

15 Priorities of sustainable development of agriculture and rural areas within the region of eastern Serbia³⁴

15.1 Introduction

Region is always considered as the optimal framework for integrated and sustainable socio-economic, demographic, cultural and environmental development of a specific territory, and the “best compromise” between fragmented local initiatives and “distant” global national plans of development [Janković 2012].

There is a long-standing general debate in many OECD countries on the effectiveness of regional support systems, especially in rural areas. In the OECD the New Rural Paradigm, states that integrated rural development requires a new focus on places rather than sectors and an emphasis on investments rather than subsidies [OECD 2006].

The EU rural area policies begin to adopt strategic concepts which is a significant shift towards an asset-based approach, necessary to respond to the specific territorial challenges and useful to provide programmes that make use of place-based assets and achieve effective regional results [Dax and Kahila 2011].

The main characteristics of the territorial approach can be summarized as follows: a) a focus on specific places and on their territorial scale; b) an endogenous development strategy based on the territory’s natural and socio-cultural assets and aimed at supporting the provision of public goods and services; c) a multilevel system of governance, aiming at co-ordination and networking both in the vertical sense (relations between different levels of government) and in the horizontal sense (relations between actors and stakeholders living and/or operating in the specific territory); and d) a focus on investment rather than subsidy [Mantino 2011].

Sound land policy and planning make a significant contribution to sustainable and balanced territorial development [Popović, Živanović and Miljković

³⁴ Paper is a part of research studies within the project: “Active Eastern Serbia in process of accession to EU” led by Regional development agency of Eastern Serbia (RARIS), supported by the Foundation for open society, Serbia, as well as project: III 46006 “Sustainable agriculture and rural development in the function of accomplishment of strategic goals of the Republic of Serbia within the Danube region”, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia, 2011-2015.

2013]. Land-use planning means a systematic assessment of physical, social and economic factors in such a way as to encourage and assist land users in selecting options that increase their productivity, are sustainable and meet the needs of society [FAO 1993]. On the basis of an agronomic evaluation of land, based on climate, soils, and landform, and using available socio-economic data to formulate constraints, targets, and production options, the spatial resource allocation can be optimized with regard to multiple objectives [Fischer et al. 1998].

However, a decisive role in the growth of the economy and employment in rural regions belongs to local actors – policymakers, entrepreneurs and employees (and their internal and external networks, including cooperation with upper administrative levels, developing agencies and universities), i.e. to their capabilities to formulate policies to attract public and private investments and to perceive changes and adjust to them [Terluin and Post 2001].

The 2013 CAP reform improves the strategic approach of rural development policy to defining (national and / or regional) rural development programmes (RDPs), strengthening the content of rural development measures and linking rural development policy more closely to the other EU structural funds. In line with the Europe 2020 strategy, and the overall CAP objectives, the following long-term strategic objectives for the EU rural development policy 2014-2020 were identified: 1) fostering the competitiveness of agriculture, 2) ensuring the sustainable management of natural resources, and climate action, and 3) achieving a balanced territorial development of rural economies and communities including the creation and maintenance of employment.

On the basis of an analysis of the needs of the territory covered by the RDP, Member States/regions set quantified targets and measures to achieve these targets, upon following common EU priorities [Reg. (EU) No. 1305/2013]:

- fostering knowledge transfer and innovation in agriculture, forestry and rural areas;
- enhancing the viability / competitiveness of all types of agriculture, and promoting innovative farm technologies and sustainable forest management;
- promoting food chain organization, animal welfare and risk management in agriculture;
- restoring, preserving and enhancing ecosystems related to agriculture and forestry;
- promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors;
- promoting social inclusion, poverty reduction and economic development in rural areas.

Based on strategic development priorities from the Regional Development Strategy of the Timočka Krajina Region [Regional Development Agency Eastern Serbia – RARIS, 2011], three key thematic areas of development for Eastern Serbia were defined in the Regional EU platform: 1) agriculture and rural development, 2) tourism and 3) environmental protection [RARIS 2015].

In the field of agriculture and rural development, measures of agricultural policy are grouped within the three strategic objectives: 1) strengthening the competitiveness of agricultural production and agro-industry, 2) sustainable management of natural resources and environmental protection, and 3) diversification and development of the rural economy, in line with the strategic objectives and priorities of the national strategy for agriculture and rural development 2014-2024 [Official Gazette of the Republic of Serbia – OG RS, no. 85/2014], as well as *to preference*, expressed in the strategy for gradual harmonization of policy for management of the development of agriculture and rural areas with the principles of the EU CAP.

With the intention to establish a stimulating ambient for the realization of above mentioned strategic development aims and measures, certain number of priority activities as a part of agricultural policy that are of interest to the agricultural sector and rural areas of the Eastern Serbia region during the EU accession process were singled out and recommended. These priorities are related to: zoning of agricultural production; development of a regional forecast-reporting service for plant protection; defining of the legal framework for the areas of integrated production, irrigation and producer associations; protection of geographical indication of agricultural products; establishment of farm management information system and formulation of local strategies for sustainable agricultural and rural development [RARIS 2015].

15.2 Data sources and methodology

In our paper we discussed the potentials and limitations for the development of agriculture and related activities in the region, as well as all the needs for the state improvement by taking a set of recommended measures. The analytical-synthetic method is used for a discussion and concluding remarks. Data are obtained from various relevant sources – official statistics, projects, reports, sectoral and development strategies and spatial planning documents. Several scientific papers and studies were analysed and quoted as well as official regulations.

15.3 Challenges and opportunities for regional agriculture and rural development

Geography and basic economic indicators

The region of Eastern Serbia (also known as the Timočka Krajina) spreads out between the Danube River in the north and the Stara Planina Mountain in the southeast, in the valley of the Timok River, along the border with Romania and Bulgaria. The region covers the administrative territory of the Bor District (municipalities of Bor, Negotin, Kladovo and Majdanpek) and Timok District (Zaječar city and municipalities of Knjaževac, Sokobanja and Boljevac), with the total area of 7,131 km² and population of approximately 238.6 inhabitants [Statistical Office of the Republic of Serbia – SORS, 2014], (Figure 1.).

Figure 1. Region of Eastern Serbia – geographical location and administrative coverage



Source: <http://www.traveleastsrbia.org/>

Mountainous and hilly terrains dominate, framing the region from the east, west and south (high mountain massif of Stara Planina and medium height mountains – Kučaj, Deli Jovan, Rtanj, Tupižnica, Ozren, etc.); river valleys of Danube, Beli, Crni and Veliki Timok, and Sokobanjas' Moravica, in which are *compositely* changing gorges and basins; and the Danube River alluvial plain

and terraces at its entrance to Dakijas' basin, between Kladovo municipality and the mouth of the Timok River. The territory outspreads in several altitude zones, from 28 m.a.s.l. (mouth of the Veliki Timok River into the Danube River, the lowest point in Serbia) to the 2,070 m.a.s.l. (part of the Stara Planina Mountain within the Knjaževac municipality). The climate is continental, with the expressed temperature extremes, large variations in rainfall and unfavourable distribution of rainfall during the year [Aleksić et al. 2004].

This is mostly agricultural area with an economy based on natural resources (energy and mining) and significant tourism potentials (Danube River and Stara Planina Mountain). The sector of agriculture, forestry, water management, hunting and fishery makes 43.7% of the region's GDP, while the sector of mining, energy, processing industry and construction has a share of 26.3%, and the sector of services around 30% [OG RS, no. 51/2011]. Mining is developed in municipalities of Bor and Majdanpek, energy and chemical industry is characteristic of municipalities of Kladovo and Negotin, while food, textile, footwear and machine industry are the most common for Knjaževac municipality and city of Zaječar. Municipality of Sokobanja is mostly recognized by developed spa tourism. Generally, development of small and medium enterprises is too slow, with the predominant share of trade and restaurant business.

Regionally observed higher GDP per capita than the national average in 2014 was recorded in the municipality of Bor, in Zaječar city and in Majdanpek municipality this indicator exceeded 80% of the national average; in municipalities of Boljevac, Kladovo, Negotin and Sokobanja it ranged from 60 to 80% of the national average, while in least developed municipality Knjaževac, it did not exceed 60% of the national average [OG RS, no. 104/2014].

Land use

Agricultural area covers 49.4% of the territory of Bor District (from 22.2% in municipality of Majdanpek to 68.0% in municipality of Negotin), while in District of Zaječar mentioned percentage is little higher, and amounts to 59.0% (from 46.3% in Boljevac municipality to 67.7% in the territory of Zaječar city) [SORS 2014].

According to data from census of agriculture of 2012 [SORS 2013], from 29,286 agricultural holdings within the Region of Eastern Serbia, there are 29,078 holdings that have at their disposal 157,676 ha of utilized agricultural area (UAA). Agricultural holdings are small and fragmented what hinders the use of modern technology and mechanization, and it makes agricultural production more expensive. Average size of UAA per holding, on the territory of the Bor District is 5.81 ha, divided on average in 6 separated parcels, while on the

territory of Zaječar District it is 5.07 ha (in 8 separated parcels). There prevail small family holdings, with size up to 5 ha of UAA (65.8%), prevail in the region and where they have at their disposal only 26.6% of the total utilized agricultural area. The largest part of UAA (58.7%) is managed by 34% of holdings whose estate ranges from 5 to 50 ha, while the remaining 14.7% of UAA is on disposal of only 0.2% large holdings (larger than 50 ha).

Among the holdings of the last two mentioned groups, there is a significant number of market-oriented family holdings, whose incomes enable them to invest in intensification of agricultural production and purchase of modern equipment and mechanization. Currently to mentioned groups, after many years of stagnation caused by the transitional difficulties in process of restructuring and privatization, are turning back some of former large public agri-combines – agricultural development within the region, and now appear successful private companies, such is “Salaš” d.o.o. from Zaječar, in Italian ownership (<http://ruskiposlovniklub.rs/en/news.htm#newsPartners>).

After the breakdown of several large public agri-combines in observed area, which had also possessed the storage facilities and processing capacities, and after the shutdown of agricultural cooperatives during the transition period, farmers were faced with difficulties in product sale and strong price and income fluctuations, which resulted from the broken market chains. Local associations of crops and fruits producers, wine growers, stockbreeders and beekeepers have been strengthened in recent years, but this is only a small indication of what they would eventually have to become – regional branches of strong and organized producers’ groups and organizations, which will represent the interests of all farmers of Timočka krajina region towards processors, large trade chains, exporters and state authorities.

Each seventh holding (4,184 holdings) has diversified activities and sources of income, primarily in the field of agricultural products processing (processing of milk, fruits, vegetables, meat and other agricultural products) and forestry, where some of them are engaged in tourism, handicraft, fishing and energy production from renewable sources [SORS, 2013]. According to available natural resources and rich cultural heritage, what soon can be expected is tourist valorisation of rural areas and within it, promotion and protection of the origin of traditional local products [Popović et al., 2010; Popović et al., 2012].

The consequences of depopulation and migration processes include unfavourable age and qualification structure of the population linked to the holdings, which generally discourages market orientation and diversification of economic activities. Agricultural holdings provide a place for living and work for 70,244 inhabitants, out of which 69,835 live and work in family holdings, while 409

persons have a status of full-time employees at the holdings of legal entities and entrepreneurs. Households with 1-2 members have a share of 63.7% within the total number of households, while those with 3-4 members participate with 31.1%. Around 41.7% of household population acts as holdings of managers. Only 2.6% of managers have agricultural secondary or higher education, or graduated from agricultural faculty, courses from the field of agriculture were attended by around 0.6% of them, while 72.5% of managers run business according to their previous experience gained in agricultural practice.

Arable land, including kitchen gardens, occupy 57.2% of utilized agricultural area, orchards 3.3%, vineyards 1.4%, while meadows and pastures around 38.1% of UAA. Totally 89,112 hectares of arable land (without kitchen gardens) is occupied by grains (62.6%), followed by forage crops (26.2%) and industrial crops (6.8%). Vegetables (peppers, cabbage, onions and tomatoes), melons and strawberries, potatoes and pulses are grown on 2% of arable land. The largest area under grains is occupied by wheat and maize, and they are mostly located in the area of Negotin, Zaječar and Sokobanja; areas under forage crops, mostly covered by alfalfa and clover, are located at the territory of Zaječar, Boljevac and Bor; while within the group of industrial plants, sunflower dominates, above all in Negotin, Kladovo and Zaječar. Vegetables (peppers, cabbage, onions and tomatoes) and melons are usually grown in Negotin and Zaječar; while potatoes and beans are more common in Knjaževac and Sokobanja.

Under irrigation are 2,327 ha, or 1.5% of UAA (at national level it is 2.9%). Arable land in 90% consists of irrigated areas, while the rest of them are under orchards (148 ha), meadows and pastures (12 ha), vineyards (9 ha) and other permanent crops (11 ha). Most of irrigated arable land was sown with grains and maize for fodder (1,523 ha), but this is only 2.7% of the total area under the mentioned crops. They are followed by areas under vegetables, melons and strawberries (302 ha) with much higher share in the total areas under the mentioned crops (40.1%), having in mind that presented share is below the national level, 63.8%. The largest part of irrigated arable land and orchards is seen in the city of Zaječar, as well as in Negotin and Knjaževac municipality.

Besides the ongoing projects of revitalization and upgrading of large irrigation systems in the Negotin plain and Zaječar (PIK Salaš), and evident need for the realization of the project of water accumulation construction in Knjaževac, it is necessary to build an accompanying energy infrastructure, whose lack greatly limits the use of water for irrigation in the villages within the valley of the Timok River.

Fruit plantations are spread over 5,133 ha, where 2,611 ha are under intensive and 2,522 ha under extensive plantations. Plums occupy the largest part

of the fruit areas. They are followed by sour cherries, apples, walnuts and pears. Plums are mainly grown in the municipalities of Knjaževac, Bor and Zaječar; sour cherries in Knjaževac and Zaječar; apples in Negotin, Zaječar and Bor; walnuts in Zaječar, Knjaževac and Bor; while pears dominate in Bor, Zaječar and Negotin.

Vineyards cover 2,169 ha of UAA, where only 3% of these areas are planted with wine varieties having geographical indications, 86.4% are occupied by other wine varieties, and the remaining 10.6% are table grape varieties. The largest areas under vineyards are located at the territory of Negotin, Zaječar and Knjaževac.

Zoning of fruit production and application of integrated and organic system of production, renovation and construction of irrigation infrastructure, permanent education and establishment of producers' associations, strengthening of the family wineries and development of wine tourism are the main tasks for the improvement of fruit and wine growing.

Meadows and pastures spread on 60,093 ha. The largest areas under permanent grassland are located on the territory of Bor and Boljevac municipalities. Larger areas are also at disposal of the city of Zaječar, and municipalities of Knjaževac, Majdanpek and Negotin. The best quality meadows are in Sokobanja, and pastures in municipality of Majdanpek. To them can be added the row of pastures at Crni vrh (Stara Planina Mountain), which are good for grazing of sheep and dairy cows [RARIS 2010].

Protection of biodiversity and advancement of the production potential of natural meadows and pastures, as a part of comprehensive programme for restoration and development of livestock production, especially livestock production based on grazing, as well as the diversification of the rural economy (production of traditional meat and dairy products, fruit, forest fruit and medicinal herbs, protection of products origin and development of rural tourism) are of great importance for the conservation of agro-ecological goods and services located at the vast mountainous landscapes of the Timočka krajina region.

Livestock production is insufficiently developed, especially on the territory of Bor district (39 livestock units (LU) per 100 ha of UAA), while in Zaječar district situation is somewhat more favourable (52 LU per 100 ha of UAA) and it is closer and closer to the national average (59 LU per 100 ha of UAA). The most of livestock is grown at the territory of Zaječar city. The highest number of cattles is in Zaječar and Bor, pigs and poultry in Zaječar and Negotin, and sheep and goats in Zaječar and Knjaževac. Close to 40% of sheep and goats are raised on grazing (at national level around 25%) [SORS 2013]. There are considerable unused potentials for the development of organic livestock production in moun-

tainous areas [Katić et al. 2010]. The region of Timočka krajina is known for the production of high quality honey. Most hives are located at the territory of the Zaječar and Knjaževac municipalities [SORS 2013].

Having in mind available areas under meadows and pastures as well as potentials for growth in production of maize, forage crops and oilseeds under the irrigation, tradition and market opportunities, livestock production represents large but unexploited chance for agriculture in this territory.

Land-use planning

The purpose of zoning, as carried out for rural land-use planning, is to separate areas with similar sets of agro-ecological and socio-economic potentials and constraints for development. Specific programmes can then be formulated to provide the most effective support to each zone.

According to criteria of prevailing terrain altitude and slope at the level of cadastral municipalities (CM), on the territory of the Timočka krajina, the following four agricultural areas can be singled out:

- lowland, up to 200 m.a.s.l. – covers 8% of the total agricultural land in the Bor District (territory of Ključ and Negotin plain); fertile land suitable for intensive crop and vegetable production;
- knolly, from 200 to 350 m.a.s.l. – covers 33.7% of the total agricultural land (17.2% within the Bor District and 16.5% in Zaječar district); land on the lower terrains is particularly suitable for grapes growing, while at the higher terrains for fruit production;
- hilly, from 350 to 600 m.a.s.l. – covers 33.0% of the total agricultural land (12.1% in the Bor district and 20.9% in the Zaječar district); lands have heterogeneous production potential, suitable for mixed livestock and integrated fruit production;
- mountainous, over 600 m.a.s.l. – includes 25.3% of the total agricultural land (6.1% in the Bor district and 19.2% in the Zaječar district); lands have serious constraints to agricultural production, suitable for livestock grazing.

Starting from the agro-ecological conditions and specific structural, technological and socio-economic limitations and potentials, and having in mind the priority directions of the spatial distribution of agricultural production within the territory of Bor and Zaječar districts which are defined in the Spatial Plan for the Republic of Serbia 2010-2020 [OG RS, no. 88/2010], by the Regional Spatial Plan for the Timočka Krajina Region [OG RS, no. 51/2011] the following agricultural or rural zones are determined:

- Zone of intensive agriculture – includes fertile land of Ključ and Negotin plain, as a part of the valley-knolly and basin areas, mostly up to 350 m.a.s.l.

With the application of anti-erosion measures, hydro meliorations and prevention of soil conversion to non-agricultural purposes, in the above – mentioned zone it is possible to organize different types of intensive plant and livestock production, which should be supported by restoration and construction of additional storage and processing facilities.

- Zone of wine-growing – 1) wine-growing region of Negotinska krajina, with the Ključ, Brzupalankas, Mihajlovacs, Negotins and Rogljevac-Rajacs vineyard areas and 2) wine-growing region of Knjaževac with Bors', Boljevacs, Zaječars' and Potrkanjes' vineyard areas. The zone has a perfect microclimate and soil conditions, as well as multi-century tradition of grapes growing and wine production. There is a need for continuous support to improvement of technical and technological conditions for the grapes and wine production.
- Polymorphic zone – covers hilly areas, located mainly at the higher altitudes (350-600 m.a.s.l.). According to complex geophysical conditions, this zone is extremely heterogeneous in terms of benefits and constraints for agricultural production. It is suitable, primarily for the development of mixed livestock breeding (cattle-goat-sheep breeding), parallel with the improvement of forage base, in order to produce quality meat and milk, as well as for the development of fruit growing in the system of integrated production.
- Zone of livestock grazing – cover areas, which are mostly located at the heights above 600 m.a.s.l. Spacious natural pastures predispose mentioned zone for the development of livestock grazing and organic production of autochthonous varieties of fruit, together with support for production improvement and protection of the origin of traditional local products, linked with the development of rural and ecotourism. Depopulation and poor accessibility to the remote mountain villages are basic limitations to sustainable use of agricultural resources in mountain areas.

Despite general zoning and definition of priority directions of the spatial distribution of agricultural production and accompanied activities at the territory of Timočka Krajina, in regional spatial plan it is noted that by multisectoral approach the borders of the mentioned zones have to be specified, spatially differentiated support measures for improvement of agricultural production competitiveness, agri-environment protection and diversification of rural economy have to be determined, in order to eliminate resource, structural, technological and socio-economic limitations of agricultural and rural development.

The best way for achievement of the above-mentioned goals is to use the framework of local development strategies and programmes of integrated rural development, which respect the territorial heterogeneity and specific socio-economic and environmental needs of local communities [Popović 2003].

In this context, it is particularly important to ensure adequate professional and advisory assistance to farmers, as well as certain support to capacity building of stakeholders for the establishment of local development strategies and programmes [Popović et al. 2009; Popović et al. 2011].

15.4 Recommendations for priority measures to support agriculture and rural development

Starting from the previously considered potentials and limitations for the development of agriculture and rural development, within the Timočka krajina, some essential priority activities of agricultural policy in the above mentioned area will be presented³⁵.

Zoning of agricultural production

Agro-ecological zoning (AEZ), as applied in the FAO studies, defines zones on the basis of combinations of soil, topography and climatic characteristics and the management systems under which the crops are grown. Each zone has a similar combination of constraints and potentials for land use, and serves as a focus for the targeting of recommendations designed to improve the existing land-use situation. Combined with an inventory of land use, expressed as land utilization types and their specific ecological requirements, zoning can be used as the basis for a methodology for land resource appraisal. Ecological-economic zoning (EEZ) approach complements elements of physical-biotic environment with socio-economic factors and a wider range of land uses in zone definition and matching both of them through multiple goal analysis, provides a tool for land users to reach a consensus on the optimal use of land [FAO 1996].

By macro and micro zoning of agricultural production is monitored and encourages specialization of agro-industrial production, linking based on interests, inclusion of small producers in market trends, better evaluation of work in agriculture (through balanced employment of all members of agricultural holding) and optimal use of natural resources. It is also a practice in the EU that zonal politics influences farms enlargement.

For zonal deployment of agricultural production and additional activities, two methods with corrective factors may be used: territorial marking of zones (based on altitude, relief and climate), and zonal marking of certain lines of ag-

³⁵ The aforementioned priority activities are among the recommendations defined for agriculture and rural development thematic area by the local stakeholders, members of the Regional EU platform, with the support of external consultant, the author of this chapter, within the RARIS project “Active Eastern Serbia in the accession process to EU” (2014-2015).

ricultural production according to their representation at particular territory (share in the total area) [RARIS 2015].

Zoning has strategic importance for the successful use of comparative advantages and sustainable development of multifunctional agriculture, including agro-ecotourism and other accompanying activities in the rural economy, which are, according to the rich natural resources and cultural heritage, of particular interest for the development of agriculture and villages in the region of Timočka Krajina.

Legal framework for integrated agricultural production

There is a wide variation of integrated farming approaches which cover production systems positioned between conventional and organic food production. Integrated farming encourages farmers to look at the whole farm and its relationships with the wider socio-economic and ecological environment, combining the best of traditional and modern production practices. No Community-wide regulation exists on integrated farming³⁶. This has led to national and regional authorities developing their own production and marketing standards, which they enforce with the aid of duly accredited certifying bodies [EC 2011].

Countries within the region arranged area of integrated production applying certain regulations, which define responsibilities of producers and prescribed technical and organizational production conditions, adequate organization of products, control, certification and labelling, etc. Integrated production is mostly present in fruit, vegetable and wine growing. Due to the excellent predispositions of spacious hilly-mountainous area, within the Timočka Krajina, for integrated fruit production, and more and more presented market requirements for quality wines gained from integrated production, establishment of the above – mentioned legislation will have significant impact on the fruit and wine growers, as well as for other agricultural producers from this region.

Legal framework for establishment of producer groups and organizations

Producer organisations are legally-constituted groups of farmers and growers that assist in the distribution and marketing of products, promote a higher quality of products and encourage their members to adopt good envi-

³⁶ The Framework Directive on the sustainable use of pesticides (Directive 2009/128/EC) only regulates the plant protection element of integrated farming, i.e. integrated pest management (IPM). The general principles of IPM are implemented by all professional users since 1st January 2014. Member States are required to encourage professional users to implement crop or sector specific guidelines for IPM on a voluntary basis. The harmonization of Serbian legislation with the EU Directive 2009/128/EC is in progress [EIO 2014].

ronmental practices. Producer organisations can group themselves into associations of producer organisations and into inter-branch organizations, which link their activities in the production of food to the processing and trading. It has especially important role in organization and purchase of fruit and vegetable.

Since the 2013 reform of the Common Agricultural Policy (CAP), producer organisations are encouraged in all sectors. Reinforced legal framework for Producer Organisations within common organisation of the markets in agricultural products (such as temporary exemption from certain competition rules, the possibility for collective bargaining in some sectors and delivery contracts for all sectors) is backed by financial support for setting up producer groups under the second CAP pillar [EC 2013].

This is a missing segment within the entire region of Eastern Serbia, having in mind the large number of small size agricultural holdings, their disorganization, and non-standardized and fragmented agricultural production. Producers' organizations and clusters are the promoters of their own interests, but also the factors of agricultural policy creation and implementation that is adjusted to the customers and market needs.

Legal framework for establishment of energy infrastructure for hydro-amelioration

By organized construction of low-voltage network, in areas where the need for use of hydro-amelioration exists, it will come to costs reduction and improvement of irrigation efficiency. Adoption of rulebook that regulates the construction of low voltage network system in function of hydro-technical amelioration encourages the yields growth and sustainable land management in agriculture. Regulations would define the activities related to establishment of planning documentation, obtaining needed permits, coordination with relevant public companies, coordination and monitoring of activities implementation and monitoring of systems' work.

Adoption of the mentioned regulation is particularly important for the region of Eastern Serbia, where a lack of electrical grid for power supply of irrigation pumps (just a few of agricultural producers use the electricity for the operation of electric pumps for irrigation in the Timok River alley) is observed.

Establishment of regional forecasting and reporting service for plant protection

Basic tasks of regional forecasting and reporting service for plant protection are prediction of appearance and determination of developmental phases of harmful organisms and plant diseases, evaluation of their impact on agricultural

production, establishment of a forecasting model, as well as undertaking of optimal measures in crops protection against harmful organisms, according to constant monitoring of their number, spatial and temporal distribution and environmental conditions. Optimal plant protection measures guarantee food safety and lower crop care costs, and they protect the environment. They also have particularly important role in the system of integrated plant production.

Development of forecasting and reporting service for plant protection, within the region of Eastern Serbia, represents significant segment in strengthening of the field crop, fruit and wine production competitiveness. The consequences of mentioned service non-functioning are reflected in the lack of knowledge related to pests' appearance and movement, application of inappropriate pesticides and use of pesticides outside the biological justification. In accordance to that, most often an unhealthy and unsafe product is received, which contains pesticides in quantities above allowable levels, what leads to pests' resistance and jeopardizes export.

Protection of geographical origin of regionally recognizable products

As protection of agricultural products leads to a certain level of added value, they become more competitive in the market and achieve higher price categories, what in the end leads to an increase in production and export volume, as well as to increase of producers' income. According to data from April 2014, 336 spirits, 1,577 wines and 1,184 agricultural products were protected in the EU. It is estimated that during the 2010, the mentioned products were sold in total amount of EUR 54.3 billion, where 11.5 billion was realized through export, what amounts to around 15% of export of the EU food and beverage industry [EurActiv 2014].

Indications of geographical origin of agricultural products in the EU³⁷ – Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) are most common in the Mediterranean EU Member States (Italy, France, Spain, Portugal, Greece) in production/processing of fruit, vegetables and cereals, cheese, fresh meat and meat products, oils and fats, as well as in production of bread, pastries and cakes, eggs, honey, spices, mineral water, beer, fish and seafood [Rastoin 2009].

Equivalent system of protection has been established in Serbia (appellation of origin and geographical indications), where 52 agricultural products with geographical indications are registered at national level, with it that just four products come from the region of Eastern Serbia: cheese from Krivi Vir and Stara Planina,

³⁷ Non-alcoholic beverages, aromatic wines and other grape products, except wine vinegar (Regulation [EU] 1151/2012).

Rtanjs' tea and Klados' caviar. International protection, according to ratified Lisbon Agreement for the Protection of Appellations of Origin and their International Registration (OG FRY – International Treaties, no 6/1998), refers only to three Serbian products (honey from Homolje, wine Bermet and homemade chutney from Leskovac). Law on Indications of Geographical Origin (OG RS, no. 18/2010) regulates application procedures for international registration of indication of geographical origin in accordance to international agreement that obliges Serbia and for the registration of indication of geographical origin on the level of the European Community, in accordance with the European Community regulation governing the protection of indications of geographical origin for agricultural products and foodstuffs³⁸ [Regulation (EU) 1151/2012].

Producers need greater government and extension service support, both in process of protection and in process of products with protected geographical origin marketing valorisation. Holders of protection are usually associations of (small) producers, which have neither the financial possibilities, nor the knowledge to successfully sell the protected product, especially in foreign market.

Products with geographical indications contribute to the recognisability of the region where they are produced, leading the way to the development of rural tourism. Therefore, it is important to achieve the synergy among the strategies of products with geographical indication value chain development with local developmental strategies.

Establishment of local strategies of sustainable agricultural and rural development

In the region of Eastern Serbia one strategic document is in force which concerns agricultural development (Strategy of Agricultural Development of Boljevac municipality for period 2010-2015) and one focused on rural development (Strategy of Rural Development of Knjaževac municipality for the period 2010-2020). As each local government should determine the best modalities of sustainable agriculture and rural development, recommendation is that initiation of establishment of relevant developmental documents should be based on participatory approach, with joint action of agricultural producers, citizens and other stakeholders interested in the goals and directions of development, as for investment in local community development.

³⁸ Agreement between the Community and Serbia on the reciprocal recognition, protection and control of wine, spirit drinks and aromatised wine names have been included in the Stabilization and Association Agreement between the EU and Serbia (Annex II to Protocol 2) [OG RS – International Treaties, no. 83/2008].

Implementation of the EU LEADER approach, which is based on the establishment of local action groups, composed of representatives of farmers, SMEs and entrepreneurs that are active in the area of agriculture, scientific-research institutions and other stakeholders, is imposed as the best solution in the process of developing of local strategy of sustainable agriculture and rural development. Only with close cooperation among stakeholders, it is possible to set a realistic SWOT matrix of internal resources and developmental constraints, in the context of opportunities and threats for the environment, and then to define the goals of development and investment activities for their realization.

15.5 Conclusions

The region of Eastern Serbia spreads out between the Danube River in the north and Stara Planina Mountain on the south-east, within the Timok River Valley, along the border with Romania and Bulgaria, on the total area of 7,130 square kilometres, where around 238.6 thousand of inhabitants live. It is mostly agricultural area, where economy is based on natural resources (energetics and mining) and significant touristic potentials (Danube River, Stara Planina Mountain). The region is characterized by depopulation processes, unfavourable age and qualification structure of the population, especially population linked to the agricultural holdings, significant spatial imbalances in the level of development and allocation of industrial (economy) capacities, generally low level of economic activity and investment, high unemployment, small and fragmented agricultural holdings, degradation of environment by mining activities, underdeveloped market infrastructure and poor transport accessibility of remote hilly and mountainous areas.

In order to create a stimulating environment for the development of agriculture and rural areas of Eastern Serbia Region during the accession process to the EU, the following activities should be undertaken: zoning of agricultural production; advancing the development of regional forecasting and reporting service for plant protection; defining the legal framework for the areas of integrated production, irrigation, as well as establishment and strengthening of producers' associations; protecting the geographical origin of local agricultural products; and establishing and implementing local strategies of sustainable agricultural and rural development.

References

1. Aleksić V., Milutinović S., Marić M., Đorđević N., *Draught in the Timok region and its consequences on plant production*. In: Proceedings of Scientific and Professional Conference "Ecological Truth – EkoIst '04". Technical Faculty in Bor, Bor, Serbia, 2004.

2. Dax T., Kahila P., *Policy Perspective – The evolution of EU Rural Policy*. In: *The New Rural Europe: Towards Rural Cohesion Policy*, ed. by A. Copus, L. Hörnström, NORDREGIO Report 2011:1, Stockholm, Sweden, 2011.
3. DIRECTIVE 2009/128/EC of the European Parliament and of the Council of 21 October 2009 *establishing a framework for Community action to achieve the sustainable use of pesticides*, OJ L 309, 24.11.2009.
4. EurActiv. *EU Possible extension of geographical indication protection*. Retrieved July 25, 2014 from: <http://www.euractiv.rs/eu-prioriteti/7532-eu-modaproiri-upotrebu-zatite-geografskog-porekla>
5. European Integration Office – EIO. *National Programme for the Adoption of the Acquis (2014-2018)*, Belgrade, 2014.
6. European Commission, Overview of CAP Reform 2014-2020. *Agricultural Policy Perspectives Brief, N°5* / December 2013*.
7. European Commission, *Integrated Farming – Fact Sheet*. In Commission Staff Working Paper. *Common Agricultural Policy towards 2020*. Impact Assessment. Annex 2A, Brussels, SEC(2011) 1153 final/2.
8. FAO, *Guidelines for land-use planning*. FAO Development Series No 1. Rome (Italy), 1993.
9. FAO, *Agro-ecological zoning. Guidelines*. FAO Soils Bulletin 73. Rome (Italy), 1996.
10. Fischer G., Granat G., Makowski M., *AEZWIN. An Interactive Multiple-Criteria Analysis Tool for Land Resources Appraisal*. Interim Report IR-98-051, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1998.
11. Janković D., *Territorial Approach to Regional Rural Development*. *Economics of Agriculture* 2012 (59) 4 (675-686).
12. Katić B., Savić M., Popović V., *Organic livestock production – Serbian unused chance*. *Economics of Agriculture* 2010 (57) 2 (245-256).
13. Mantino F., *Developing a Territorial Approach for the CAP*. A Discussion Paper, IEEP, 2011.
14. OECD, *The New Rural Paradigm, Policies and Governance*, OECD Rural Policy Reviews, Paris, 2006.
15. Official Gazette of the Republic of Serbia, no. 104/2014. *Regulation on establishing a unified list of development of regions and municipalities for 2014*.
16. Official Gazette of the Republic of Serbia, no. 85/2014. *Strategy of Agricultural and Rural Development of the Republic of Serbia 2014-2024*.
17. Official Gazette of the Republic of Serbia, no. 51/2011. *Regulation on adoption of Regional Spatial Plan for Timočka krajina*.
18. Official Gazette of the Republic of Serbia, no. 88/2010. *Law on Spatial Plan of the Republic of Serbia 2010-2020*.

19. Official Gazette of the Republic of Serbia, no. 18/2010. *The Law about Geographical Indications*.
20. Official Gazette of the Republic of Serbia – International Treaties no. 83/2008. *The Law about ratification of Stabilisation and Association Agreement between the European Communities and their Member States of the one part, and the Republic of Serbia, of the other part*.
21. Official Gazette of the FRY - International Treaties no. 6/1998. *The Law about Ratification of the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration*.
22. Popović V., *European agricultural support and sustainable rural development*. Institute of Agricultural Economics, Belgrade, 2003.
23. Popović V., Živanović Miljković J., *Key issues of land policy in Serbia in the context of spatial development – case study of Danube basin area*. Proceedings of 2nd International Scientific Conference *Regional development, spatial planning and strategic governance – RESPAG 2013*. Belgrade: Institute of Architecture and Urban & Spatial Planning of Serbia, 2013.
24. Popović V., Milijić S., Vuković P., *Sustainable tourism development in the Carpathian region in Serbia*. SPATIUM International Review, 2012, (28), p. 45-52.
25. Popović V., Katić B., Savić M., *Rural Development in Serbia and the local communities*. Economics of Agriculture 2011 (58) 1 (33-44).
26. Popović V., Nikolić M., Katić B., *The role of multifunctional agriculture in sustainable tourism development in the area of Stara Planina*. Proceedings of International Scientific Meeting *Multifunctional Agriculture and Rural Development (V) – Regional Specificities*, Institute of Agricultural Economics, Belgrade, Vrujci Spa, 2010.
27. Popović V., Katić B., Živanović Miljković J., *Rural Development Network and Territorial Competitiveness*. In Proceedings of 113th EEA Seminar *The role of knowledge, innovation and human capital in multifunctional agriculture and territorial rural development*, European Association of Agricultural Economists, Institute of Agricultural Economics, Belgrade, 2009.
28. Rastoin J-L., *Vers une marque ombrelle des produits alimentaires Méditerranéens*. Le projet IPAMED. Premier Séminaire *La Signalisation des terroirs – Pourquoi? Comment faire? Concepts, méthodes, pratiques et témoignages*. CI-HEAM, Paris, 2009.
29. Regional Development Agency Eastern Serbia – RARIS, *Recommendations of Eastern Serbia in the process of EU accession*. Project “Active eastern Serbia in the EU accession process” supported by Open Society Foundation, Serbia, 2015.

30. Regional Development Agency Eastern Serbia – RARIS. *Regional Development Strategy of the Timočka krajina 2011-2015*, 2011.
31. Regional Development Agency Eastern Serbia – RARIS. *Profile of the Timok region*, 2010.
32. Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 *on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005*, OJ L 347, 20.12. 2013.
33. Regulation (EU) No 1151/2012 of the European Parliament and of the Council of 21 November 2012 *on quality schemes for agricultural products and foodstuffs*, OJ L 343, 14. 12. 2012.
34. Statistical Office of the Republic of Serbia – SORS. *Municipalities and Regions of the Republic of Serbia 2014*.
35. Statistical Office of the Republic of Serbia – SORS. *Census of Agriculture 2012 – Agriculture in the Republic of Serbia*. Book I, Book II.
36. Terluin I.J., Post J.H., *Strategies towards territorial development in rural Europe*. In: European policy experiences with rural development, ed. by A. Arzeni, R. Esposti, F. Sotte, Selection of papers from the 73rd EAAE Seminar, Ancona, Italy, 2001.