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1 Introduction and background

1.1 Introduction to rural technology transfer

Organised knowledge transfer to the rural population does not have an established tradition in Bosnia and Herzegovina. In the former political system, until the beginning of the 1990s, the State-owned sector was favoured while individual producers were mainly left to themselves. They were acquiring knowledge on the most recent technical and technological achievements mainly on an individual basis, through experts in agricultural institutes and stations, co-operatives, agro-complexes, or through the media (within radio or TV programmes about the countryside and farming). There was no organised knowledge transfer via agricultural extension services like the practice in developed countries. The issues regarding the interest of farmers to acquire knowledge shouldn't be neglected as well.¹ As a consequence, production (both total and average yields) results were utmost modest in the private sector and they were putting B&H at the very bottom of the European scale.

The post-war period in Bosnia and Herzegovina (after 1995) is characterised by implementation of different reconstruction programmes and projects, among which those ones related to agriculture took important place. A significant portion of the help to the agricultural sector was related to education and professional training of agricultural producers. This was done mainly by various institutions, organisations and individuals, since an institution, such as the extension service, that would deal with farmers' training and education did not exist at that time. Establishment of extension services according to the principles that are common in Europe started only in the post-war period with the implementation of two EU projects in the period 1998-2002:

1. PHARE – PFAP (Co-ordination, Institutional Development and Advisory Services to Support Private Farmers), implemented from 1998 to 2000. The project aim was the formation (establishment) of advisory services including extension services training in the project areas (Una-Sana Canton in the north-west part of the Federation of B&H and seven municipalities of Banja Luka region in north-west part of the Republika Srpska).
2. EU – ESP (National Extension Services for Bosnia and Herzegovina), implemented from 2000 to 2002 with total budget of 2.0 million Euro. The purpose of the project was the establishment of extension organisations throughout Bosnia and Herzegovina, institutionalised within regional and central government structures with sustainable training capacity tested and working.

After the end of the EU-ESP project that helped, in terms of financing, the establishment of Cantonal (in FB&H) and Regional (in RS) offices of agricultural extension services (AES) in Bosnia and Herzegovina, the third phase of the development of extension services followed. This phase understood institutionalisation of the services and their spreading on lower levels (particularly in municipalities with favourable natural conditions for agricultural production) together with exploring possibilities for their self-sustainability.

¹ For example, in the 1960s, when the fertilisers were introduced into practice, it took farmers a lot of time to accept it. Namely, during the first year of that period, farmers believed only in manure so most of mineral fertilisers were thrown into rivers. The process of changing production habits of BH farmers is a very slow and difficult process.

Regarding status issues, the agricultural extension service in RS is better regulated than the one in FB&H. In May 2002, the Government and the Ministry of Agriculture, Forestry and Water Management (MAFWM) of RS first decided to establish the Agricultural Extension Service of RS (AES RS²) as the specialised service for providing professional services for farmers and for the other subjects in agriculture. AES RS is within the organisational framework of the mentioned Ministry, it is financed by it and responsible to it. Two years later, on the basis of changes and additions to the Law³, the Government of RS established The Agency for providing services in agriculture as a separate professional and legal organisation with a wide range of activities. Within that range, providing agricultural producers with advice, knowledge and skills is the primary one.

Responsibility for the activities of extension services in the Federation of Bosnia and Herzegovina after the end of support from the EU was left to cantonal governments and their relevant ministries in charge of agriculture. Therefore, the situation in FB&H regarding agricultural extension services is uneven in terms of personnel issues, institutional issues, ways of organisation and financial support.⁴ There are even threats in some cantonal offices that employees in agricultural extension services could leave this job, which would mean the complete waste of the four-years long efforts of the international community to prepare, train and create basic conditions for the work of agricultural extension services. Future development in the Federation of Bosnia and Herzegovina will surely depend on agricultural policy makers but also on the personnel of extension services, as they are supposed to justify their existence with the results of their work. In Brcko District, the Office of the agricultural extension service operates within the Department of Agriculture and Forestry in the Government of Brcko District, and the Government is in charge of financing it.

1.1.1 Agricultural and rural training

The attitude of the rural population and the farmers towards modern knowledge in agriculture has changed significantly in the post-war period in comparison with the period before the 1990s. Increasing interest of farmers for new knowledge is the result of, first of all, different treatment of this issue by the State (establishment of extension services, orientation towards agriculture as a strategic economic activity), more significant presence in the field of potential service providers, such as municipal servants, co-operatives, agricultural institutes, universities and so on. Furthermore, there is a stronger presence of international institutions and organisations that in their plans and operation programmes recognise the importance of the training of farmers for the overall development of agriculture as the dominant economic activity in the rural areas of Bosnia and Herzegovina. On the other hand, social factors should not be neglected. In another words, for the greatest share of the rural population, agriculture presents the only source of income and the only employment possibility, since industrial and other production activities in Bosnia and

² Official Gazette of RS, No 36, from June, 21.2002.

³ Law on the changes and additions of the Law on Ministries (Official Gazette of RS no. 33/04) and the Law on the Government of RS (Official gazette of RS no. 3/97 and 3/98).

⁴ In the Report on the situation in cantonal extension services in FB&H (2006) it is stated that EU projects had only partial success in this B&H entity. After the Project was completed, extension services continued to function in the form they were planned to only in some cantons, in some others Institutes of agriculture were established and the personnel got employed in them, while in some of them extension services ended their activities completely and personnel was transferred to some other tasks within cantonal ministries. The lack of legal framework and the fact that a co-ordination unit on the level of the Federal Ministry of Agriculture has never been established are among the most commonly mentioned reasons for such a situation.

Herzegovina are still not enough recovered and developed to absorb this population group (which was the practice under the former political system).

It cannot be said that there is not enough skilled personnel with expertise for providing advisory services in agriculture. Six faculties of agriculture, two faculties of technology with food technology included, one faculty of forestry and one of veterinary medicine are supporting this statement as they all educate diploma engineers, masters and doctors of sciences in related fields. In addition, there are four scientific institutes of agriculture (two of them in each entity), three professional cantonal institutes of agriculture, the Institute of genetic engineering and biotechnology and numerous veterinary stations. There are also 14 secondary schools of agriculture in Bosnia and Herzegovina that educate agricultural technicians. Unfortunately, one of the biggest problems Bosnia and Herzegovina is facing is the fact that “production” of highly educated personnel is much higher than the needs, so most with bachelors degrees end up either on employment agency lists as unemployed or they get employment outside agriculture (most of them in administration). Mentioned institutions (universities, institutes) significantly participate and contribute to farmers’ training either on their own initiative or on the basis of engagement by producers’ associations, co-operatives, municipalities, international governmental and non-governmental organisations. What particularly deserves to be pointed out is the fact that there is no systematic approach to the training of farmers from these institutions but the training takes place spontaneously, quite often as the result of the enthusiasm of individuals.

International institutions and organisations play a very important, if not the most important, role in transfer of knowledge, techniques and skills to farmers as well as in technical support in Bosnia and Herzegovina through implementation of various projects in the sphere of agricultural production development. For example, USAID – LAMP project, during the last three and a half years, organised 1,041 training events with 29,040 participants. The main focus of these training events was: improvement of knowledge in the dairy sector (429 training events and 13,505 participants) and in the fields of fruit growing and vegetable production (261 training events and 6,466 participants). An important segment of this project were professional, educational and study field journeys (51 journeys with 741 participants), and of especial importance in the project was that it included training of trainers as well (25 training events with 276 educated trainers). The institutions involved include agricultural extension services, agricultural institutes, veterinary institutes and chambers of commerce. In 2007, a part that is really missing in Bosnia and Herzegovina was started. It refers to the training of employees from co-operatives as the very important link in the whole chain of knowledge transfer to farmers. The programme of this training includes marketing, financial and institutional knowledge, otherwise insufficient among B&H farmers.

IFAD’s Project ‘Livestock and Rural Finance Development’ also significantly contributed to improvement of livestock production.⁵ This contribution is particularly expressed through advisory services to farmers, municipal servants and representatives of farmers’ associations in the fields of fodder production, milk hygiene and animal health. In 2006, over 4,000 of farmers took part in these trainings. Project FFAM (Farmers Facilities Access to Market), that was financed by the Italian Government, was implemented through the IFAD project as well. Within the FFAM project, farmers were trained in dairy sector, with the emphasise on introduction of European standards into milk production practice in Bosnia & Herzegovina.

⁵ The Project started in 2002 and it still lasts

The World Bank is very active in farmers' training in the southern part of Bosnia and Herzegovina, and the training is being conducted in the fields of fruit growing, bee farming and irrigation.

The DEZA (Swiss Agency for International Development)–GTZ Project significantly contributed to introduction of integral fruit and vegetable growing in Bosnia and Herzegovina. Many farmers that now use this production practice were trained within this project. The particular importance of this project was in raising awareness of the importance of extension services, which is reflected by the fact that farmers, for the first time, pay for these services.

There are many other governmental and non-governmental organisations in Bosnia and Herzegovina that take active part in knowledge transfer to the rural population, but description of their activities cannot be given in this Report due to its limitations.

1.1.2 Agricultural and rural advisory/consultancy services

Agricultural extension services, as known in practice world-wide, in fact for the first time started to exist in Bosnia and Herzegovina in 2002. They are organised on entity level (Agency for providing services in agriculture in RS, Cantonal agricultural extension services in FB&H, Department of Extension Services in Brcko District).

The work of these services is well planned in a territorial sense. The concept of their activities is also well planned and it includes as follows:

- providing farmers and other clients with professional advice, knowledge, instructions and practical skills,
- participating in data gathering and processing on all levels of agricultural production,
- co-operation with the other departments within the Ministry of Agriculture, Forestry and Water Management,
- establishment of an efficient market-informational system in order to collect and analyse data to be able to provide all agricultural subjects with timely information,
- presentation of the new varieties, hybrids, plants and agro-techniques,
- providing reporting and forecasting services about outbreaks of plant diseases and pests and about new diseases in livestock production,
- providing help in creation of business plans and farmers' applications for loans,
- activities on environment protection,
- stimulation of rural development and improvement of the quality of life in the countryside,
- stimulation and support for establishment of various forms of farmers' associations,
- registration of farms as fundamental carriers of agricultural production and creation of models for farms' orientation to commercial production,
- providing farmers with advice and instructions for standardisation of products intended for market,
- monitoring, control and approval of production that is under some of the forms of incentive measures.

Unfortunately, such an ambitious plan for the spectrum of activities is far from matched by personnel sufficiency, technical equipment and financial support. To accomplish all mentioned activities, much more significant support from the State is needed. So far, this support has been and still is missing.

Beside extension services, the whole range of institutions can act as providers of professional and advisory services. Among those that are worth mentioning are the following ones:

- Experts and professionals in co-operatives, agricultural and processing enterprises,
- Professionals in veterinary institutes and stations,
- Research and scientific institutes and
- Agricultural institutes and stations.

Scientific and professional seminars, symposia and radio and TV programmes also play very important roles in knowledge transfer.

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

Serious self-organisation of farmers in Bosnia and Herzegovina, in the form of various associations, began only some ten years ago. Immeasurable contributions on this issue belong to numerous foreign international institutions and organisations that implemented their various projects in post-war Bosnia and Herzegovina⁶. Unfortunately, there are no statistical data on the exact number of these associations, but this number, no doubt has been increasing year by year. Associations are mainly formed on the basis of the common production-economic interest, such as intention to increase volume of produced good for better position on market, to negotiate with wholesalers about conditions of sale, to ensure joint action in achieving better conditions for input purchase. They also act jointly in order to influence agricultural policy' making. Besides, they often organise training and workshops for their members, during which they can get familiar with the newest technical and technological achievements in particular fields of agricultural production.

As for the co-operatives, that in pre-war Bosnia and Herzegovina used to present the strongest link in the chain of knowledge transfer to farmers, although huge number of them exist today (total number estimated on around 630), they still haven't found the model of functioning that would attract big number of members. Thus, their role in post-war Bosnia and Herzegovina is reduced due to unevenness in their activities but also due to the fact that other forms of association occurred that are, in this stage, more attractive to farmers.

1.2 **Agricultural and rural skill levels**

The educational structure of the rural population in Bosnia and Herzegovina is very unfavourable. Data given in the annex of this report show that out of the total rural population older than 25, 24.7% of males have not finished elementary education, which means they have no formal education, while 22.12% of them have only elementary education. The highest share in this population has the group completing secondary education (48.40%), while the share of university educated males is only 4.72%. In the female rural population, as much as 47.5% have no formal education and 26.45% have only elementary education. Only every fifth woman older than 25 has finished secondary school, and only 3.95% of them have a university degree.

The structure of the rural population's employment shows the characteristics of the countries in transition in the region where the majority of the rural population is engaged in agriculture. According to LSMS⁷ B&H data (2001), every third employee (34.8%) is employed in agriculture. If other economic activities beside agriculture are observed, the rural population is

⁶ For example, only within IFAD Project Livestock and Rural Finance Development, nine associations of milk producers have been established in the territory of the Federation of Bosnia and Herzegovina.

⁷ Living Standard Measurement Survey

also employed in manufacturing (14.21%), construction, (12.98%) and in trade (12.08%). The share of the services in total rural employment is 9.65%, of finances 6.35%, of transport 5.03%, mining 2.85 % and utilities 2.05%.

2 Specific technology transfer issues

2.1 Training provision

2.1.1 Quality and suitability of provision

There is no valid information on the quality of training provision in Bosnia and Herzegovina, although monitoring and evaluation are being conducted as a compulsory constituent part of most projects, particularly of those implemented by international organisations and institutions. Statistical data on agricultural production could be used as an indicator of the quality of services on knowledge transfer and training provision. These data indicate that the average yields in most agricultural production are higher than the pre-war ones. For example, in livestock production, which was one of the focal fields of interest for farmers' education and training, the average milk yield increased from 1,400 litres (1991) to 2,000 litres (2005).

It is important to emphasise that training provision mainly concerned transfer of technical and technological knowledge that can contribute to increase of total farm production. Very few training was aimed to provide farmers with managerial skills and knowledge in economic principles of production that could enable the rural population to increase total income. In relation with this, it should also be stressed that very little education and training was aimed to teach the rural population how to earn income out of agriculture, which is one of the principles of integral rural development that is the valid development concept in EU countries and the concept that Bosnia and Herzegovina accepted as well.

There are two issues that deserve to be mentioned as recorded problems in training provision. There was lot of overlapping in terms of similar or identical training by different implementing institutions, and of target groups for training provision. Namely, until recently, all interested farmers could participate in training, although there were many who were very small-size farmers and not serious agricultural producers. This practice has been changed lately, so commercially oriented, intensive agricultural producers are being trained. Such a change in approach is obvious, for example in the USAID-LAMP Project.

2.1.2 Availability and spatial issues

One of the more important problems that training organisers and service providers are facing is the problem of the terrain, high dispersion of villages and settlements and spatial organisation in general.

Bosnia and Herzegovina, as a predominantly mountainous country⁸, is characterised by a high number of settlements (around 5,800) and villages that are dispersed in an unplanned manner. A lot of them are located on high, steep and inaccessible terrain. Such disposal, together with very

⁸ According to the latest delimitation from 1985, 57% of total BH territory is mountainous.

poor infrastructure makes it impossible to organise education and training or provide services in a significant share of mountainous villages.

2.1.3 Practical issues

As far as training of farmers is concerned, in terms of number of training events, a great increase has been recorded during the last several years. Yet, most of them were the result of implementation of numerous projects rather than the real, priority needs of the farmers themselves. All training organised was, of course, very welcome for the rural population, considering the permanent poor level of knowledge in agricultural production. The segment that could be changed in the future, regarding this aspect of agricultural development in Bosnia and Herzegovina is to ensure better co-ordination between farmers and institutions that provide training and knowledge transfer in rural areas.

Beside the mentioned issues, it is important to underline that there is no systematic approach in farmers' training, education and knowledge transfer. This basically means that there are no permanent funds that would guarantee a permanent presence of actors that operate in training provision. A typical example for this statement could be municipal governments which, occasionally "find" some funds for this form of support to agricultural producers, but not on an annual or on any other regular basis.

2.1.4 Demand side issues

Numerous small farms, a high share of rural people in the total population structure, the strategic importance of agriculture, raising awareness about importance of rural development and integral development are just some among many factors that indicate the importance of providing farmers and the rural population with extension services and knowledge transfer. The scope of the needs will certainly increase in the future, so Bosnia and Herzegovina will face a very complex task to meet them. Higher education institutions, as very important agencies in generating new achievements, have an important role in addressing this task. Education of professionals is already changing, as most of the universities in Bosnia and Herzegovina have started with the reform process according to the principles of the Bologna Declaration. The intention is to create new curricula in order to correct the main shortage from the previous educational system, when there was not enough practical training and knowledge, but theoretical ones dominated.

2.1.5 SWOT analysis

Training provision

Strengths	Weaknesses
<ul style="list-style-type: none"> - Sufficient number of professional personnel for training provision - Many higher educational institutions in the field of agriculture and food industry 	<ul style="list-style-type: none"> - Insufficient number of personnel in higher education institutions, - Dominant share of theoretical over practical knowledge in educational system, - Uneven education system in entities (cantons) - Poor financial support, - The lack of systematic, regularly available

	<p>solutions,</p> <ul style="list-style-type: none"> - Weak co-ordination between farmer's needs and service providers, - Unharmonised and unco-ordinated training programmes (doubling or overlapping), - Education for technology improvement prevails over those for income raising (low level of training in economics, marketing and management), - The lack of educational programmes for non-agricultural activities, - Insufficient use of media (TV and radio)
Opportunities	Threats
<ul style="list-style-type: none"> - Increased interest of farmers in training and adoption of new technologies, - Strategic orientation for development of agriculture, - Enhancing awareness and actions in rural development (numerous studies that emphasise importance of rural population's education and training) , - Continued participation of international governmental and non-governmental institutions in personnel training, - Initiative to establish common Ministry of Agriculture, Forestry and Rural Development on State level, - Harmonisation of educational system with European standards (Bologna reform at universities), - Presence of experienced foreign experts, - Development of information technologies and new training methods. 	<ul style="list-style-type: none"> - No unique Law on higher education at State level, - No Ministry of Agriculture on the State level, - High level of farms with natural character of subsistence agricultural production and traditional technologies, - Low share of market-oriented farms, - Farmers' fears of changes, - High share of rural population with no formal education (particularly among women), - Brain-drain, - Spatial diffusion of farms and rural households, - Political instability of the country, - Strategic orientation is not followed with adequate funds for implementation.

2.2 Extension and advisory services

2.2.1 Public sector services

As agricultural extension services in Bosnia and Herzegovina are, practically, at the beginning of their existence and operation, there are many problems they are facing. One of the most important among them that is worth mentioning here is the lack of personnel in terms of both quality and quantity. If the number of farmers and the number of extension services providers is taken in account, it clearly indicates very problematic situation in this part of agricultural administration in Bosnia and Herzegovina. The number of small-size, undeveloped farms and number of rural households that depend on agricultural production in Bosnia and Herzegovina is very high. These farms and households particularly depend on public extension services. Unfortunately, in the Agency for providing agricultural extension services (RS) and in Cantonal

Extension Services (FB&H), one employee (service provider) is still supposed to take care of as much as 15,000 farms and rural households⁹, which is far insufficient for any serious extension service' activity. Even if all 320 municipal agricultural servants (officers who perform advisory activities quite often) were included in the system, the ratio wouldn't fall below 2,200 farmers per one servant¹⁰.

The most numerous group among extension service providers in the Agricultural extension service in Bosnia and Herzegovina are diploma engineers of agriculture. They make up more than 95% of the total personnel, and the rest (5%) are those with higher positions. Most of them have general educational orientation (crop production, livestock production, fruit growing) while the number of specialists, for example for plant protection, irrigation, agricultural machinery, is extremely modest.

The other, not less important problem, is the quality of work of these services. Most of their working hours, employees in these services spend doing administrative jobs, first of all those related to realisation of incentive measures. In certain cantonal extension services (in FB&H) this share is as much as 80%. This means that they spend insignificant time performing activities they exist for, providing advisory services. Therefore, the data given in the Report from the Agency for providing agricultural extension services (RS) for 2006, that they realised 9,500 contacts with farmers should be taken into consideration carefully, as it is not clear how many of these contacts really were related to providing professional services.

The third problem that should be mentioned and underlined is insufficient financial support for the activities of these services. This statement refers both to technical equipment of these services, particularly for field work, and to salaries of employees. Although it can be often heard from officials that extension services are of the utmost importance for agricultural development, this support is only declarative, and nothing is actually done in order to improve their status. Moreover, situation is even deteriorating. This is the case in RS where the budget for extension services for 2006 is reduced by 10% in comparison with the previous year.

2.2.2 Private sector services

Private form for providing services still does not exist in Bosnia and Herzegovina, although in one part of the country (RS) the legal framework for it is already set up.

2.2.3 Demand side issues

It was stated in Strategic documents¹¹ that the activities of extension services cannot reach all subjects that consider themselves as agricultural producers, as there are several hundreds of such subjects. It is suggested in the document, that the target group for extension services should be the category of farmers that is eligible for incentive measures, as the State (through relevant laws

⁹Source: Functional review of the agricultural sector in Bosnia and Herzegovina, October, 2004.

¹⁰ Unofficial data about the number of service providers in 2006 in Extension Services in Bosnia and Herzegovina (79 advice providers out of which 38 RS, 38 FB&H, 3 District Brcko) indicate slightly more favourable relations farmer-advice provider. Given 570,000 farms, 7,200 farms per advice provider is calculated, which is still far behind the level of, for example, Austria (550 farms/advisor), or in Slovenia (189 farmers/advisor).

¹¹ Mid-term strategy of Agricultural sector development in Federation of Bosnia and Herzegovina for the period 2006-2010.

and sub-laws) explicitly determines the perspective of the agricultural producer. The number of such producers in FB&H is estimated as 20-30,000. Such strategic commitment should be the guideline for future work of extension services.

Within the necessary personnel, enhancing extension services will have to take care of the needs of farmers and of rural population in general, taking into consideration all specific characteristics of the related region (production practice, managerial skills, cultural habits, geographic and natural conditions). Therefore, good, suitable extension services will have to be developed and adjusted for the whole range of regions with all their specific characteristics.

At the end, concept of rural development with its raising importance, shouldn't be forgotten either. This concept has been accepted in Bosnia and Herzegovina, and extension services will have very important role in it. So far, this concept is still only an idea, but accelerated processes of BH integration into EU will enforce the need for fast professional enhancing of extension service in the field of rural development.

2.2.4 SWOT analysis

Extension and advisory services

Strengths	Weaknesses
<ul style="list-style-type: none"> - Enough professional personnel for the work in extension services, - Good organisational scheme (in territorial sense), - Institutionalisation of the part of agricultural extension services (RS) as the basis for its status definition, - Permanent education of existing personnel in Agricultural extension services (introduction of new technologies). 	<ul style="list-style-type: none"> - Insufficient number of employees in Agricultural extension service, particularly specialists, - The lack of motivation due to unsolved status (in FB&H), - Poor technical equipment of agricultural extension services, - Dominant administrative activities (related to incentive measures) over extension services, - Poor financial support, - Poor co-ordination between farmers and service providers, - Insufficient self-promotion of agricultural extension services, - Insufficient experience of agricultural extension services, - The lack of personnel from the field of economics, marketing and management for service providing in order to increase income of rural population.
Opportunities	Threats
<ul style="list-style-type: none"> - Increased interest of market-oriented farmers in training and adoption of new technologies, - Strategic orientation for development of agriculture, - Enhancing awareness and actions in rural 	<ul style="list-style-type: none"> - The lack on unique Law on the agricultural extension services - Evident trend of decreasing funds for the work of agricultural extension services, - Farmers' fears of changes, - The lack of tradition in using extension

<p>development (numerous studies that emphasise importance of rural population' education and training) ,</p> <ul style="list-style-type: none"> - Initiative for establishment of common Ministry of agriculture, forestry and rural development on state level, - Registration of farmers, - Continued participation of international governmental and non-governmental institutions in extension services personnel' training, - Development of communication and information technologies. 	<p>services,</p> <ul style="list-style-type: none"> - High share of rural population with no formal education (particularly among women), - Spatial diffusion of farms and rural households, - Migration of young and educated people.
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3 Overview and prospects

3.1 Training

Significant change took place in post-war Bosnia and Herzegovina, on both knowledge transfer to farmers and the rural population, and in their attitude to modern achievement in agriculture. Increasing interest of farmers for new technical and technological knowledge is the result of both changed treatment of this issue from the State side and of strong presence of international organisations and institutions that recognised, through their programmes and projects, the importance of farmers education for improvement of agriculture as dominant production activity in rural regions in Bosnia and Herzegovina.

Public professional and advisory service providers and other domestic institutions, organisations and individuals are still far from being able to satisfy all needs of the rural population that makes the majority (56%) of the total population in Bosnia and Herzegovina. Poor educational structure of the rural population with a high share of those with no formal education (particularly among women) is among the most important obstacles in new achievement transfer. Besides, farmers' education is the issue that hasn't been systematically solved, so it mainly takes place as the result of individual actions.

In the coming period, as far as training provision is concerned, it is necessary to approach the issue in a much more organised way and co-ordinate activities in training provision with the real needs of the farmers, taking into account all specific circumstances they live in (production practice, habits, natural conditions etc.) but the needs of the country as well. This means, among other factors, orientation to target groups of farmers that fulfil conditions to be included into incentive measures' schemes, as the State explicitly determines and defines who is categorised as an agricultural producer.

3.2 Extension

It is obvious that extension services in Bosnia and Herzegovina are in the stage of establishment. The whole range of problems in front of them, and solving them is a precondition to achieve the

level on which extension services will be able to meet huge needs of farmers and the rural population in acquiring knowledge, techniques and skills necessary to improve agricultural production and to increase income. Personnel capacity-building, institutionalisation, legal regulation of the services' work (FB&H) and financial support are top priority tasks at the moment. Coming years will show to what extent the State of Bosnia and Herzegovina took seriously this problem of agricultural administration, because the overall position of this very important economic activity will significantly depend on the functioning of the extension services. It seems that there is still space to fulfil mentioned tasks, as the international community is still strongly present in Bosnia and Herzegovina and it largely compensates for many shortages and inefficiency in the field of knowledge transfer to farmers and extension and advisory services provision. Time is, of course, limited as the time when they leave is expected to come.

3.3 Linkages between technology transfer agencies

Professional and advisory service providers in Bosnia and Herzegovina are, as in many other countries, mediators between the State (information regarding agricultural policy and rural development policy) and scientific and research institutions (new technologies and production practices) on one side, and farmers on the other. As agricultural extension services are still at the very beginning of their functioning, there are still a lot of problems such as bad co-ordination or lack of co-ordination with institutions mentioned above, particularly with those from the domain of research and scientific work. Relations are, so far, mainly based on occasional engagement of experts, as the pace of these institutions in the whole system providing farmers with services has not yet been clearly defined.

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Annex

Table 1: Training Provision and Use by the Rural Population in Bosnia and Herzegovina

Approx. % of population that is rural by:	
(a) place of residence	56%
(b) place of work	n/a
Approx. % of all workers in rural areas in:	
(a) agricultural employment	35%
(b) non-agricultural employment	65%
Number of universities and similar institutions with agricultural courses	8
Number of colleges and similar institutions providing agricultural training	1
Number of other training providers:	
(a) publicly funded	100%
(b) privately funded	-
Approx. % of agricultural personnel with:	
(a) degree or equivalent	2
(b) diploma or equivalent	2
(c) certificate or equivalent	1
(d) full secondary education	35
(e) less than full secondary education	24
(f) little or no formal education	36
Estimated level of demand for further training¹²: (use A=high, B=moderate, C=low)	
Agriculture – arable/cropping production	A/B
Agriculture – livestock production	A
Business management	A
Other [please specify; add rows as necessary]	

Advisory and Extension Services Available to Agricultural and Rural Businesses

Public sector organisations by name	Approximate number of advisors or consultants
Agency for extension and advisory services of the Republika Srpska (including regional units)	38
Cantonal extension services of Federation of Bosnia and Herzegovina (including advisors from agricultural institutes that have role of extension services)	38

¹² Estimation refers rather to the need than to demand as farmers are not aware enough of the important of training

Extension service of District Brcko	3
Federal Agricultural Institute Sarajevo	
Federal Agro-Mediterranean Institute Mostar	
Agricultural Institute Banja Luka	
Agricultural Institute Bjeljina	
Private sector organisations by name	Approximate number of advisors or consultants
Estimated % of farmers actually <i>using</i> advisory services of some sort	2-3%
Estimated % of NAE rural businesses actually <i>using</i> advisory services of some sort	0-1%
Estimated demand for <i>new</i> advisory services - % of all farms and other rural businesses	5-10%

Table 4: Percentage Distribution of Rural Population 25 Years and Older by the Level of Education Completed by Sex in Bosnia and Herzegovina

Level of education completed	Male	Female
None	24.76	47.56
Primary	22.12	26.45
Secondary	48.40	22.04
Tertiary	4.72	3.95

Source: Living Standard Measurement Survey (LSMS) in B&H, 2001

Table 5: Percentage Distribution of Rural Population 25 Years and Older by the Age Group, Sex and Educational Attainment in Bosnia and Herzegovina

Age group	Male				Female			
	None	Primary	Secondary	Tertiary	None	Primary	Secondary	Tertiary
25 - 29	3.44	27.27	66.33	2.96	2.05	40.66	53.47	3.82
30 - 34	0.99	26.26	70.80	1.95	2.60	49.48	46.07	1.84
35 - 39	4.32	22.46	67.10	5.56	15.16	36.25	37.32	11.27
40 - 44	7.22	28.62	56.52	7.14	25.95	42.21	24.42	7.41
45 - 49	14.36	21.71	59.65	4.29	43.45	27.82	22.56	6.18
50 - 54	27.07	24.17	40.83	7.93	61.57	19.06	15.57	3.80
55 - 59	44.51	22.96	27.33	5.20	76.28	12.43	9.93	1.35
60 and older	63.12	13.64	19.32	3.92	86.22	10.35	2.64	0.79

Source: Living Standard Measurement Survey (LSMS) in B&H, 2001