manage business successfully;

Training and demonstrating testing of new technologies; agricultural production and processing standards, and management of farm business;

Tracking investments in the whole cycle, and reducing the risk of inadequate implementation of chosen business plans, as well as payment of credits at arranged terms;

Providing support to develop organized supply chain of agricultural products and providing mediation services for all chain participants.

At the moment, the Agriculture Investments Support Unit has developed a network of 14 advisors who work on the territory of the whole country, facilitating the access to funds offered by the financial institutions included in the IFAD Project, and designed for the rural population.

The main task of the IFAD advisors is to provide a package of advisory services for the clients, which comprise the preparation of business plans and the part that offers technical and business advice for successful utilization of investments after the credit has been granted. The method of payment for advisory services is on the basis of a written agreement between the project and the client; thus the advisor is partially paid from the project funds, and the rest is the client's responsibility. The decision to hire an advisor is made by the client, while the prices of the advisory services within the project are determined by special price rates.

***Agricultural statistics.*** The overall goals of the agricultural statistics are control of the agricultural activities and supply of reliable information for various users. The State Statistical Bureau makes significant efforts to improve its agricultural statistics, but still the coverage of the private farms remains a main problem. Holding the agricultural census and introducing the agricultural register are expected to expand the basis for the statistical coverage of the private agriculture and to improve the reliability of the agricultural statistics. The census, which has been postponed for several years, most probably will be held this year.

With regards to the agricultural statistics, a total of seventeen research projects have been conducted for the needs of farming - stock breeding – forestry statistics (annually or more often), of which nine were focused on the commercial farms and eight on the farms with small estates. The methodology applied was: gathering data and reports from companies, researches based on a sample with a large number of farm visits (for example, a livestock farm) and estimates (yield estimates.) Yet, the majority of them can not be counted as fully representative, because the coverage of the farms with small estates, for example, is very poor regarding some statistical indicators and missing of others.

For the purposes of developing agro-monetary statistics, a large priority is given to the Economic Accounts in Agriculture. The creation of the Economic Accounts in Agriculture at the moment is a responsibility of the State Statistical Bureau which began establishing Economic Accounts in Agriculture in 1999 which referred to 1998. The last Economic Accounts in Agriculture have been processed in 2004. The development of reliable Economic Accounts in Agriculture suffers from lack of information about farms with small property and precise information about the larger agricultural enterprises where there is a lack of data on mutual spending in the sector, interest rates to loans and rent, input of labor and value of principle of shareholders' capital. At the moment, there is no contribution by MAFWE to overcome the problem of lack of data or to use the Economic Accounts in Agriculture in the policy formulation process.

The improvement of the agricultural statistics is the main goal of the Swedish project funded by Sida, more precisely, strengthening the main components of the system of Agricultural Statistics, i.e. introducing a statistical farm register, preceded by the agricultural census; improvement of the already available statistics on wheat, livestock and forestry production; development of labor in agriculture, and the agro—monetary statistics (including the Economic Accounts in Agriculture).

### **Farmer associations (FAs)**

The farmers are organized in more than 200 farmers associations throughout the country, covering different products and regions. The farmers' Federation of the Republic of Macedonia (FFRM), was established in 2002, and presently has around 90 of the farmer associations as its members. Its aim is to act as a lobbyist of the interests of the Macedonian farmer and coordinate the activities of the farmer associations.

- Adopt Codex of the farmers and their organizations;
- Representation of the FAs in relations with the Ministry of Agriculture and other players
- Issuing informative bulletin;
- Web page of the FFRM;
- SWOT analysis for 5 national associations;
- Study tour and co-operation with Federation of Swedish farmers;

Most associations tend to be commodity based for example as milk, grape, livestock, bee keepers, goats, pigs, rabbits, poultry, vegetables and arable crops production associations; Some associations tend to privatize extension, but most are commodity based ; More than half of them only registered, but not functioning;

FAs are engaged in distribution (sometimes sales – “cannot trade”) of inputs obtained through the assistance of foreign foundations; Providing of production inputs like seeds, fertilizer, plant protection materials, live animal, animal feed, building material etc; FAs provide education through vocational training, workshops/seminars, study tours, etc. on agriculture practices/marketing within the specific subject matter of the association; Application of modern technologies in the production process, sometimes implementation demonstration trials;

### 3. Organization and management of research and extension stakeholders

While previously advisory services was matter of national public institutions, in last few years a range of organizations providing advisory services emerge increasingly to producer organizations, NGOs and private enterprises. *Four major categories of actors in agricultural advising* in the country are: public agencies, private service providers, farmers' associations (FAs) and international donor organizations. Beside the National Extension Agency (NEA) which is probably the only that has a provision of advice as its primary activity, remaining *public* institutions (such as institutes and faculties) consider advising as a necessary and complimentary activity to their research/educational function. Input suppliers, veterinary stations and private training and consulting companies are most available *private* providers of services in rural regions. Internal human and organizational capacity and acquired donors support through projects are two crucial determinants that do determine the scope and quality of services provided by existing associations of farmers. Commonly, the quantity and frequency in provision of advice by private actors, farmers' associations and international donors essentially depends on the level of economic and demographic development of particular regions. In general the main *target group* of public institutions and private advisory services are Macedonian farmers although they also provide some services to processing companies and associations of farmers. At the same time, the target group of donors, which apparently present the most active group of providers at the moment, are mainly focused on associations of producers/processors putting emphasis on institutional strengthening aspects.

By largest portion, extension services in agriculture are *funded from public* sources widely considered as: state budget's funds (allocated through NEA, MAFWE and research and education institutions) as well as donors support. *MAFWE* provides advisory services on national level throughout realization of regular annual programmes of its sectors and directorates. It finances different advisory activities and training programs including organizing seminars, consultations and publishing reference literature from the field of agriculture in amount that varies from MKD 1-3 million over the years. In addition MAFWE 33 regional offices countrywide do perform executive and administrative activities locally, mainly supporting the farmers in state support application process, dissemination of other MAFWE policy information, restricted activities in land policy and reporting of sown and harvested areas, thus performing the most of agricultural extension activities in agricultural sector. Vertically subordinated under the MAFWE's Agricultural Department the regional offices currently employ 88 persons.

But still the most of the state funds allocated for advisory services in agricultural sector are budget means allocated to *the Agency for Promotion of Development of Agriculture in RM* or also so-called National Extension Agency (NEA). Currently NEA funding is entirely provided from the state budget which is sufficient only to cover the salaries and basic operational costs without any additional earned incomes. Its 2005 budget consists of 5 budget programs is in average of annual amount of MKD 45 million (€ 730,000) or only 3% of actual public budget spending in agriculture in 2005.

The funding principal of larger scale self financing as a supplement to the existing budget that was also introduced. Perceived as indicator of efficiency of performance of Agency this was unreal to be achieved since only minority of private producers are commercial and enough profitable to pay, MAFWE agricultural policy objectives and instruments toward advisory services were fairly undefined and capacity of NEA

employees needed to be upgraded essentially to the optimum level then and now. In October 2004 consideration given to operation of state institutions between the government and IMF and the World Bank resulted in a government conclusion that the Agency should lose its status of first-line-budget beneficiary, and become a second-line budget beneficiary under the Ministry. Although this goal has already been achieved, just recently MAFWE initiated a new process of further transformation of Agency institutional status toward full incorporation within the Ministry structure.

According to analysis of the SIDA funded Macedonian Agricultural Advisory Development Support Program (MAASP), NEA weaknesses are identified in its weak management with poor internal communication, minimal links with MAFWE, lacks of business and market knowledge, aging de-motivated manpower with narrow orientation on technology advisory skills, outdated IT equipment (but incomparably better the equipment in MAFWE regional offices), no long-term strategy, etc. On other side their strengths are technical knowledge and basic production skills, good physical network and developed farm monitoring system. NEA highly centralized management organization lacked procedures to design or implement a practical plan or monitoring and evaluation procedures.

The Agency operates comprehensive and technically well-structured system for monitoring of farm business. This system is a single organized network of collection of structural and financial data on the functioning of individual farms some 400 farms being included. Although primary objective of this database is to help the Agency in providing data for business management advice the existing FMS has been widely recognized and recommended by EU experts as sound basis to be upgraded to future FADN system needed for formulation of agricultural policy of CAP type. Nevertheless since 2001 NEA has a permanent problem to provide approx. MKD 2 million for operational costs.

Most of the researches are funded by the Ministry of Education and Science. Funds for research project are granted according to the proposed programs, or by a public bidding procedure. As a supplementary activity to their basic research or educational functions, these institutions do deliver advisory services mainly mandated by the Ministries as well as limited services to private actors on purely commercial basis. No seriously organized approach of communication and knowledge transfer between research institutions and advisory has been established yet.

In general, the principle of financial participation by beneficiaries is not widespread presented in funding of advisory services in the Republic of Macedonia. Most of the users of services are not charged for the services they receive. If it is a case then the payers usually are commercial, market-oriented producers, economically feasible and profitable competitive exporters who usually live in agricultural prosperous areas. Usually, they are clients of services delivered by private actors. According to EU TAIEX team *'the efficiency of any advisory service is inhibited by the very small scale of most producers; their limited investment possibilities and attachment to traditions'*. Insofar the trials for establishment of more professional private organization of advisors such as associations or advisory groups have been of limited duration and usually linked with time-life of support by different project and their activities (previously Agro-manager and IFAD consultants now).

At the moment there is no dedicated MAFWE capacity that realistically envisages and promotes joint actions among stakeholders in knowledge creation and transfer process.

In addition, the certification system for suppliers of agricultural advisory services staff advisors has not been established in the country yet.

#### 4. Research-extension linkages

The research institutes are legally part of the faculties, but receive very limited Government funds. All public research activities, including the ones in agriculture, are funded through the Ministry of Science and Education. The funding method through the Ministry of Science and Education has recently changed; now the Ministry provides the salaries and allocates funds for programs and sectors in accordance with the agricultural research strategy. Any organization or individual can submit an offer or a proposal to work on a research project. The Government covers the salaries, which contributes about 20% of the total budget of the institutions, while the rest comes from project funds. In 2005, the total amount spent on all five research activities in these institutions (including their current expenses) was only € 2.3 mil.

Expenses of agricultural research institutions in 2005:

Institution	Mil. Denars		
	RM Budget	Own Income	Total
Institute of Agriculture	12,0	40,1	52,2
Institute of Livestock Breeding	4,9	18,6	23,6
Veterinary Institute	0,0	0,0	0,0
Institute of Southern Crops	5,2	15,9	21,2
Institute of Tobacco	7,3	33,5	40,8
Total for Research Institutions	29,4	108,2	137,6

Source: RM Budget

Unlike in the past, when the advisory services in the agriculture sector were mainly the authority of the public sector institutions, such as the National Extension Agency (NEA) and the scientific-research institutions, recently different categories of agricultural advisory services have taken their place in the country. In conditions of limited public institution funds, the private sector institutions, the farmer associations and the international donor organizations more and more become significant factors in providing advisory services. However, these still offer a limited range of services, use insufficiently diversified methods, address limited target groups and have a limited effect in satisfying the advisory needs.

Except NEA, the other public institutions (such as the institutes and the faculties) restrict their advisory services to additional educational activities linked to their own research activities or individual one to one activities. On the other hand, seed and seedling, fertilizer and machinery suppliers, and veterinary stations are the most active providers of broad-based advisory services to the rural areas. The range and the quality of services provided by the existing farmers associations is related to the internal human and organizational resources of the organizations and the available donors' support.

Usually, the scope and the intensity of the advisory services relate to the level of economic and demographic development of the specific region, being more concentrated where agriculture is important for the development of the region, where there is a more professional engagement of the majority of farmers. Mainly, the number of users of the public advisory services is not very high in the Republic of Macedonia, except for the commercial, market-oriented and profit oriented producers, especially those competitive exporters from the prosperous agricultural areas such as Gevgelija and Bitola.

Inter-institutional cooperation and horizontal linkages between research and educational institutions, administrative policy formulation institutions (MoES and MAFWE) and the users of knowledge in the sector are very weak. As a result of that, commonly approved strategic objectives and vision for development and enhancement of agricultural knowledge needed for planning of activities and resources formulated through participatory approach by relevant stakeholders do not exist yet. While funding provided under MoSE and MAFWE led to many isolated successful results, the potential of combined research efforts has yet to be fully exploited and agricultural research policy in Macedonia today remains highly fragmented. This leads to isolation of researchers as well as duplication or/and inefficiency.

The framework for establishment of quality partnerships and *transfer of agricultural technologies and knowledge between the higher education and research institutions on one side and the economy* on the other is ineffective. The mechanisms of interaction between research and agri-food business sector are not developed which result in insignificant private investments and participation in applied research and innovation. In addition there is an insufficient involvement of employers in the development and profiling of the workforce that will correspond to the current needs of labor market. Policy does not stimulate the cooperation of institutions from higher education with the research institutions and with the economy.

### **Information and communication strategy**

Research information of national use is not readily accessible to producers other than through personal contact and a few extension seminars. Researchers themselves have reasonable access to electronic and printed information while ICT capacities are not well employed for research and organizational management. Research orientation is still towards mostly large scale exploitations rather than based on needs by the much larger community of small scale farmers. Communication channels, policies and finances to improve this research orientation are not available. However, project experience of participatory research collaboration was perceived very positively but continuation and up-scaling are lacking funding, awareness and perhaps also commitment.

Collection of useful data for decision makers or producers, processors or traders is in its infancy but with promising progress. Accessibility of such data will depend on modalities for financing of data collection and technology availability to users for retrieving the information in a timely fashion.

**The agriculture market information system.** The broader goals of the agriculture market information system are a continuous provision of a transparent overview of the movement in the agriculture markets and strengthening the position of the national agro-food sector at the domestic and foreign markets. Additionally, the system provides relevant market data, important for formulation of the business and agriculture policy strategies. Integrated comprehensive market information system with regular dynamics of publishing results, still does not exist. The Agriculture Unit at the State Statistical Bureau collects prices and publishes data on trading of agricultural products on a weekly basis, and publishes reports on a monthly basis. The prices are collected at the wholesale fruit and vegetable markets in Skopje and Strumica, at the six animal markets, 13 green markets at different locations on market days, 4 to 5 times per month. The highest, the lowest and the most common prices are collected, but average prices are not calculated. Also, data on supplied quantities at the animal markets is collected, and the movements at the agricultural product buying stations are followed. The reports include comparisons with previous month and previous year prices. The Price Unit in the Section for National Accounts of the State Statistical Bureau works on farm prices, which at the moment are exclusively for statistical purposes. In formulating the prices per producers, the prices valid in agriculture industries are used. Certain partial efforts to establish an agriculture market information system have been made with the assistance of foreign donors, such as Land o' Lakes, USAID and GTZ .These efforts have not proved sustainable in the long run because of the absence of an integrated system for tracking and analyses of movements at the agricultural markets.

The generally recognized, important role that agricultural information plays in agriculture development is one of the main principles of MAFWE in creating the agricultural policy and the initiatives to establish a body which will integrate and coordinate the system.

The inadequate development and application of the information technologies in the relevant institutions of the system additionally make the process of establishing an integrated agricultural information system more difficult. The additional obstacle is the condition of the general information infrastructure in the rural areas and the application of information technologies at farm level. Therefore, the roles of the media and the advisory services in disseminating information, are greatly emphasized.

**BAFN Project** - The BAFN (Balkan Agro Food Network) project started on 1st May 2006 and will run for two years, ending in April 2008. During this project, several actions will be undertaken to prepare the participation in research projects supported by the European Union. In a first step, researchers from universities, research institutes and NGOs, as well as private companies from the agricultural and food sector are invited to register in an on-line database. This database will help to promote competencies and initiate cooperation with research groups, researchers and private companies from the European Union. In a second step, consultations of the registered experts are organised. At the beginning of December 2006, more than 160 research groups, 350 researchers and 65 companies already expressed their interest and registered on the information platform [bafn.eu](http://bafn.eu).

The project gathers partners from Albania, Bosnia and Herzegovina, FYROM and Serbia. Organizations from Bulgaria, Hungary and Greece with good knowledge of European research programs also participate in the project. The project is coordinated by Euroquality, a consulting company established in Paris.

The objectives of BAFN will be achieved thanks to the creation of a network of researchers. Researchers will be invited to register their profile into an on-line and dynamic database. Networking will then be stimulated thanks to the involvement in national consultations and to the communication of relevant information for scientists from the agricultural and food sector.

The project Balkan Agro Food Network (BAFN) intends to contribute to these efforts in the area of agricultural and food research. For implementation in Macedonia responsible organizations are The Agricultural Institute and The FACE (Foundation Agro-Centre for Education).

### **Ideas and suggestions for improved regional partnership**

- Developing proper information content for information systems requires the best use of available technical expertise. Thus research, education and advisory systems need to be organized and directed in ways that stimulate collaboration and provide feedback for retuning work priorities.
- provide farmers with locally relevant and up-to-date agricultural information on new farming techniques for sustainable food security, crop diversification for improved farm profitability and better marketing opportunities
- The advisory function needs to be supported by appropriate material in the right format provided by the education and research sectors, at first in the traditional format (hardcopy, field demonstrations) and increasingly relying on electronic formats (web-based data leaflets, on line videos, slide presentations).
- improve the quality of the information within the technology innovation sector so that information will be readily available and accessible to those who need it;
- gain access to other information sources (international) for content development and the adaptation of these information to local situations
- Special training for new functions in such a system may be necessary at managerial level.
- Increase capacity of universities, including the non-formal agriculture education providers, as well as the research institutes and centers.