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CONTENT

1 Introduction and background

1.1 Introduction to rural technology transfer

In Croatia the national education, research and technological policy is the responsibility of the Ministry of Science, Education and Sports (MSES). The Government has defined its policy for science and technology development in the "Strategy for Development of Science in the Republic of Croatia in the 21st Century" adopted in 2003. In 2005, the Government adopted a document "Education Sector Development Plan 2005-2010" with intention to improve the Croatian education system, that includes legal aspects, human resources, financial matters, scientific aspects and expertise. In May 2006 the Government adopted a document "Croatian Science and Technology Development Policy 2006-2010" which will serve as the basic framework for future research and technology project.

The Croatian educational system provides educational services on the following levels: pre-school, primary, secondary and tertiary, and an adult education system. The Croatian research and higher education system consists of 7 universities, 26 public research institutes, 11 research centres in the industry sector, 16 public colleges and polytechnics, and 16 private colleges and polytechnics which are accredited by the MSES, one military research centre, 5 technological centres and one business – innovation centre (CSTDP 2006-2010).

The total budget of the MSES accounted for 4.1 percent of the GDP in 2004. If the expenditures of the MSES are added to expenditures made by other central ministries and at the local level, public education expenditures amounted to 4.3% of the GDP in 2004. (ESDP 2005-2010, p.17). Croatia has a relatively high rate of investment in research and development (R&D), but there is disproportion of investment between the public and the private sector (Table 1). In 2004, total expenditure on R&D was 1.22% of GDP, it was above the average of the new EU member States (Poland, Hungary, Lithuania, Estonia, Latvia etc.). However, R&D expenditure by the private sector is relatively low, 0.51% of GDP compared to 1.22% of GDP of EU15.

In the last decade there were various activities to assist by establishing new institutions and strengthening the capacity of existing ones for enhancing the commercialisation of innovation and transfer knowledge on technical innovation from academic research Centres to the enterprise sector (Bartlett and Cuckovic, 2006). The HITRA (Croatian Programme of Innovative Technological Development) Programme, which was started in 2001, was implemented through two technology projects named TEST (Technological R&D Project) and STRIP (mainly directed to the academy community) and the sub-programme RAZUM (Development of Knowledge-Based Companies) directed to enterprises which use technologies innovation from scientific research. In 2005 the TEST and STRIP project were combined into a single Programme JEZGRE which aims to enhance R&D resources in industry and increase the employment of young scientists in industry (Bartlett and Cuckovic, 2006). The RAZUM Programme was redesigned 2005, and re-launched by the Business Innovation Centres Network (BICRO) which was established in 1997. BICRO is designed to link innovative enterprises with research institutions in an attempt to stimulate knowledge transfer and promote innovative activity (Bartlett and Cuckovic, 2006).
In February 2005, the Croatian Innovation System Council was established. It is responsible for coordination of activities between departments and international economic cooperation regarding research, development, innovations and technologies. The European Information and Communication Centre Zagreb (EICC) was set up in cooperation with the European Board within the CARDS programme, with headquarters in the Croatian Chamber of Economy (HKG).

Simultaneously, a network of institutions for direct support and entrepreneurial development has been created in Croatia, currently including technology/business parks (20), technology Centres and a programme to stimulate the formation of technology clusters. There are five Technology Transfer Centres (Technology Transfer Centre CTT in Zagreb, Technology Centre Split, Technology and Innovation Centre TIC in Rijeka, Technology Development Centre Osijek-TERA and Research and Development Centre for Mariculture in Mali Ston, Dubrovnik).
The institutional pillars of small business development in Croatia are the Ministry of Economy, Labour and Entrepreneurship, Croatian Chamber of Economy with 20 county chambers, Croatian Chamber of Trade with 20 county chambers, Croatian Association of Cooperatives, Croatian Agency for Small Business, Croatian Bank for Reconstruction and Development and also regional centres, agencies and incubators. The Ministry of Agriculture, Forestry and Water Management (MAFWM) also has a significant role in the support of small businesses in agriculture. The Croatian Agency for Small Business (HAMAG) is founded on the basis of the Small Business Development Support Act and is one of the bearers of the Small Business Development Programme. The Agency's tasks include providing a continuous support for small business development and its share in the Croatian economy by creating a stimulating business environment, developing an efficient support infrastructure on State, regional and local levels, applying new technologies, improving quality, increasing competitiveness, securing market access, creating new jobs and making connections between entrepreneurs and institutions. The target groups are small and medium businesses, individuals, crafts, cooperatives, farmers, free lancers, self employed and various organisations with permanent residence in Croatia.
Although Croatia has formed an institutional basis and has relatively numerous programmes of technology development and knowledge transfer, the experts think that they have not given satisfactory results, especially concerning rural areas. According to the opinion of the National Council for Competitiveness, the education and research still does not act as a factor of improving the competitiveness of Croatian economy, the state of lifelong learning does not promote growth based on a professional workforce, there is a low rate of new enterprises, a low level of internet transparency in the economy, and a low level of networking. The Council also concluded that the main reasons for this condition are the result of intangible or institutional factors such as political will and low quality of institutions rather than material reasons (NCC, 2004).

1.1.1 Agricultural and rural training

Croatian rural areas, compared to urban areas, have significantly poorer facilities for the education of children and young adults as well as for professional training and permanent adult education. Only one quarter of villages in Croatia have an elementary school. The teaching in the rural schools follows unified curriculum, with negligible coverage of agriculture and its importance for development of the complete national economy and the rural areas.
Formal agricultural education is conducted as Q and HQ education. Educational programmes for lower “qualification” professions in agriculture (agriculturist, florist, cattle breeder, phyto-pharmacist etc.) and agricultural technicians (general and specialist) are offered by seven agricultural schools and around thirty secondary schools (Table 2).
The schooling of agricultural experts of different specialities is organised in two colleges as university undergraduate, postgraduate and doctorate studies (the Faculty of Agronomy in Zagreb and the Faculty of Agriculture in Osijek) and as a professional course lasting three years (the Polytechnic College in Križevci, Knin, and in Požega; on the Institute for Adriatic Crops and Karst Reclamation in Split and Institute for Agriculture and Tourism in Porec). In addition to the colleges, scientific research in agriculture is conducted by regional institutes (there are three regional institutes in agriculture), and in the veterinary and forestry areas, by the Croatian

Veterinarian Institute and Forest Research Institute. In the last few years there has been a great increase in practical and development research in agriculture, partially aided financially by foreign credits and a stronger co-operation with foreign institutions.
Institutions for adult education are relatively numerous in Croatia, but are mostly located in cities. Besides about twenty public open universities (school for adult), programmes for formal and informal adult education are offered by centres for culture, state high schools, private schools and private companies. Public open universities offer educational programmes of general purpose, such as programmes for completing elementary school (elementary school programme is financed by the Croatian Government within its literacy programme and the vocational programmes if the person is sent from the Employment Office for a change of qualification), foreign languages courses, the use of computers, programmes related to entrepreneurship etc. Agricultural programmes include education about wine, spice herbs, mushroom growing and bee-keeping. Private schools and companies mostly offer programmes related to entrepreneurship, informatics and foreign languages.
Informal and free-of-charge programmes in agricultural topics are offered by Extension Service, usually as winter courses. Adult education is also provided by non- governmental organisations (NGOs). For example USAID is co-financing NGOs through programmes MERCECORPS, CRONGO etc. These programmes provide financing activities like training local actors in civic education, building partnerships, corporative partnership, preserving local knowledge. It opens possibilities for pilot project financing, helps in equipment purchase, media connections, publishing activities. The importance lies in flexibility and possibilities of approach in rural areas (ZOE project for rural women) (Peršuric-Ilak, Žutinic, 2007).

1.1.2 Agricultural and rural advisory/consultancy services

The Croatian Agricultural Extension Institute (CAEI) was established in 1997 as a government institution specialised in advisory work. It is financed by state budget. CAEI provides Croatian family farms and other users with free services, for improvements of agricultural production, development, reconstruction and reservation of all rural areas' values in Croatia. At the same time CAEI acts as the link between the Croatian Government and farmers concerning the implementation of agricultural policy and determination of the problems of Croatian family farms. The Service uses informatics equipment (PCs, Laptops), has its own Web site and developed networks with branches. Advisors distinguished two parts in their professional activity: 80% of their working schedule they spend in advising as well as in collecting information and writing messages or reports for farmers and 20% of time they spend in attending training sessions or working for the CAEI administration (reports, meetings). Considering the number of the advisors (average ten per county, or one on three thousand family farms on average) and their qualifications (inadequate number of experts in agricultural economy, management, rural development and the like; see Table 3, 4), the service cannot play an important role when it comes to faster adjustment of Croatian agriculture to the current trends and market economy, particularly since many family farms are outside the area of its coverage. The CAEI Annual Report indicates that about 80-90 thousand farmers actually use advisory services of some sort.
Along with research and education, agricultural faculties also provide consulting services together with public research institutes and several private companies registered for consulting in agriculture (example - KonAgra, Agra Invest etc). Also, the Croatian Agricultural Cooperative Union (CACU) performs some consulting activities in the areas of education, publishing, project work and consulting. The CACU has started a library "Poljoprivredni savjetnik" for family farmers.

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

Promoting social and economic interests for Croatian farmers was done through associations, unions and interest groups made by the initiative and support of several political parties (Croatian Farmers' Association, Federation of the Slavonia and Baranja Farmers' Associations, Association of the Family Farms of the Đakovo Region etc). So far, the Croatian farmers have lacked a single influential union, independent from political influences and from actors who only address the farmers when they need them as electorate. Formally, in Croatia there are three farmers associations and several unions at regional level, the majority are specialised and based on connecting "bigger" producers of the same branch. The majority of farmers are still not in this form of association, while some associations are not active, existing only formally. Beside farms' associations there are two cooperative unions, the Croatian Agricultural Cooperative Union and Croatian Cooperative Union. The role of these associations and unions on regional and national level is minor in knowledge transfer and the scientific and technological achievements. Farmers' organisations aren't ready to play a more active role in extension, and aren't ready to contribute financially.

1.2 Agricultural and rural skill levels

In Croatia, regional differences in the level of education of the population are most visible in the number of illiterate people in a certain region in comparison to the total illiteracy rate in Croatia. Specifically, counties such as Požega-Slavonija, Zadar, Šibenik-Knin, Vukovar-Srijem, Sisak-Moslavina and Lika-Senj that are at a below-average level of development have an illiteracy rate higher than 3% The 2001 Census data on formal education of the Croatian rural population show also a comparatively high share of population without any or with incomplete basic schooling (28.3%) and a small share of graduate groups (4.7%).
Although there are no official data on qualification structure of people employed in rural areas, estimates say that it is more unfavourable related to the same structure on the national level (Table, 5, Fig,1). The status of formal education and the level of professional education of agricultural work force is one of the bigger obstacles for the development of Croatian agriculture. The data (Table, 6,7,8) shows that a large number of people employed in agriculture do not have professional agricultural education and that they derive their knowledge about agriculture exclusively on their practical experience.

2 Specific technology transfer issues

2.1 Training provision

2.1.1 Quality and suitability of provision

Croatia has a relatively large number of education and research institutions which directly support Croatian agriculture and rural areas, but they are still not professional enough and ill-equipped for development needs. In spite the fact that basic education is obligatory in Croatia and contains the necessary aim of improving life circumstances and combating poverty, children in rural areas face more difficulties in reaching education institutions, and education quality is lower compared to urban areas (Ilak Peršuric, Gautier 2005).

The curricula of agricultural schools do not offer knowledge required for adequate qualification of the farming generation on family farms for work under market conditions (minimum knowledge in the economy, farm management, and the like), and they are not tailored to the actual jobs. Although it formally exists, the practical training is inadequate since most schools have no adequate "facilities". The interdisciplinary collaboration with the similar colleges, universities and scientific research institutes and services is rather poor. Some of these schools do not fill the approved enrollment quotas because the young are not interested in this profession.
In university and college education, curricula are set upon the “Bologna declaration”, which is a process which will last and make changes in the work of professors and students too. The basic ingredient is a mentor system and more individualised approach in studying, therefore expectations are high, especially concerning employment requests from agricultural professions (Ilak Peršuric, Žutinic 2007).
In the long term, better education, along with favourable changes in the economy aligned with labour market needs, is expected to contribute to a reduction in the unemployment rate. It is also expected that economic development will be encouraged as part of the revitalisation of the demographically declining areas.

2.1.2 Availability and spatial issues

Although a spatial distribution of secondary and high schools (colleges and faculties) per counties is favourable in Croatia there are large regional disparities in the application rates to secondary and higher education (Table 2). Data on participation levels in the educational system range from an almost full inclusion rate of children in primary education to, according to European standards, a below-average participation rate in the tertiary education system (ESDP-2005-2010, p. 11). The expected difficulties stemming from limited access to the labour market due to demographic developments point to the need for the improved efficacy and performance of the education system, particularly education programmes and training by adults.

2.1.3 Practical issues

The problem is that the information on the possibilities of funding for professional education and pre-qualification for the adult rural population, is mostly found on the Internet, which is still inaccessible to most of them.

2.1.4 Demand side issues

It is necessary to establish regional inter-disciplinary networks which will provide the necessary co-operation between the education system, researchers and the labour market.
In addition to the technical and process knowledge gained at the agricultural schools, their curricula should be expanded with various information and knowledge (interdisciplinary approach) that will contribute to building of capacities that are more adequate for the market conditions and integration of the future agricultural generation into the modern social trends (information technology, ecology, humanities). The obligatory specialised programmes should be tailored to the characteristics of the regional agriculture. The monolithic educational and know-how transfer models should be avoided, the curricula should be updated, and the information technology must be integrated with the teaching practice.
The demonstration facilities should be set up for practical training of the students and young farmers and their gaining of the initial hands-on experience, there where they are not available. These might be pilot family farms, educational parks for presentation of agricultural technologies, demonstration polygons, and the like.

Regional focal points should be set up for regular additional education and permanent training of the farmers and rural inhabitants, such as adult education Centres, which would offer both agricultural and related subjects, such as the household economics courses, computer courses, foreign languages, culinary skills and the like.
It is necessary to establish a unified methodology for gathering data for the needs of the labour market and the educational system at all levels. This methodology will provide the foundation for the development of a contemporary school system and professional information, guidance and counselling.

2.1.5 SWOT analysis

Training provision

Strengths	**Weaknesses**
- Relatively great number of institutions for education and vocational training - Highly qualified, competent teachers/ lecturers - Reform of HQ educational system towards EU standards (Bologna declaration) - Involvement in EU programme (CARDS, F6) - Detailed elaboration of Education and R&D strategies and programmes– although they are not carried out - - -	- The limited ability of the educational system to adapt to changes in demand on the labour market and rural economy - Small number of college graduates and a very small percent of labour force participates in life-long learning - Lack of Basic ICT skills and knowledge in secondary (vocational) education - Inadequate practical training in vocational schools - Lack of the Education Management Information System – EMIS - Undeveloped programmes for adult education - Poor investment in educational infrastructure in rural areas, agricultural research and teaching staff - Dislocated institutions for education and professional training for rural inhabitants - Regional cooperation among educational institutions is poor - Lack of continuing professional training for teachers /lecturers - Lack of systematic monitoring and quality control mechanism for higher education teaching and scientific research work
Opportunities	**Threats**
- Growth of investment in education and vocational training	- Small budget for adult education and professional training

- Intensified reform of education system increasing the chance for local changes - Consciousness about importance of lifelong learning - Development of telecommunications and informatics' infrastructure - Expansion of private and foreign schools - Positive changes created by expectations of European Union accession - Growth of demand for qualified labour force - Development of business incubators, centres and parks - Development of vocational training programmes - Getting acquainted with e-learning - EU funds will be used to develop new forms of education planning and teaching	- "Outflow" of highly qualified workforce to the cities - Poor involvement of the private business sector in R&D - Poor spatial and professional migration of labour force – vertical and horizontal passability towards achieving occupations - Disparity in regional development - The high and long-term level of unemployment of those who have completed secondary education - Lack of involvement of adults in life-long learning - Elderly population has difficulties in finding jobs - -

2.2 Extension and advisory services

2.2.1 Public sector services

Beside CAEI there are several public institutions in agriculture that provide expert work and services for farmers. In the branch of Livestock Production, several institutions and services work on animal selection, reproduction and protection. Selection in Livestock production is promoted and authorised by the Croatian Livestock Centre (HSSC), which through local selection services carries out breeding work (including AI) on family farms. The branch of Plant Production is covered by five specialised services. The Croatian Institute for Plant Protection in Agriculture and Forestry (ZZPŠ) is tasked with diagnosis and preventive services for plant protection against pests and diseases. The Institute for Soil (ZT) should take care of the whole soil protection; The Croatian Institute of Viticulture and Enology (HZVV) has the main task of performing the analysis, inspection and evaluation of grapes for wine and running the Vineyard Register. Basic activities of the Institute for Seed and Seedlings (ZRS) include agricultural plant species recognition, seed crop control, seed certification and similar. The Institute for Fruit Growing (ZV) is responsible for fruit improvement and introduction of new varieties, research, influence of agro- and pomotechnical measures aiming towards a better genetic potential).

2.2.2 Private sector services

In Croatia, in the area of agricultural services there are no organised private services, although according to the Law on Agriculture such a possibility exists. We should say that agricultural companies and stores, especially the ones that distribute plant protection products, also provide

advice for the producers. Regulations demand that these companies and stores must have employees experts with degrees (diploma, licence) in plant protection. Veterinarian services are the best organised private service sector, under the patronage of the Croatian Veterinary Chamber.

2.2.3 Demand side issues

The existing system of professional help to Croatian farmers is focused on spreading knowledge about the production, while topics such as production economics, management, organisation of work and similar are neglected. Recent research of farmers' expectations and experience with Agricultural Extension Service showed that farmers require such education (Žutinic, Brkic, 1999). More consultants and more diversified topics are needed. Also, there is a lack of specific programmes of education and transfer of new technologies to target groups - rural youth, rural women and young farmers.
Expanded public and private self-education sources are needed, adequate for and accessible to the farmers. These would include specialised media, newspaper columns, TV and radio shows, specialised and popular editions including the data bases and data banks, which is the primary challenge at the moment.

2.2.4 SWOT analysis

Extension and advisory services

Strengths	**Weaknesses**
- Highly qualified, competent and experienced advisors - Good Research/Extension linkage (good cooperation with research institutes and faculties) - Good logistic support of informatics equipment (PC, Web-site; LAN, on-line bulletin etc.) - Team work - Permanent training of advisors - Good cooperation with international and national non government sector - Involvement in international rural development projects - Understand need for rural development work to improve rural communities -	- Number of advisors in branch-offices is low - Limited financial resource – inadequate funding by state budget, 66 percent of budget goes on salaries, little left for operational costs - Inadequate number of experts (specialists for agricultural economy; management in rural business; rural development, organic agriculture, agro-tourism) - Lack of information/human communication specialists (for making extension materials more readable, more attractive to the farmers, appropriate communication techniques) - Limited (using) transport funding (12 000 kilometres per advisor) - High orientation on individual method in advisory work - Low salaries - Lack of programme for target group- young farmers, rural women…

Opportunities	Threats
- More participatory extension model - Build capacity of farmers organisation (associations) and expansion of agricultural cooperatives - Possibility to establish private advisory/consultancy services - Build co-operation between the different organisations (farmers, non-governmental sector, researchers and extensionists) - New curriculum "Agricultural Extension and Communication" on Faculty of Agriculture University of Zagreb – Master degree study - Expansion of small entrepreneurship - -	- Unstable macroeconomic and political environment, low Government priority for agriculture and rural economy - Limited financial resources for applied agricultural and rural research - Poor Farmer incentives, not active role in extension - Farmers & farmer's organisations are not ready to financially support agricultural research and extension - Poor programme to strengthen farmers' organisations - Farmers' unwillingness to organise themselves - Youth lack interest in agriculture and older agricultural population - Unfavourable agrarian structure (high share of small farms and fragmented agricultural land)

3 Overview and prospects

3.1 Training

The vision of the national R&D and education programme is to develop a high quality S&T and higher education sector that would support economic, social and humane progress and, through its contribution, would serve as a backbone for the development of a knowledge-based society.

3.2 Extension

The concept of family farming and entrepreneurship development, along with rural development, must be based on setting up functional relations between educational and development policies (agricultural and rural policies) aimed at strengthening the basic know-how and capacities, encouraging initiatives, achieving realistic synergy compatible with the dynamic nature of the scientific and technological possibilities.

3.3 Linkages between technology transfer agencies

To enable the right technology infrastructure to support commercialisation of research outputs and development and growth of knowledge-based enterprises, the Government has initiated, with support from the World Bank, the Technology Infrastructure Development Programme (TehCro), administered by BICRO, which will grant support for creation of technology incubators, R&D Centres and technology-business Centres linked to research/ academic institutions.

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Annex

Table 1 Some indicators of Research and Development (R&D) in Croatia, 2004

Indicator	
Total public expenditure on education as a percentage of GDP	4.53*
Gross domestic expenditure on R&D (GERD), % of GDP	1.22
R&D expenditure by sector, % of GDP	
Business enterprise sector	0.51
Government sector	0.25
Higher education sector	0.45
Exports of high technology products as a share of total exports	11
Tertiary graduates in science and technology per 1 000 of population aged 20-29 years	5.4
Female tertiary graduates in science and technology per 1 000 of female population aged 20-29 years	3.6
Male tertiary graduates in science and technology per 1000 of male population aged 20-29 years	7.0
Population aged 20 to 24 having completed at least upper secondary education, %	93.5
Female population aged 20 to 24 having completed at least upper secondary education, %	94.6
Male population aged 20 to 24 having completed at least upper secondary education, %	92.6
Total researchers by sector, Head count	
All sectors	13 139
Business enterprise sector	1 228
Government sector	4 721
Higher education sector	7 190

** year 2003*
Source: EUROSTAT

Table 2 Distribution of basic, agricultural schools and colleges in Croatia, per county

County	Basic schools	Agricultural and vocational schools with agricultural courses	Polytechnic colleges	University colleges
Zagrebacka	128	1		
Krapinsko-zagorska	88	1		
Sisacko-moslavacka	91	2		
Karlovacka	84	1		
Varaždinska	70	2		
Koprivnicko-križevacka	93	2	1	
Bjelovarsko-bilogorska	108	2		
Primorsko-goranska	126	3		
Licko-senjska	55	0		
Viroviticko-podravska	77	3		
Brodsko-posavska	65	1		
Požeško-slavonska	114	1	1	
Zadarska	106	1		
Osjecko-baranjska	184	7		1
Šibensko-kninska	52	1	1	
Vukovarsko-srijemska	93	4		
Splitsko-dalmatinska	220	1	1	
Istarska	110	2	1	
Dubrovacko-neretvanska	77	2		
Medimurska	59	0		
City of Zagreb	140	**1**		**1**
Total	**2140**	**38**	**5**	**2**

Source: Basic education/School year 2005/2006 ISCED EDUCATION; Secondary Education, Review by Counties; DZS RH

Table 3 Specialist structure of CAEI employees in 2003-2006

SPECIALITY	2003	2004	2005	2006	Index 06/03
Grape, Wine and Vegetables	49	52	55	56	1.14
Livestock	38	39	43	42	1.11
Plant Production	40	52	51	47	1.18
Plant Protection	24	24	24	26	1.08
Agroeconomy	10	10	10	10	1.00
Mechanization	4	5	6	5	1.25
Ecology	0	0	0	12	-
Horticulture	2	3	3	3	1.5
Melioration	2	4	4	1	0.50
Other (staff, administration)	9	10	13	12	1.33
Total	**178**	**199**	**209**	**214**	**1.20**

Source : Annul Report 2007, CAEI

Table 4 Regional distribution of CAEI employees, 2006

County/ Speciality	Grape, Wine Vegeta b.	Livestock	Plant Product.	Plant Protect.	Agro-economy	Mechaniz a-tion	Ecology	Horti-culture	Melioration	Other	**Total**	**No of family farms**
Staff Office	2	2	1	1	2	1	1	0	0	10	**20**	**-**
City of Zagreb	1	0	0	1	0	1	1	0	0	0	**4**	**14121**
Zagrebacka	4	3	2	1	1	0	1	1	0	0	**13**	**38283**
Krapinsko-zagorska	3	1	2	1	0	1	0	0	0	0	**8**	**27657**
Sisacko-moslavacka	2	4	2	2	0	0	1	0	0	0	**11**	**27184**
Karlovacka	1	2	3	2	1	0	0	0	0	0	**9**	**19171**
Varaždinska	2	1	2	1	0	0	0	0	0	0	**6**	**33315**
Koprivnicko-križevacka	2	1	2	1	0	0	1	0	0	0	**7**	**22738**
Bjelovarsko-bilogorska	1	4	4	2	0	0	0	0	0	0	**11**	**23497**
Primorsko-goranska	2	2	0	1	0	1	1	0	0	0	**7**	**10111**
Licko-senjska	0	1	1	1	1	0	0	0	0	0	**4**	**8514**
Viroviticko-podravska	2	2	3	1	0	0	1	0	0	0	**9**	**19062**
Brodsko-posavska	2	3	3	0	2	0	1	0	0	0	**11**	**13521**
Požeško-slavonska	2	3	2	1	0	1	1	0	0	0	**10**	**20704**
Zadarska	3	1	2	1	1	0	1	0	0	0	**9**	**14392**
Osjecko-baranjska	4	4	5	2	0	0	1	0	0	1	**17**	**41103**
Šibensko-kninska	2	2	1	1	1	0	0	0	0	0	**7**	**13202**
Vukovarsko-srijemska	4	2	7	1	1	0	0	0	0	0	**15**	**26316**
Splitsko-dalmatinska	6	2	0	2	0	0	0	2	1	0	**13**	**31954**
Istarska	3	1	1	1	0	0	0	0	0	1	**7**	**13534**
Dubrovacko-neretvanska	7	0	2	1	0	0	0	0	0	0	**10**	**9723**
Medimurska	1	1	2	1	0	0	1	0	0	0	**6**	**20349**
Total	**56**	**42**	**47**	**26**	**10**	**5**	**12**	**3**	**1**	**12**	**214**	**448532**

Source: Annul Report 2007, CAEI, Agricultural Census 2003

Table 5 Persons in Paid Employment in Legal Entities, according to NKD 2002. and by Educational Attainment Situation as on 31 March 2005

Sector	Total	University degree	Non University college degree	Secondary school Education	Basic School Education
Agriculture, hunting and Forestry	25 416	2 923	882	9 137	1 360
Fishing	1 273	78	41	501	81
Mining	8 086	1 121	316	3170	250
Manufacturing	235 484	20 219	10 165	89 015	9 398
Electricity, gas and water supply	27 030	2 813	1 716	10 070	897
Construction	77 255	4 429	3 535	26 071	3 727
Transport, Storage and communication	76 731	7 485	5 787	39 059	4 829
Trade	168 528	15 550	7 675	102 693	4 103
Hotels and Restaurants	32 289	1 908	1 390	13 843	1 503
Real estate, renting and business activities	59 142	16 718	4 046	28 208	2 010
Public administration and defence	104 565	23 017	9 524	58 793	212
Financial and other services	30 486	9 021	2 851	17 389	617
Other community, social and personal acitvity	37 358	7 403	2 145	17 788	1 619
Education and culture	90 951	41 646	24 952	11 988	2 435
Health care and social welfare	73 617	15 455	8 284	33 754	2 807
Total	**1048 214**	**169 786**	**83 309**	**461 479**	**37 848**

Source: 2006 Statistical Yearbook, Croatian Bureau of Statistic

Fig. 1 Persons in Employment Ratio, by sex within NKD Activities, 2005 in Croatia

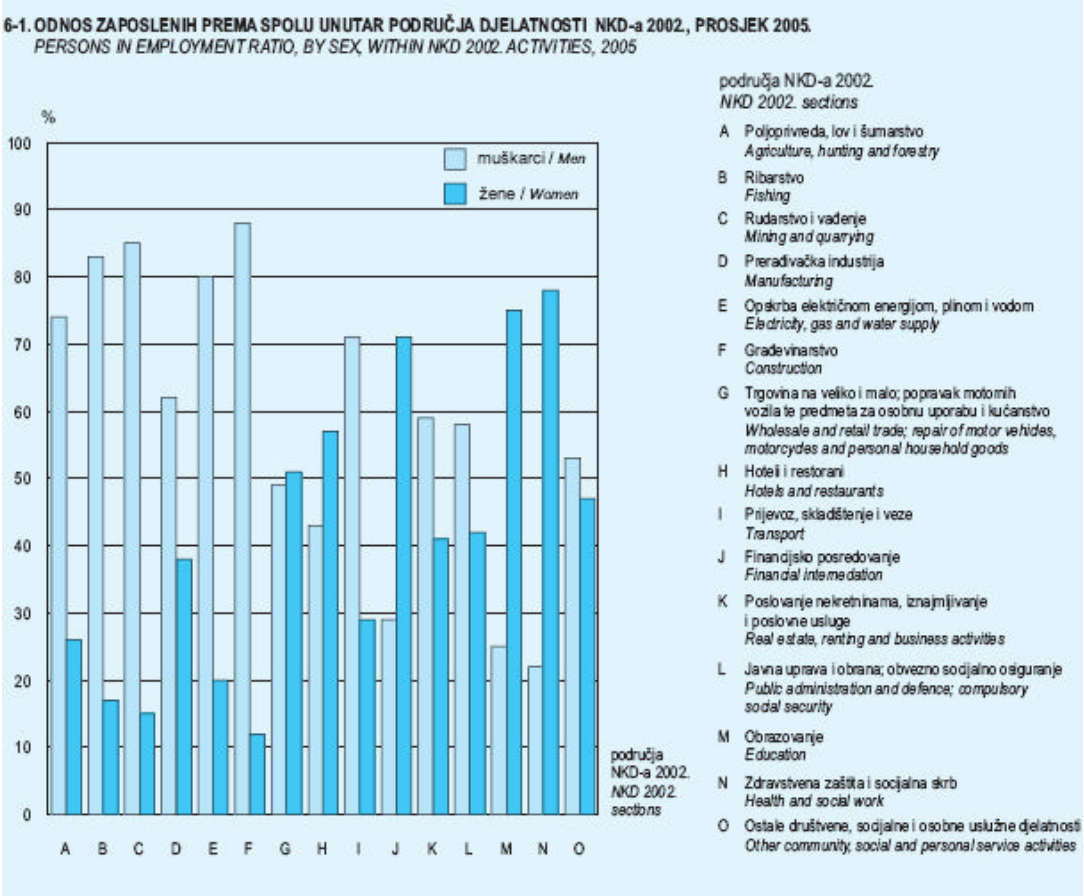

Table 6 Data on active farmers as per age and qualifications, 1991

Age group	Qualification*			
	High	Undergraduate	Graduate	Working farmers
15-24	25.09	0.15	0.12	20,435
25-34	27.90	1.09	0.90	31,676
35-44	12.80	0.75	0.58	38,973
45-54	4.42	0.35	0.27	49,941
55-64	1.55	0.08	0.10	71,735
65 and over	0.69	0.07	0.04	51,172
Unknown	7.70	0.07	0.04	1,363
Total	8.58	0.36	0.29	264,895

** Only the percentages for the workforce with high, undergraduate and graduate education are shown.*

The difference to 100% encompasses illiterate and those with elementary and unfinished elementary school.

Source: Brkic et al. 2002

Table 7 Farm labour in Croatia towards agricultural education, 2003

	Business Entities*	Household members (family farms) by agricultural education		
Agricultural education	**No of workers**	**%**	**No of household members**	**%**
Only practical experience	4 775	50.9	969 753	98.1
Course	753	8.0	2 480	0.3
Three-year secondary school	769	8.2	3 541	0.4
Four-year secondary school	1 795	19.1	8 864	0.9
Higher or university education	1 289	13.7	3 905	0.4
Total	9 381	100.0	988 543	100.0

** Business entities and parts of business entities which engage in agricultural production are legal and physical persons registered to perform agricultural activities, or which engage in agricultural production but are registered in another activity .*

Source: Agricultural Census 2003, Central Bureau of Statistics, Republic of Croatia

Table 8 Farm family labour in Croatia towards agricultural education per counties, 2003

County	Number of households	Number of households members towards agricultural education				
		Only practical experience	Course	Three-year agricultural school	Four –year agricultural school	Higher and university education
Zagrebacka	38 283	85 458	252	193	499	283
Krapinsko-zagorska	27 657	66 776	124	49	143	84
Sisacko-moslavacka	27 184	58 532	122	122	380	213
Karlovacka	19 171	42 489	54	49	142	67
Varaždinska	33 415	75 554	175	280	546	179
Koprivnicko-križevacka	22 738	50 719	110	249	557	359
Bjelovarsko-bilogorska	23 479	51 754	136	168	421	278
Primorsko-goranska	10 111	20 470	25	24	85	45
Licko-senjska	8 514	18 102	7	20	45	28
Viroviticko-podravska	19 062	38 957	95	247	567	257
Požeško-slavonska	13 521	28 516	106	235	592	175
Brodsko-posavska	20 704	45 468	158	310	757	209
Zadarska	14 392	30 317	49	58	137	49
Osjecko-baranjska	41 103	80 234	439	703	1 772	678
Šibensko-kninska	13 202	26 615	30	21	30	33
Vukovarsko-srijemska	26 316	53 891	143	453	1 238	415
Splitsko-dalmatinska	31 953	73 307	98	55	188	124
Istarska	13 534	28 203	99	44	194	89
Dubrovacko-neretvanska	9 723	21 062	35	76	192	90
Medimurska	20 349	44 758	167	138	253	91
City of Zagreb	14 121	28 571	56	47	126	

Source: Agricultural Census 2003, Central Bureau of Statistics, Republic of Croatia

Training provision and use by the rural population

Approx. % of population that is rural by:	
(a) place of residence	43%
(b) place of work	20-30%
Approx. % of all workers in rural areas in:	
(a) agricultural employment	15-20%
(b) non-agricultural employment	80%
Number of universities and similar institutions with agricultural courses	See Table
Number of colleges and similar institutions providing agricultural training	See Table
Number of other training providers:	
(a) publicly funded	90 %
(b) privately funded	?%
Approx. % of agricultural personnel with:	
(a) degree or equivalent	See Table 6, 7,
(b) diploma or equivalent	See Table
(c) certificate or equivalent	See Table
(d) full secondary education	See Table
(e) less than full secondary education	See Table
(f) little or no formal education	See Table
Estimated level of demand for further training: (use A=high, B=moderate, C=low)	
Agriculture – arable/cropping production	B
Agriculture – livestock production	B
Plant protection	H
Business management	H
Rural tourism, agro-tourism	H
Marketing	H
Legislative in Food quality	H
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
Croatian Agricultural Extension Institute	200
[add rows as necessary]	
Private sector organisations by name	Approximate number of advisors or consultants
Veterinary services	150
[add rows as necessary]	
Estimated % of farmers actually *using* advisory services of some sort	20-30%
Estimated % of NAE rural businesses actually *using* advisory services of some sort	
Estimated demand for *new* advisory services - % of all farms and other rural businesses	30-40 % (high)