



Research, innovation and technology transfer in the agri-food sector in the Western Balkan countries/territories: Phase II

The Republic of Srpska / Bosnia and Herzegovina

Željko Vaško

Univeristy of Banja Luka

Bosnia and Herzegovina

Introduction

- **Aim of the study** is: (1) to identify needs, capacities and gaps in RITT, (2) to contribute to RITT's enhancement and to exploring possibilities and (3) to facilitate (to the extent possible) the participation of the research entities and networks from the WB agro-food sector in European projects and networks, particularly within Horizon Europe or COST.
- Scientific research infrastructure in the field of agricultural sciences in the Republic of Srpska consists of ministry in charge for science, scientific research institutes, agricultural faculties and the Academy of Sciences of RS.
- There are 142 researchers in two institutes and two agricultural faculties in the RS and represent 54% of the total number of their employees.
- The report follows seven key action areas and agreed methodology – individual interweaves and focus group discussion.

Methodology

	Name and surname	Position	Institution	Date	Focus group meeting
1.	Goran Bursać	Assistant Minister	Ministry of Agriculture, Forestry and Water Management of the Republic of Srpska	21.12.2020.	15.03.2021.
2.	Slavica Samardžić	Senior Expert Associate	Ministry of Agriculture, Forestry and Water Management of the Republic of Srpska	22.12.2020.	15.03.2021.
3.	Vojo Trkulja	Director	Agricultural Institute of the Republic of Srpska	24.12.2020.	15.03.2021.
4.	Olivera Radić	Head of Centre	Chamber of Commerce of the Republic of Srpska	24.12.2020.	-
5.	Branka Savić	Head of Department	Ministry of Scientific and Technological Development, Higher Education and Information Society	29.12.2020.	15.03.2021.
6.	Dušan Nešković	Assistant Minister	Ministry of Foreign Trade and Economic Relations of BiH	not realized	-
7.	Željko Vaško	Vice Dean	Faculty of Agriculture, University of Banja Luka	author of the report	



Phase II - Focus group meeting

- The discussion within the focus group was held on March 15, 2021.
- The focus group discussion allowed interactive exchange opinions and positions about four selected case studies:
 - 1) COST Action NGS (Empowering NGS technologies for the study and diagnostic of plant viruses) (EU case study);
 - 2) Rondel hen housing system (EU case study);
 - 3) Flame-weeding machine (the case study from Serbia);
 - 4) Domestic maize hybrid BL43 (the case study form BiH/RS).

Conclusions

KA1: Advice, education and research. In the Republic of Srpska, there are a dozen scientific research and educational institutions in the field of agriculture and a public agricultural extension/advisory service and some forms of a private advisory service that represent elements of its Agricultural Knowledge Information System (AKIS). They have a certain human and physical resources, but lacking in modern equipment and financial resources carrying out activities within their competence. In general, institutional capital (human, physical and social) of scientific research, educational and advisory institutions is weak. There is a weak connection between the business sector and the scientific community (which oftentimes researches for itself). In the process of agricultural education, the emphasis is more on acquiring theoretical than practical knowledge.

Conclusions

KA2: Knowledge diffusion through networks. Scientific research, educational and advisory institutions make some contribution to the creation and transfer of knowledge and new technologies within AKIS, but this contribution is fragmented, and there is a lack of synergetic effects of networking research and advisory capacities and better linking of science and practice in research and application of scientific results in food production and processing. There is no long-term cooperation, and the cooperation takes place in the short and medium term, mainly as a project based. There are cases of different modalities of institutional cooperation with abroad, which are most often achieved by scientific research and higher education institutions and public bodies. More advanced farmers and entrepreneurs are transferring new technology mainly by importing know-how directly from abroad or thanks to facilitation of local dealers.

Conclusions

KA 3: AKIS vision. The AKIS in the Republic of Srpska consist from several sub-systems and their associated institutions that are poorly interconnected. The level of cooperation and interaction between different stakeholders in research, innovation and technology transfer (RITT) is uneven. Sometimes the cooperation and exchange of information between institutions is intensive, and sometimes it does not exist at all. The AKIS is partially formalized, but it could be rather said that it does not exist in the true sense. There are some stable and permanent connections, but a lot of links is being established sporadically and temporarily. There are several subsystems that partially fulfil the role of AKIS, but their compilation and coalition are missing, or it is weak. The greatest strength of AKIS is the need and desire of some stakeholders for change (innovation application or new technology transfer), the greatest weakness is lack of financial resources for financing the transfer of new technologies, the greatest opportunity are pre-accessional and other EU funds which successfully fills the funding gap and the greatest threat is low level of economic development in BiH.

Conclusions

KA 4: Entrepreneurial activities and experiments. Agricultural and food manufacturing sector in the RS is exclusively relay on private farms and companies. More and more farmers are becoming interested in RITT, the awareness is maturing that if they want to survived and be profitable, they must apply new technologies and new scientific achievements. Farms and companies transfer new technologies mainly based on their imports (e.g., new agricultural machinery, process equipment, plant protection products, seeds, etc.), supported with vender advices. There are not many examples of RITT through foreign direct investment in the agricultural and food manufacturing sector. The use of green and clean technologies is not a top priority, either for the private, or for public stakeholders. The application of clean and green technologies is sporadic, as well as renewable energy production and consumption in agriculture.



Conclusions

KA 5: Market environment. The deteriorating economic situation, in BiH but and in the World, pulls back the scope of scientific research and the degree of transfer of innovation and new technologies in the agricultural sector. The process of accession to EU goes in favour to RITT due to broader availability of many funds for scientific research (e.g., HORIZON) and for their application in agricultural production (such as IPARD pre-session funds). The pandemic has worsened economic and overall situation, but also increased motivation for food own production and healthy living. The international, donor funded, projects present in BiH positively influence on strengthening and application RITT, financially and in other ways. Successful business people (more associated to the food manufacturing industry than agriculture production), are leaders in RITT and most often those who have gone beyond the local framework and the first import and thus apply new technologies and innovations.

Conclusions

KA 6: Legitimacy for RITT. Incentives for the creation and transfer of new technologies come from the scientific community, the open market, international projects, new regulations and tax policy. Disincentives to create and transfer new technologies are the challenges of free competition, the lack of sources to finance new investments, the low level of subsidies and other incentives, and the gap between national and EU regulations. BiH is not yet a direct beneficiary of IPARD funds, but IPARD program could contribute to the improvement of RITT by co-financing new investments in agricultural sector. The IPARD like program is in small extent simulated through EU4Business and EU4Agri programs. FARMA II and other bilateral financed projects (USAID, GIZ, SIDA, TIKa; Cooperazione Italiana, CDA, etc.) have supported the implementation of certain technological innovations, but they are not primarily focused on that goal. Other supranational programs (e.g., HORIZON, COSME) also contribute to RITT, but the participation of institutions and companies from the RS in them so far is modest.

Conclusions

KA 7: Resource mobilization. The RITT process in the agricultural sector in the RS is led by two ministries, the Ministry of Agriculture and the Ministry of Science, but their role in this is insufficiently strong. There are various strategies, more or less, related to RITT, which are partially implemented. There are ongoing initiatives and arrangements led and funded by international projects or single, more advanced, farms and companies. The governance arrangements for transferring research and innovation into practical application are different (public financed and lead arrangements, project-based arrangements or individual investor arrangements). The EU HORIZON program is important for finance and strengthen scientific research, but it is poorly represented in BiH due to high competition and the marginal position of BiH participants. The IPARD is certainly a useful mechanism for initiate and finance technology transfer, but BiH does not have still own experience with IPARD programme implementation. National programs are also important for RITT, but have little financial resources to support the promotion of innovation and the transfer of new technologies.

Recommendations

- 1) **Increase funding for research** and thus research in the field of biotechnological sciences and focus that research on heretofore **agreed priorities, tailored to the needs** of those who will be the beneficiaries of scientific results.
- 2) **Modernize and improve the technical equipment and ability to conduct research** and knowledge acquiring and dissemination for all stakeholders involve in research chain.
- 3) **Financially and in other ways support farmers and processors to procure and introduce new technologies**, as an effective way to support the improvement of their competitive position.
- 4) Permanently **improve human capacities** of staff involve in research, education and advisory, based on the selection of the best staff and the constant improvement of their knowledge and enable them the **access to valuable scientific information**.

Recommendations

- 5) Greater and better **reliance on ICT in the RITT process**, in education and research, and especially in disseminating knowledge, advice and information through various forms of digital tools.
- 6) Improve **coordination between scientific research institutions and researchers** in the country with scientific research institutions and scientists abroad (establish scientific networks, institutional and personal).
- 7) Be more active in **attracting and securing external sources of funding for scientific research** (EU and other programs) and improve the management of research projects.
- 8) Establish **better coordination and exchange of information** between ministries of agriculture and science and scientific and educational institutions and advisory services.

Recommendations

- 9) Identify the priorities of scientific research based on **better cooperation with the business sector** in agriculture and **improve dissemination the research results** to final beneficiaries who can and should apply innovations and new technological procedures.
- 10) Increase **farmers' awareness** of the need and benefits by applying innovations and new technologies in their business.
- 11) Introduce **incentives for the transfer of innovation and new technologies** from the scientific sphere to practical application.