

**Interreg IPA Cross-border Cooperation Programme Croatia – Serbia 2014 -  
2020**  
**Annex 7: Situation Analysis\***



\* Graphical representation of the territory covered by the Programme is without prejudice to the settlement of the dispute regarding the extension of the state border between the Republic of Serbia and the Republic of Croatia

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### Note:

*This situation analysis has been drafted on basis of the statistics from Croatia and Serbia and on basis of the relevant national strategy documents. Sources are mentioned throughout the document.*

## 1. OVERALL DESCRIPTION

### 1.1. Description of the programme area

The area of Interreg IPA Cross-Border Cooperation programme Croatia-Serbia covers NUTS 3 regions in the border territory between Croatia and Serbia.

The programme area consists of four counties (NUTS 3 regions) on the north-east of Croatia: Osječko-baranjska, Vukovarsko-srijemska, Brodsko-posavska and Požeško-slavonska county and five districts (NUTS 3 regions) on north-west of Serbia: North Bačka, West Bačka, South Bačka, Srem and Mačva district.

In total, 2,322,735 inhabitants live in the programme area. The largest urban and regional centres are Osijek in Croatian part of the programme area and Novi Sad in Serbian part of the programme area.

**Figure 1: Map\* of the programme area**



\* Graphical representation of the territory covered by the Programme is without prejudice to the settlement of the dispute regarding the extension of the state border between the Republic of Serbia and the Republic of Croatia

The length of the Croatian-Serbian border is 261.7 km with eight border crossings for international traffic. The state border follows River Danube with 139.9 km, making a natural border between the two countries. The programme area is based in the Pannonian Plain and extends over 25,505 km<sup>2</sup> thus representing 18,4% of Croatian territory and 17% of Serbian territory. The northern part of the programme area borders with Hungary, while the southern Croatian and south-western part of the Serbian programme area borders with Bosnia and Herzegovina.

The population density in the programme area is 84.9 inhabitant/km<sup>2</sup>, which is higher than the national average of 81.2 inhabitants/km<sup>2</sup> in Serbia and 75.7 inhabitants/km<sup>2</sup> in Croatia.

The main reason for the slightly higher population density throughout the history is that the programme area is characterized by lowland with fertile soil highly suitable for agriculture and forestry. The rivers Danube, Drava, Sava and Tisa make the programme area rich in water – most of these waters being navigable and also suitable for irrigation systems. In addition to rich agricultural soil, woodlands and fluvial-wetland plains, significant natural resources include: oil and gas fields, clay, sand and gravel excavation fields, and areas of high biodiversity. The southern part of the programme area contains one of the few mountains in the whole Pannonia plain: Fruška Gora on Serbian part of the programme area and the mountain plexus of Papuk, Psunj, Krndija, Dilj and Požeška gora on the Croatian part of the programme area.

### **Conclusions:**

- *The programme area has a favourable geographic and strategic location (vast area of protected areas and mostly plain areas (except for Fruška Gora)).*
- *The territory is rich in soil suitable for agriculture and in waters: Rivers Danube, Sava, Drava and Tisa.*
- *The population density is favourable within the entire programme area in comparison to national averages of the two countries.*
- *There is a potential for further urban development of the regional centers Osijek and Novi Sad as well as some other smaller towns.*

### **1.2. Demography**

The population in the programme area exceeds 2.3 million heads. 31% of this population lives in Croatia and 69% in Serbia. Population density is 84.9 inhabitants/km<sup>2</sup> amounting to 73% of EU average, while at the same time being above national average of both countries. It is important to note that most of Croatian programme territory is relatively close to national average with only Požeško-slavonska county being significantly below the average (43 inhabitants/km<sup>2</sup>). On the Serbian side of the programme area, South Bačka District has a population density above both national and EU average with 153 inhabitants/km<sup>2</sup>.

**Table 1: Population and density in the programme area**

<b>NUTS 3</b>	<b>Number of inhabitants</b>	<b>Surface area, km<sup>2</sup></b>	<b>Density, inhabitant/km<sup>2</sup></b>
<b>Croatian programme area</b>	<b>721,162</b>	<b>10,462</b>	<b>66.88</b>
Osječko-baranjska	305,032	4,155	73.4
Vukovarsko-srijemska	179,521	2,454	73.2
Požeško-slavonska	78,034	1,823	42.8
Brodsko-posavska	158,575	2,030	78.1
<b>CROATIA TOTAL</b>	<b>4,284,889</b>	<b>56,594</b>	<b>75.7</b>
<b>Serbian programme area</b>	<b>1,601,573</b>	<b>15,043</b>	<b>102.94</b>
Srem	312,278	3,485	89.6
South Bačka	615,371	4,015	153.3
West Bačka	188,087	2,488	75.6
North Bačka	186,906	1,784	104.8
Mačva	298,931	3,271	91.4
<b>SERBIA TOTAL</b>	<b>7,186,862</b>	<b>88,509</b>	<b>81.2</b>

Source: Croatian Bureau of Statistics, 2011; Statistical Office of the Republic of Serbia, 2011

There is an overall trend in population decrease within the last 10 years in the programme area. Urban migration due to poor economic situation, lack of employment opportunities and slow post-war recovery in northeast part of Croatia contribute to the negative trend.

A positive trend is registered in South Bačka District with 3.7% increase in population in the last 10 years. On the "favourable" natural growth influenced largely migration to Novi Sad, which had according to the last census a positive population growth.

**Table 1: Population change in the last 10 years in the programme area**

NUTS 3	Total population Census 2001/2002	Total population Census 2011	Population change, %
<b>Croatian programme area</b>	<b>797,870</b>	<b>721,162</b>	<b>-9.7</b>
Osječko-baranjska	330,506	305,032	-7.7
Vukovarsko-srijemska	204,768	179,521	-12.3
Požeško-slavonska	85,831	78,034	-9.1
Brodsko-posavska	176,765	158,575	-10.3
<b>CROATIA TOTAL</b>	<b>4,437,460</b>	<b>4,284,889</b>	<b>-3.4</b>
<b>Serbian programme area</b>	<b>1,673,343</b>	<b>1,601,573</b>	<b>-4.3</b>
Srem	335,901	312,278	-7.0
South Bačka	593,666	615,371	3.7
West Bačka	214,011	188,087	-12.1
North Bačka	200,140	186,906	-6.6
Mačva	329,625	298,931	-9.3
<b>SERBIA TOTAL</b>	<b>7,498,001</b>	<b>7,186,862</b>	<b>-4.1</b>

Source: Croatian Bureau of Statistics, Census 2001-2011; author's calculation; Statistical Office of the Republic of Serbia, Census 2002-2011

Another demographic problem is the ageing population and negative trend in birth/mortality ratio in Croatia and programme area as well.

**Table 2: Population age**

NUTS 3	Average age	Age 0-14 % of total population	Age 15-65 in %	Age>65 in %
Osječko-baranjska	41.2	15.3	67.8	16.9
Vukovarsko-srijemska	40.6	16.96	65.94	17.09
Požeško-slavonska	40.9	16.84	65.22	17.94
Brodsko-posavska	40.6	17.07	65.37	17.56
<b>Croatian programme area</b>	<b>40.8</b>	<b>16.54</b>	<b>66.08</b>	<b>17.75</b>
<b>CROATIA TOTAL</b>	<b>41.7</b>	<b>15.23</b>	<b>67.07</b>	<b>17.7</b>
Srem	39.5	13.98	69.42	16.6
South Bačka	39.8	15.22	69.64	15.14
West Bačka	40.7	13.18	68.21	18.61
North Bačka	42.1	14.18	68.66	17.16
Mačva	40.7	14.39	68.74	16.87
<b>Serbian programme area</b>	<b>40.6</b>	<b>14.19</b>	<b>68.93</b>	<b>16.88</b>
<b>SERBIA TOTAL</b>	<b>42.2</b>	<b>14.42</b>	<b>68.6</b>	<b>16.98</b>

Source: Central Bureau of Statistics - Croatia, Statistical Yearbook 2012; Statistical office of RS – Publication 2012.



One of the favourable conditions of the programme area is the large variety of different ethnicities on both sides of border living in cohabitation and enriching public cultural and lingual life of the cross-border area.

The biggest national minority on Croatian side of programme area are Serbs with 7.6% of total population of the area. Most of them live in Vukovarsko-srijemska (15.5%) and Osječko-baranjska county (7.76% of the population). Hungarians are the only other national minority group exceeding 1% of total population in the programme area, who live mostly in Baranja, Osječko-baranjska county (2.7% of its population). Bosniaks, Montenegrins, Slovenes and Albanians are represented with less than 1% of the population in the area.

Ethnic richness exists in Serbia with more than 20 ethnic minorities living in the programme area. This is especially evident in North Bačka District where only 27% of its population is Serbian. The majority are Hungarians (40.8%), followed by 8% Croats and 7% Bunjevci. West Bačka District and South Bačka District are also characterized by ethnic richness. In West Bačka District 65% are Serbs and main minorities are Hungarians (9%) and Croats (6%). In South Bačka District, 72% of population are Serbs, followed by Hungarians (8%) and Slovaks (4%) as main minorities.

**Table 3: Main national minorities in the programme area**

NUTS 3	National minorities, % in total population									
	Croats	Serbs	Bosniaks	Hungarians	Montenegrins	Albanians	Bunjevci	Roma	Ruthenians	Slovaks
Osječko-baranjska	85.89	7.76	0.14	2.70	0.10	0.28	-	0.61	0.03	0.75
Vukovarsko-srijemska	79.17	15.5	0.97	0.94	0.05	0.27	-	0.14	0.79	0.66
Požeško-slavonska	90.38	6.00	0.06	0.21	0.02	0.25	-	0.02	0.01	0.12
Brodsko-posavska	94.99	2.60	0.29	0.04	0.03	0.20	-	0.74	0.01	0.02
<b>Croatia</b>	90.42	4.36	0.73	0.33	0.11	0.41	-	0.40	0.05	0.11
	Serbs	Croats	Bosniaks	Hungarians	Montenegrins	Albanians	Bunjevci	Roma	Ruthenians	Slovaks
Srem	84.95	2.80	0.02	1.21	0.16	0.06	0.01	1.76	0.54	2.61
South Bačka	72.36	1.63	0.04	7.76	1.85	0.11	0.06	1.70	1.13	4.01
West Bačka	65.31	5.78	0.02	9.30	2.70	0.12	1.15	1.60	2.51	0.58
North Bačka	27.00	7.78	0.12	<b>40.80</b>	1.95	0.26	7.37	1.79	0.24	0.15
Mačva	95.06	0.11	0.09	0.04	0.06	0.01	0.01	1.52	0.01	0.01
<b>Serbia</b>	83.3	0.81	2.02	3.53	0.54	0.08	0.23	2.05	0.19	0.73

Source: Central Bureau of Statistics, Census 2011; Statistical Office of the Republic of Serbia, Census 2011

Concerning the status of refugees and displaced persons, in the Serbian part of programme area there are still 2671 people with status of refugees and displaced persons (North and West Bačka District), whereas in the Croatian programme part, the number of refugees and displaced persons is insignificant. The most important problems of refugees are employment and housing.

In Serbia, nearly one third of the refugees are unemployed, average monthly income of refugee households is 90 Euro, and about 20% refugees suffer from chronic diseases. Also, they are in need of legal assistance for obtaining various documents. Due to the lack of documentation, refugees usually have problems in employment, registration of residence and education, as well as problems connecting to the pension service, social care and health insurance.

### **Conclusions:**

- 2.3 million people live in programme territory with approximately 70% on Serbian side and approximately 30% on Croatian side of the border.
- The programme area has a population density of 84.9 inhabitants/km<sup>2</sup> - with exceptions of Požeško-slavonska county being significantly below the national average (43 inhabitants/km<sup>2</sup>) and South Bačka being well above the national average (153 inhabitants/km<sup>2</sup>).
- There is a population decrease in the last 10 years throughout the programme area with exception of South Bačka.
- The programme area is characterized by an aging population.
- The border region is rich in ethnic variety with Serbs being the largest national minority in Croatia and Hungarians being the largest national minority in Serbia.

## **2. EMPLOYMENT, LABOUR MOBILITY, SOCIAL INCLUSION, HEALTH AND SOCIAL CARE**

### **2.1. Economic background**

Both countries are significantly lagging behind EU terms regarding GDP, which is 43.129 million Euro in Croatia (2013) and 31.988 million Euro in Serbia (2013). The economic performance in the programme area is only at 20.5% of the EU27 GDP per capita in 2011. Within the programme area, there is a significant difference between the two countries. The Serbian part of the area is at 63% of the Croatian part of the territory. Further difference lies in the fact that Serbian part of the area is slightly above the national average concerning GDP per capita, while on Croatian side – programme area is much below national average - at 61% of the national average.

We can conclude that programme area covers the richest part of Serbia (excluding Belgrade) and one of the poorer areas of Croatia.

**Table 5: GDP per capita in programme area (2008-2011)**

<b>NUTS 3</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Osječko-baranjska	8,871	8,112	7,539	8,271
Vukovarsko-srijemska	6,647	5,974	5,521	6,217
Požeško-slavonska	6,750	6,229	6,053	6,281
Brodsko-posavska	6,183	5,606	5,357	5,882
<b>Croatia total</b>	<b>10,722</b>	<b>10,111</b>	<b>10,060</b>	<b>10,377</b>
Vojvodina	4,446	3,955	3,836	4,336
<b>Serbia total</b>	<b>4,445</b>	<b>3,955</b>	<b>3,841</b>	<b>4,290</b>

Source: Croatian bureau of statistics, Serbian Ministry of Finance

In spite of those differences, the economies cope with similar types of problems, such as need for restructuring of agriculture, decline in industrial production, lack of SME's, lack of R&D and innovation, etc.

Furthermore, in the programme area there are no signs of sector specialisation. Most segments of the processing industry operate here, among them it is worth mentioning the food industry, the machinery and significant capacities of electronic assembly plants.

The share of services fails to reach national average in either of the Croatian counties concerned. Within the programme area, Osječko-baranjska county has the strongest services sector (63.1% gross-value added). Public administration, education, human health and social work activities are overrepresented in Požeško-slavonska and Vukovarsko-srijemska county, while economy related service sectors (e.g. info communication, financial,



professional and scientific services) are extremely weak in these counties – reflecting the lagging behind status of these areas. Agriculture is important GDP contributor with gross value added significantly above national average. The main reason for that is that the eastern counties have the biggest share of quality farmland with favourable water resources.

**Table 6: Distribution of gross value added by main groups of economy (GVA)**

NACE	Group of industry	Osječko-baranjska	Vukovarsko-srijemska	Požeško-slavonska	Brodsko-posavska	Croatia
A	Agriculture, forestry and fishing	9.9	15.5	13.4	10.3	4.9
B,C,D,E	Manufacturing, mining and quarrying and other industries	18.7	14.9	21.7	25.9	20.2
C	<i>of which Manufacturing</i>	14.1	10.9	17.6	20.8	15.9
F	Construction	8.3	10	5.4	8.1	6.7
G-U	Services	63.2	59.6	59.6	55.8	68.2
G,H,I	Wholesale and retail trade, transportation, storage, accommodation and food service activities	17.1	14.6	13.1	11.1	20.1
J	Information and communication	4.4	1.8	6.0	2.2	5.1
K	Financial and insurance activities	4.1	2.0	1.9	3.2	7
L	Real estate activities	10.9	14.1	13.9	14.5	10.6
M,N	Professional, scientific, technical, administrative and support service activities	4.9	3	2.1	4.4	7.3
O,P,Q	Public administration and defence, education, human health and social work activities	19.6	21.9	21.0	18.3	15.5
R,S,T,U	Other service activities	2.2	2.2	1.6	2.1	2.6
A-U	Total	100	100	100	100	100

Source: Croatian Bureau of Statistics, 2010

**Table 7: Distribution of gross value added by main groups of economy (GVA)**

NACE	Group of industry	Serbia	Vojvodina
A	Agriculture, forestry and fishing	3.6%	9.3%
B	Mining and quarrying	9.4%	23.0%
C	Manufacturing	27.0%	35.2%
D	Electricity, gas and steam supply	6.2%	3.1%
E	Water supply; sewerage, waste management and remediation ac	2.6%	2.8%
F	Construction	6.9%	4.5%
G	Wholesale and retail trade; repair of motor vehicles/cycles	18.1%	13.4%
H	Transportation and storage	7.0%	2.4%
I	Accommodation and food service activities	1.0%	0.4%
J	Information and communication	8.7%	1.7%
K	Financial and insurance activities	0.2%	0.2%
L	Real estate activities	0.9%	0.3%
M	Professional, scientific and technical activities	4.6%	1.9%
N	Administrative and support service activities	2.6%	1.0%
O	Public administration and defense; compulsory	0.0%	0.0%

	social security		
P	Education	0.1%	0.1%
Q	Human health and social work activities	0.1%	0.1%
R	Art, entertainment and recreation	0.6%	0.4%
S	Other service activities	0.2%	0.2%
T	Activities of households as employers	0.0%	0.0%

Source: Agency for Regional Development of the Autonomous Province of Vojvodina, 2012

Vojvodina is the most industrialised part of Serbia, with strong food processing and beverage sector, yet also chemical industry, rubber and plastic, oil and gas products and metal processing. The sector's share in Vojvodina total GVA production is amounts for 34%. The tertiary (services) sector is the greatest contributor to the GDP production with its 51% share. Manufacturing represents a third (34%) of the area's economy but the agriculture is also an important segment in value production (8% compared to the 9.9% proportion in Serbia).

### **Conclusions:**

- GDP is 43129 million Euro in Croatia (2013) and 31988 million Euro in Serbia (2013)<sup>1</sup> which is less than 0,3% of the EU27 average.
- Programme area is significantly lagging behind EU in terms of economic performance being at 20.5% of EU 27 GDP per capita.
- The economies on both sides of the border region cope with similar problems: a need for agriculture restructuring, decline in industrial production and lack of R&D and innovation.
- The agriculture and food processing and production present main industrial activity in the border area.
- The services sector dominates in terms of GVA, but manufacturing is also a significant GDP-producer in the area.

## **2.2. Labour Market**

The labour market situation is rather alarming in the programme area. There is a negative trend in terms of employment and unemployment in the last five years in programme area.

The unemployment is alarmingly high in the four Croatian counties with rate of 32.2% in 2012 - compared to an unemployment rate at national level of 20.1% and 10.5% at EU27. Most people are long term unemployed (for 1-2 years). Within the Croatian programme area, women represent 54.2% of the unemployed. There is a trend that the percentage of unemployed women increases with length of being unemployed. In 2012, the largest group of unemployed people were young people: 16.43% among the 20-24 years and 14.2% among the 25-29 years.

Serbia also faced an increase of the unemployment rate since 2009. The unemployment rate at the Serbian part of the programme area was 31.6% in 2012 (compared to national unemployment rate of 22.3%) which is on the same level as on Croatian part of the programme area. Another joint problem is the high percentage of young people being unemployed. In the five Serbian districts, the most vulnerable group is the age group of 25-29 years with an unemployment rate of 13%.

In general, the most likely reasons for long-term unemployment are inadequate education background and skills for the labour market needs, lack of working experience and lack of motivation after long-term absence from the labour market, as well as a lack of professional mobility and motivation to participate in training and life-long learning programmes. The long-term unemployed people are often regarded as a work force without skills required for the fast-changing labour market demand. Long-term unemployment is higher among less educated and older unemployed people.

<sup>1</sup> Source: Eurostat

**Table 8: Employment and unemployment rates**

NUTS 3	Unemployment rate, %	Employment rate, %
Osječko-baranjska county	30.5	69.5
Vukovarsko-srijemska county	34.8	65.2
Požeško-slavonska county	29.1	70.9
Brodsko-posavska county	34.8	65.2
<b>Croatia programme area</b>	<b>32.2</b>	<b>67.7</b>
<b>CROATIA</b>	<b>20.1</b>	<b>79.9</b>
North Bačka District	26.5	73.5
West Backa District	35.2	64.8
South Backa District	26.1	73.9
Srem District	33.8	66.2
Mačva District	36.3	63.7
<b>Serbian programme area</b>	<b>31.6</b>	<b>68.4</b>
<b>SERBIA</b>	<b>22.3</b>	<b>77.7</b>

Source: Croatian Employment Service, 2012./RadnaSnaga\_prosinac2012.pdf National Bureau of Statistics, Research RAD, the RDA; Statistical Office of the Republic of Serbia, 2012

Net monthly earnings are however significantly lower in Serbian part of the programme area (342.2 euro) than in Croatian part of the programme area (645.86 euro). However, net earnings in the four Croatian counties are lower than national average (730.69 euro), due to the high number of people employed in agriculture.

Most people in the programme area are employed in the sectors of manufacturing, wholesale and retail trade, education, public services, and human health.

**Table 9: Employment by sectors according to NACE**

PERSONS IN PAID EMPLOYMENT IN LEGAL ENTITIES, BY COUNTIES ACCORDING TO NACE SITUATION AS ON 31 MARCH 2012										
	Total	A	B	C	D	E	F	G	H	I
<b>CROATIA</b>	1,066,328	24,253	5,466	200,400	16,352	21,381	70,309	164,490	59,696	34,894
%	100.0%	2.3%	0.5%	18.8%	1.5%	2.0%	6.6%	15.4%	5.6%	%
Osječko-baranjska county	69,335	4,107	207	13,346	1,297	1,584	5,718	9,825	3,231	1,525
%	100.0%	5.9%	0.3%	19.2%	1.9%	2.3%	8.2%	14.2%	4.7%	2.2%
Vukovarsko-srijemska county	30,430	3,266	89	4,717	479	910	2,173	3,617	1,606	378
%	100.0%	10.7%	0.3%	15.5%	1.6%	3.0%	7.1%	11.9%	5.3%	1.2%
Požeško-slavonska county	13,558	1,026	67	3,693	202	257	403	1,630	627	118
%	100.0%	7.6%	0.5%	27.2%	1.5%	1.9%	3.0%	12.0%	4.6%	0.9%
Brodsko-posavska county	24,947	954	56	6,652	385	562	2,324	2,681	1,117	119
%	100.0%	3.8%	0.2%	26.7%	1.5%	2.3%	9.3%	10.7%	4.5%	0.5%
<b>Croatian programme area</b>	138,270	9,353	419	28,408	2,363	3,313	10,618	17,753	6,581	2,140
%	100.0%	6.8%	0.3%	20.5%	1.7%	2.4%	7.7%	12.8%	4.8%	1.5%
<b>SERBIA</b>	1,341,114	33,002	22,245	289,286	28,148	32,849	71,198	183,973	84,641	20,306

%	100.0%	2.5%	1.6%	21.6%	2.1%	2.4%	5.3%	13.7%	6.3%	1.5%
Srem District	44,251	2,359	76	12,527	714	1,523	1,923	5,815	3,209	206
%	100.0%	5.3%	0.2%	28.3%	1.7%	3.4%	4.3%	13.1%	7.2%	0.5%
South Bačka District	138,453	5,294	1,097	25,742	1,797	2,232	8,668	21,980	6,929	1,577
%	100.0%	3.8%	0.8%	18.6%	1.3%	1.6%	6.2%	15.9%	5%	1.1%
West Bačka District	27,604	2,917	-	7,587	299	725	690	3,078	1,642	209
%	100.0%	10.6%	-	27.5%	1%	2.6%	2.5%	11.1%	5.9%	0.8%
North Bačka District	39,140	2,978	3	9,862	431	763	1,885	6,727	2,748	375
%	100.0%	7.6%	0.008%	25.2%	1.1%	1.9%	4.8%	17.2%	7%	0.9%
Mačva District	38,649	773	594	9,372	822	1,294	2,053	6,048	3,128	225
%	100.0%	2%	1.5%	24.2%	2.1%	3.3%	5.3%	15.6%	8%	0.6%
<b>Serbian programme area</b>	288,097	14,321	1,770	65,090	4,063	6,537	15,219	43,648	17,656	2,592
%	100.0%	5%	0.6%	22.6%	1.4%	2.3%	5.3%	15.1%	6.1%	0.9%

	J	K	L	M	N	O	P	Q	R	S
<b>CROATIA</b>	29,384	36,441	4,177	42,684	32,631	104,133	107,365	82,734	18,676	10,859
%	2.8%	3.4%	0.4%	4.0%	3.1%	9.8%	10.1%	7.8%	1.8%	1.0%
Osječko-baranjska county	1,482	1,676	168	1,975	1,474	6,460	7,799	5,844	956	661
%	2.1%	2.4%	0.2%	2.8%	2.1%	9.3%	11.2%	8.4%	1.4%	1.0%
Vukovarsko-srijemska county	238	446	52	571	317	4,493	4,014	2,611	287	166
%	0.8%	1.5%	0.2%	1.9%	1.0%	14.8%	13.2%	8.6%	0.9%	0.5%
Požeško-slavonska county	94	182	27	169	71	1,590	1,642	1,591	97	72
%	0.7%	1.3%	0.2%	1.2%	0.5%	11.7%	12.1%	11.7%	0.7%	0.5%
Brodsko-posavska county	294	498	12	639	507	2,298	3,057	2,335	294	163
%	1.2%	2.0%	0.0%	2.6%	2.0%	9.2%	12.3%	9.4%	1.2%	0.7%
<b>Croatian programme area</b>	2,108	2,802	259	3,354	2,369	14,841	16,512	12,381	1,634	1,062
%	1.5%	2.0%	0.2%	2.4%	1.7%	10.7%	11.9%	9.0%	1.2%	0.8%

<b>SERBIA</b>	39,936	39,245	3,030	54,219	29,805	72,662	138,959	160,884	22,339	14,386
%	3%	2.9%	0.2%	4%	2.2%	5.4%	10.4%	12%	1.7%	1.1%
Srem District	623	455	34	925	939	2,737	4,591	4,845	600	149
%	1.4%	1%	0.08%	2.1%	2.1%	6.2%	10.4%	10.9%	1.3%	0.3%
South Bačka District	6,011	4,667	375	6,540	3,958	6,706	14,698	15,825	2,997	1,342
%	4.3%	3.4%	0.3%	4.7%	2.8%	4.8%	10.6%	11.4%	2.2%	1%
West Bačka District	240	337	15	470	223	1,581	3,592	3,484	341	172
%	0.9%	1.2%	0.05%	1.7%	0.8%	5.7%	13%	12.6%	1.2%	0.6%
North Bačka	882	477	59	1,230	495	1,499	3,750	4,010	537	428

District										
%	2.2%	1.2%	0.1%	3.1%	1.3%	3.8%	9.6%	10.2%	1.4%	1.1%
Mačva District	420	439	35	902	321	2,016	4,714	4,979	323	192
%	1.1%	1.1%	0.09%	2.3%	0.8%	5.2%	12.2%	12.9%	0.8%	0.5%
<b>Serbian programme area</b>	8,176	6,375	518	10,067	5,936	14,539	31,345	33,143	4,798	2,283
%	2.8%	2.2%	0.2%	3.4%	2%	5%	10.9%	11.5%	1.7%	0.8%

*Legend: A - Agriculture, forestry and fishing, B - Mining and quarrying, C - Manufacturing, D - Electricity, gas, steam and air conditioning supply, E - Water supply; sewerage, waste management and remediation activities, F - Construction, G - Wholesale and retail trade; repair of motor vehicles and motorcycles, H - Transportation and storage, I - Accommodation and food service activities, J - Information and communication, K - Financial and insurance activities, L - Real estate activities, M - Professional, scientific and technical activities, N - Administrative and support service activities, O - Public administration and defense; compulsory social security, P - Education, Q - Human health and social work activities, R - Arts, entertainment and recreation, S - Other service activities*  
*Source: Statistical report: Employment and Wages, 2012, Croatian Bureau of Statistics*  
*% and sum of programme area: Author's calculation*

We can conclude that young people entering the labour market are extremely vulnerable due to the lack of employment opportunities, lack of industry and sectors that would employ large number of people, a misbalance between supply and demand in the existing and needed knowledge and skills, lack of entrepreneurial spirit and skills for self-employment, a restructuring of agriculture and food production and loss of jobs. In terms of the education level, most represented unemployed group are people with primary education.

Through the EU funded IPA IV project, an analysis of educational needs for economic development was conducted on county level in 2011. Most important conclusions for Croatian part of the programme area are:

- The gap between demand and offer of labour market is significant.
- There is a misbalance between natural outflow of persons who retire and young persons seeking employment.
- Adult learning institutions should be supported to fill the gaps in education of unemployed in order to increase employability.
- The educational system does not anticipate labour market needs in mid-term period and is too slow in adapting educational programmes.

To conclude, the employability and adaptability of the labour force should be enhanced by more efficient employment policies. On the one hand, it is necessary to expand the range of existing active labour market programmes and target better the needs of unemployed, putting more emphasis on the populations at risk of labour market exclusion, in particular young people, long-term unemployed and people with disabilities. On the other hand, local stakeholders in employment policies should take a more active part in devising solutions tailored to local needs.

### **Conclusions:**

- *The border region has an alarmingly high percentage of unemployed – 32.2% in Croatian counties, and 31.6% in Serbian districts.*
- *Most represented unemployed group are young people (20-29 years).*
- *There is a misbalance between supply and demand on labour market and insufficient cooperation between employers, institutions providing education activities and employment services.*

- *The quality and efficiency of education and training needs to be improved as there are inadequate formal education programmes that do not match the labour market needs.*
- *There is a lack of entrepreneurial spirit and skills for self-employment.*
- *It is necessary to expand the range of existing active labour market programmes and target better the needs of unemployed, in particular young people, long-term unemployed and people with disabilities.*

### 2.3. Social care

About 5% of the population in the programme area is receiving social care. This number illustrates difficult social picture of poverty and unemployment that is drastically higher than in the rest of the country.

Croatian part of the programme area has 4.6% of social care beneficiaries, which is higher than national average (2.6%).

The percentage of social care beneficiaries in Serbian part of the programme area (7.3%) is below national average (8.8%) due to the fact that Vojvodina is the richest part of Serbia, but it is higher than in Croatian part of the programme area.

The most represented categories of social care beneficiaries are: children and youth without adequate parental care, persons with intellectual, physical or sensory disorders, unemployed and elderly people.

The Croatian social care system currently works through a network of regional Social Care Centres and other specialised institutions, which are often insufficient or inappropriate to the real needs. Larger urban centres have a much better set of social services than smaller ones, in particular rural communities, which often have a greater need.

**Table 10: Number of social care beneficiaries and social care institutions**

NUTS 3	Census 2011	Number of beneficiaries (2012)	Recipients per inhabitant %	Number of social care institutions
Osječko-baranjska county	305,032	15,551	5.1%	17
Vukovarsko-srijemska county	179,521	8,240	4.6%	22
Požeško-slavonska county	78,034	2,299	2.9%	21
Brodsko-posavska county	158,575	7,198	4.5%	16
<b>Total programme area Croatia</b>	<b>721,162</b>	<b>33,288</b>	<b>4.6%</b>	<b>76</b>
Srem District	312,278	22,951	7.3%	13
South Bačka District	615,371	39,768	6.5%	16
West Bačka District	188,087	20,022	10.6%	8
North Bačka District	186,906	15,044	8.0%	20
Mačva District	298,931	11,626	4%	12
<b>Total programme area Serbia</b>	<b>1,601,573</b>	<b>97,785</b>	<b>7.3%</b>	<b>69</b>

Source: Ministry of Social Policy and Youth of the Republic of Croatia, Annual report 2012  
 Republic Institute for Statistics, Statistical Yearbook of the Republic of Serbia, 2012, For Serbia Total:  
 Provincial Secretariat for Health, Social Policy and Demography, 2012



High unemployment and low labour market participation, coupled with raising costs of living, have increased the share of population living at risk of poverty or social exclusion in the programme area (cca 32% in 2012). Programme area has one of the highest rates of people living at risk of poverty or social exclusion compared to the EU average. The largest group of people living at risk of poverty are unemployed people. Homeless represent one of the most vulnerable groups faced with extreme poverty and social exclusion. Older women are particularly vulnerable as 37.8% of women aged 65 or above were at risk of poverty or social exclusion in 2012 (compared with 26.9% of men of the same age); the figure rises to 43.2% for women aged 75 or above (31.8% for men).

The number of elderly people in the Croatian programme area is 162,436 people. The percentage of elderly is with an average of 15% in 2011 in the Serbian programme area lower than in the Croatian programme area.

There is a limited number of homes for the elderly and the disabled in Croatian part of the programme area (most of them in private ownership). Infrastructure investments in homes for elderly people are needed to ensure quality standards of institutional care.

In Serbian part of the programme area there is an identified need for regional Mental health Center and regional Palliative Care Center. Furthermore, there are 10 gerontology centres (excluding Mačva).

Both countries will have to face the fact of soon retirement the so called 'baby boomers'<sup>2</sup> and the effect it will have on the pension system and structure of the population resulting in increased demand for health and social care services.

Quality, scope and delivery mechanism of social services provided to users in vulnerable positions are not well adapted to their diversified needs and the changing environment, such as ageing of population, increased number of users, and different user profiles. The social care system is unequally developed at different levels where the services are provided and across the regions, which leads to significant differences in access to services and reduces the effectiveness of service provision. It is often overloaded with requirements and does not dispose with sufficient capacity to provide personalized and integrated services especially for specific user groups (such as children without parental care, children and youth with behavioural disorders, and persons with disabilities), but also to offer them all the relevant information regarding their rights. Significant limitations in the system are even more present in relation to availability of community-based services.

**Table 11: Social care institutions by type**

NUTS 3	Institutions for adults with mental disorders	Institutions for persons with mental and physical disorders or disabilities	Homes for children	Homes for drug addicts	Social care centres	Elderly homes (public and private)	Pensioners*
Osječko-baranjska	1	2	3	1	6	10	24,5%
Vukovarsko-srijemska	0	3	1	0	4	18	24,7%
Požeško-slavonska	1	2	1	0	2	17	25%
Brodsko-posavska	0	1	1	0	2	14	23,5%
<b>Croatian programme area</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>1</b>	<b>14</b>	<b>59</b>	<b>24,4%*</b>

<sup>2</sup> People born during the demographic Post-World War II baby boom between the years 1946 and 1964.

Srem	0	0	0	0	7	6	20.4%
South Bačka	1	1	1	0	9	6	21%
West Bačka	0	0	1	0	5	3	25.7%
North Bačka	1	1	0	0	7	12	23.9%
Mačva	1	0	1	0	7	4	19.8%
<b>Serbian programme area</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>35</b>	<b>31</b>	<b>22.2%</b>

Source: Ministry of Social Policy and Youth of the Republic of Croatia, \*Statistical information of Croatian Pension Insurance Institute; Ministry of Labour, Employment, Veteran and Social Affairs; Statistical Office of the Republic of Serbia

According to the Plan for deinstitutionalization and transformation of social care and other legal entities in the Republic of Croatia for the period 2011-2016, non-institutional models of care will be developed and supported, in particular the development of social services in local communities.

In order to ensure the maximum accessibility to social services in the community and to support process of deinstitutionalisation, there is a parallel ongoing process of social planning on county level with County social plans being prepared.<sup>3</sup>

Serbia has a new Law on Social Protection that was adopted in 2011. The law makes major changes in the institutional and regulatory sphere-introduction of the Chamber of social protection, licensing of professionals and service providers, the institute of public procurement of services, reformulate the control function, professional supervision and inspection. The focus shifts from the system of law towards a system of services in the field of social protection that are answering to the needs of beneficiaries. There is a tendency towards ensuring access to services for all groups and individuals in need. The provision of social services and civil actors were allowed, but under the conditions defined by the laws and now, they are equal to the state and non-state providers.

There is a need for improving the quality system and by-laws defining the minimum standards for the provision of social services necessary to obtain a license (permit) to work, giving users the guarantee of quality of service they can get. Local governments are obliged to guide the actual needs of the local population, to order, negotiate and fund much of the social services.

## 2.4. Health care

Within the programme area, the main problems of both health systems are a need for modernization and restructuring to achieve optimal use of both health care workers as well as better material resources such as beds and medical equipment. The population is ageing so health care needs to be strengthened.

The healthcare system consists in general of an inefficient and ineffective network of healthcare institutions, inappropriate distribution and mobilisation of capacities at different levels of care, underperforming system management including insufficient focus on quality standards, fragmentation, low level of ICT solutions in use, resulting in reduced financial sustainability of the system, inadequate communication and information connectivity between its different parts and finally in reduced access to services for the patients and unsatisfactory quality of healthcare provided. Within the programme area, number of doctors available to population is lower than national average and EU average (320/100.000).

<sup>3</sup> Partnership Agreement for the European Structural and Investment Funds in the EU financial period 2014-2020

Croatia has a relatively low level of health care financing. According to WHO statistics for 2011, Croatia dedicates less than 8% of GDP to health, compared to 10.5% in EU27. Problems in the healthcare system call for a serious restructuring of sector. While the expertise of the doctors, nurses and medical staff is still considered high, the infrastructure of the hospitals is mainly inadequate and the management is inappropriate.

Some areas in Croatia do not have a sufficient number of primary health care teams or necessary infrastructure to provide adequate services to inhabitants. Furthermore, the out-dated hospital system cannot provide adequate services to population, and requires change in modality of health care provision. Currently, hospital care in Croatia is primarily based on acute inpatient care, which is the most expensive modality. A shift to other modalities of hospital care is needed, with day hospital/day surgery and other less resource-intensive modalities of care.

Hospitals in Croatia are established mainly by the counties (general hospitals and primary health care institutions, such as ambulances), but clinical centres, clinical hospitals and clinics are established by the state. Private persons can establish special hospitals and polyclinics. However, due to serious financial problems, the majority of county hospitals have been centralised in 2013 and are now managed by the state.

**Table 12: Number of medical doctors and health care institutions**

NUTS 3	Number of medical doctors	Population Census 2011	Number of doctors per 10,000 inhabitants	Number of health care institutions*
Osječko-baranjska county	861	305,032	28	10
Vukovarsko-srijemska county	387	179,521	22	2
Požeško-slavonska county	210	78,034	27	3
Brodsko-posavska county	433	158,575	27	4
<b>Croatian programme area</b>	<b>1891</b>	<b>721,162</b>	<b>26</b>	<b>19</b>
<b>CROATIA TOTAL</b>	<b>12,810</b>	<b>4,284,889</b>	<b>30</b>	<b>117</b>
Srem District	584	312,278	19	12
South Bačka District	1938	615,371	31	27
West Bačka District	429	188,087	23	8
North Bačka District	398	186,906	21	6
Mačva District	323	298,931	10	14
<b>Serbian programme area</b>	<b>3,672</b>	<b>1,601,573</b>	<b>23</b>	<b>67</b>
<b>SERBIA TOTAL</b>	<b>21,079</b>	<b>7,186,862</b>	<b>29</b>	<b>377</b>

Source: Croatian National Institute of Public Health, 2012, \*Ministry of Health of the Republic of Croatia, own calculation Serbia – description of health system

The strongest health care centre in the Croatian part of the programme area is in Osijek, which has a Clinical Hospital Centre, while other counties have a General hospital in larger cities (Slavonski Brod, Vinkovci, Našice, Požega and Vukovar) or Health Centres (9 in total). Osječko-baranjska County also has a Clinic for Rehabilitation of Speech and Hearing “Suvag” and Health Resort “Bizovačke toplice”.

Apart from that, there are Specialist Hospital for medical rehabilitation in Lipik, Požeško-slavonska county and Psychiatric Hospital "Sveti Rafael" in Strmac, Brodsko-posavska county.

On-going functional and territorial rationalization of the healthcare system, as envisaged in the National Health Care Development Strategy 2012–2020, is expected to provide the framework for the modernization of the system and to systematically address the identified key problems making the healthcare in Croatia more efficient and responsive to contemporary and future health care needs of population by equally focusing on the implementation of efficient investments into health care infrastructure and related services, and development of human resources.

In Serbia the share of total health care expenditures in GDP in 2011 stood at 10.4% (6.0% by the national health insurance), which is comparable to the 10.5% of EU27. However, there is also a need for modernization and restructuring, to achieve optimal use of both health care workers as well as material resources such as beds and medical equipment.

Serbian National Public Health Strategy centres on 10 general objectives: monitoring, evaluation and analysis of health requirements and expectations of the community; prevention and control of communicable and non-communicable diseases and injuries; promotion and support to healthy lifestyles; promotion, development and support to public health policy; development and education of human resources in public health; establishing and development of partnerships in addressing the public health issues; promotion, development, support to and launching of actions to provide safe and healthy living and working environments; promotion, development and support to health in all ages; promotion, development and support to actions for improvement of health status of socially vulnerable population groups; support to development of accessible and quality health care. Also, a number of strategies have been developed in order to improve health care sector in Serbia: National Mental Health Strategy, Strategy for Prevention and Control of Chronic Non-communicable Diseases (CND), Strategy for Palliative Care, Strategy for Continuous Improvement of Health Care Quality and Patient Safety.

Within the Serbian part of the programme area, the strongest health care centre is in Novi Sad, which has a Clinical Hospital Centre, while other counties all have a general hospital in larger cities (Subotica, Sombor, Sremska Mitrovica and Sabac). Also, there are several special hospitals for rehabilitation which cover large number of medical fields (Apatin, Novi Sad, Stari Slankamen and Vrdnik).

### **Conclusions:**

- *Both countries are in need for modernization and restructuring of both health and social care systems in order to improve efficient and quality services to the citizens.*
- *Social care systems are going through process of decentralization with more responsibility for local and regional governments.*
- *An opportunity is to strengthen care for elderly: elderly homes, palliative care, etc. as 23% of elderly people in the Croatian programme area and 17% of elderly people in the Serbian programme area.*
- *Scope and delivery mechanism of social services provided to users in vulnerable positions are not well adapted.*
- *The imminent retirement of the "baby boomers" resulting in increased demand for social and health care services.*
- *Due to increasing number of inhabitants being in risk of poverty, and more responsibility for social care being transferred to local and regional governments - there is a need for more local services available to citizens: legal counselling for vulnerable groups, assistance for elderly, improved services for disabled persons and children with disabilities.*

- *Strong health care centres in Osijek and Novi Sad*
- *There is an insufficient number of health care workers in the programme area.*

### **3. ENVIRONEMENT, CLIMATE CHANGE ADAPTATION, RISK PREVENTION, SUSTAINABLE ENERGY AND ENERGY EFFICIENCY**

#### **3.1. Environmental protection**

Croatian part of the programme area shows no serious pollution problems which is largely due to the absence of heavy industry in the area, whereas on the Serbian side certain industries (chemical, petrochemical, machinery manufacture, metallurgical, food and oil industries) cause increased pollution levels in certain parts.

For example, out of total of 13 environmental 'hot spots' in Croatia, one is situated in the programme area – Borovo factory near Vukovar which is in remediation since 2010. However, in the Serbian part of programme area there are 13 environmental hot spots that present danger for the environment:

1. Revitalization of the Grand Bačka Canal in Kula and Vrbas
2. Unregulated landfill reclamation projects (illegal dumping – there are 10-20 in all municipalities)
3. Construction of regional landfill in Subotica
4. Construction of regional landfill in Novi Sad
5. Construction of regional landfill in Sombor
6. Construction of waste water treatment plants
7. Construction of waste water treatment plants in Apatin, Bačka Palanka (all cities along the Danube)
8. Mine and smelter - regional landfill in Zajaca – Loznica
9. Chemical factory Zorka Sabac - industrial landfill
10. Textile factory Obnova Sabac - industrial landfill
11. Promulgation of protected natural resource at the three border of the Danube-Drava-Mura
12. Identification of brownfield sites
13. Identification of hazardous industrial waste landfill.

However, it is important to mention that the programme area is facing risks regarding air pollution, in particular particulate matter (PM) due to transport and combustion of solid fuel for domestic heating. In that sense, this programme should take into account Clean Air Policy Package which describes the air pollution problem and sets out new interim objectives for reducing health and environmental impacts up to 2030. It also defines the necessary emission reduction requirements for the key pollutants and the policy agenda that will be necessary to achieve the objectives.

A key feature of the environment in the programme area is the river Danube which constitutes for a large part the border. The river is a defining and common feature and any environmental issues linked to the Danube clearly require joint action. In this respect, one major common environmental challenge for both sides of the border is the damage caused by serious flooding of the river. In addition, there is considerable scope for joint actions to prevent cross-border pollution given that pollutants generated in and beyond the programme region are carried by waterways that ultimately flow into the Danube.

As far as the Tisa River, a tributary of the Danube, it is important to note that the pollution channel Vrbas-Bezdan is going through the mid-size town Vrbas and is characterized as the "worst in Europe". The area of influence from the most upstream point is Sivac, Kula municipality, and ends about 30 km downstream, which is known as the "Triangle". "Triangle"



is where the Vrbas-Bezdan flows into the channel Becej-Bogojevo (in the vicinity Vrbas plans to build a central plant for waste water treatment).<sup>4</sup>

The Sava River Basin is a major drainage basin of South Eastern Europe with a total area of 97,713.20 km<sup>2</sup> and is one of the most significant sub-basins of the Danube River Basin. Sava River is very important for the Danube River Basin also for its outstanding biological and landscape diversity. It hosts the largest complex of alluvial wetlands in the Danube Basin and large lowland forest complexes. The Sava River is a unique example of river with some of the floodplains still intact, thus supporting the flood alleviation and biodiversity.

Sava River Basin Management Plan has been developed according to the requirements of the Water Framework Directive. The scope of Sava River Management Plan is to:

- a) align river management with EU Water Framework Directive
- b) align flood management with EU Flood Directive and Flood Action Programme for Danube
- c) enhance accident prevention and control - Accident Emergency Warning System- (AEWS) has been established by the Sava River Basin countries by the adoption of the Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention). The system was developed and is maintained by the ICPDR. The main purpose of the AEWS is to increase public safety and to protect the environment in the event of accidental pollution by providing early information for affected riparian countries.
- d) enhance information exchange and management- the aim is to establish a platform for Information exchange in accordance with EU INSPIRE Directive and the Water information System
- e) enhance rehabilitation and development of navigation

The protection of water pollution caused by nitrates of agricultural origin is regulated by Council Directive 91/676/EEC of 12 December 1991 - Nitrates Directive. Croatian Waters are responsible for monitoring the nitrate concentration in waters of so-called vulnerable areas. At the moment, there are no vulnerable areas in Osječko-baranjska county while the town of Ilok and municipalities of Borovo and Lovas in Vukovarsko-srijemska county are considered as vulnerable and are regularly monitored.

The Assembly of the Autonomous Province of Vojvodina adopted in 1985 the Law on the utilization of agricultural land, which is in line with codified provisions system. The system includes control of all the factors that determine soil fertility and fertilizer action, or how soil affects the growth, development and yield of crops and which measures have to be undertaken in order to ensure high and stable production with the use of cost-effectiveness and protection of the biosphere.

### **3.2. Sustainable use of natural resources**

The programme area encompasses 1697 km<sup>2</sup> of protected nature, which makes almost 7% of the programme area.

Fruška Gora (25,525 ha) is the only national park in the programme area rich with more than 1.500 herbal species, 38 protected mammals and more than 200 species of birds. In 2012 the Fruška Gora National Park had 14.647 visitors with 72.556 overnights. The average annual income for the period from 2010 to 2012 is approximately 8.000.000 Euro.<sup>5</sup> Its location, specific geological history and different microclimatic conditions make it interesting

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<sup>4</sup> Source: Provincial Secretariat for Urban Planning, Construction and Environment of the AP Vojvodina

<sup>5</sup> Source: Serbian Business Registers Agency



and important to science. Thanks to unique and rich deposits of fossil fauna and flora, Fruška Gora is called the 'mirror of geological past'.

Obedska Bara (Srem) is one of the most famous nature reserves in Serbia and in Europe. It is a large swamp-forest area and natural reserve stretching along the Sava River in Southern Syrmia (Serbia), some 40 km west of Belgrade. The pond is an authentic complex of stagnant tributaries, marshes, pits, marsh vegetation, damp meadows and forests. It is home to over 30 different water, swamp, forest and meadow biocoenoses. Special nature reserves in the Serbian part of the programme area are: Zasavica (Srem and Mačva), Selvenjske pustare, Ludaš lake (North Bačka), Gornje podunavlje (West Bačka), Koviljsko-petrovaradinski rit, Karadjordjevo and Bagremara (South Bačka).

The most important protected area on Croatian side of the programme area is the Nature park Kopački rit (17,700 ha, 4.24 % of the territory of Osječko-baranjska county), the ornithological reserve Podpanj, nature and geopark Papuk and the Zoological reserve Kopački rit which is situated within the boundaries of the Nature park. It is seen as one of the best preserved fluvial marsh territories in Europe which is characterised by the beauty of its landscape and its bio diversity.

It is important to mention Regional Park Mura-Drava which was established in 2011 as the first regional park in Croatia. 30% of the Park area spreads through Osječko-baranjska county. Due to exceptional value for biodiversity conservation, Regional Park is included in the Croatian ecological network and it is envisaged that in the future it will become a part of Natura 2000 network and the UNESCO cross-border biosphere reserve Mura-Drava-Danube.

The Mura-Drava-Danube Biosphere Reserve is to be implemented within the European Commission's Strategy for the Danube Region. Serbia submitted its nomination of the protected areas within the planned biosphere reserve in 2013. The future management and implementation needs are extensive since this area will be the largest conserved floodplain complex in the upper course of the Danube River in Serbia and one of the largest floodplains along the middle section of the Danube.

As regards to nature and geopark Papuk, it is mountainous with many forests, swamps and meadows. Papuk has a bigger surface (33,600 ha) but is only partially within the programme area in Požeško-slavonska county (56.63%). The average number of visitors in nature park Papuk for the period from 2011 to 2013 was 5,783 (according to number of registered visitors and tickets sold). The number of entrances in the park are not under constant surveillance, the estimates for the exact number of visitors vary from 100,000 to 150,000 per year. The average annual income for the period from 2010 to 2012 is 2,276,860 HRK (ca 306 000 Euro<sup>6</sup>).

Both nature parks (Kopački rit and Papuk), are managed by public institutions.

There are other protected areas within the programme area such as reservations and monuments of nature of lower protection classification that also present natural richness.

**Table 13: Surface of protected areas per county/district**

NUTS 3	County land surface	Park of nature - land (ha)	Special Reserve (land) (ha)	Regional Park (ha)	Park - forest (ha)	Important Landscape - land (ha)	Monument of Nature (ha)	Monument of Park Architecture (ha)	Total protected area (real)	Share of protected areas in the county surface
	km <sup>2</sup>								(ha)	%
Osječko-baranjska county	4,157.74	17,052.06	6,164.54	26,016.14	-	149.22	0.61	150.75	49,533.32	11.91

<sup>6</sup> Source: Nature park Papuk

Vukovarsko-srijemska county	2,452.97	-	229.15	-	89.98	1,165.11	-	21.76	1,506.00	<b>0.61</b>
Požeško-slavonska county	1,823.39	18,954.60	-	-	-	71.47	0.08	18.90	19,045.05	<b>10.44</b>
Brodsko-posavska county	2,029.50	3,262.00	965.73	-	-	20,070.82	-	-	24,298.55	<b>11.97</b>
Srem District	3,486	-	35,884	-	-	-	-	-	36,052	<b>10.34</b>
South Bačka District	4,016	2,595	9,054	-	-	-	-	-	12,059	<b>3</b>
West Bačka District	2,420	19,605	-	-	-	-	-	-	19,605	<b>8.1</b>
North Bačka District	1,784	712	1,523	-	-	5,369	-	-	7,604	<b>4.26</b>
Mačva District	3,268	7	-	-	-	-	-	-	7	<b>0.002</b>

Source: State Institute for Nature Protection of the Republic of Croatia (2012), Institute for Nature Conservation of Serbia

There are no substantial problems in the protected area within the programme area. In terms of management of the protected areas, further resources need to be invested in environment and nature protection in order to preserve the resources and to contribute to the sustainable management of the existing protected areas. On the other hand, environment pollution, spatial urbanization, global climate changes and flood prevention actions could lead to destruction of valuable natural areas.

### 3.3. Energy efficiency, renewable energy resources

The share of renewable sources in total energy consumption is in the programme area only 11%, which is on the same level as national averages of both countries.

The total production of electricity in Croatia in 2011 was 10,830 GWh, out of which 45% came from renewable sources, but these include big hydro-electric power plants (41%), whereas only 3% comes from other renewable sources (small hydroelectric power plants, wind energy, biomass and bio-gas). According to the data from the energy balance for 2009 (2009 is the year defined by the EnC Secretariat as the base year in the methodology for calculation of the binding share of RES in the GFEC of Serbia in 2020), the share of electricity from hydro potential in the GFEC amounted to 9.6 % (28.7 % in the electricity sector), while the share of heat from biomass in GFEC amounted to 11.5 % (27.5 % in heating and cooling sector).

In the period from 2009, the interest in the use of RES has been constantly growing, but the number of newly built structures is relatively small (about 40 energy entities with the privileged electricity producer status).

The programme area has favourable conditions in terms of renewable energy resources. In terms of development of renewable energy production, the experts see the largest unused potential in geothermal energy. However, putting the potential into use requires large infrastructure investments and overcoming a number of regulatory obstacles.

According to Croatian national action plan for renewable sources of energy for 2020, the increase in production of energy from renewable sources of energy relates to increasing capacities of power plants of biomass and biogas, wind power plants, sun power plants, geothermal power plants and of small and big hydropower plants.

The first National Energy Efficiency Action Plan (NEEAP) of the Republic of Serbia set the target of 1.5%, savings in final domestic energy consumption in 2008 (0.1254 Mtoe), for period 2010 to 2012, and 9% of savings in final domestic energy consumption in 2008 (0.7540 Mtoe) for nine years period from 2010 to 2018. Serbia reached 81.5% of plan for the first reporting period. The Second NEEAP adjusted new targets for period 2013 up to 2015 on 3.5% of savings of final domestic energy consumption in 2008. The savings should be achieved by implementation of energy efficiency measures set in the NEEAP for energy consumption sectors: industry, households, public and commercial sectors and traffic. Future NEEAPs should also include measures for energy savings of primary energy.

The guidelines for the development of renewable sources of energy for regional and local level are due to be prepared within next two years by the Croatian Ministry of Economy.

In Croatian programme area, there is one company registered for production, trade and storage of biofuel made of rapeseed.<sup>7</sup>

In Osječko-baranjska county, as part of Panonia sediment basin enriched with geothermal potential that is evident in average values of geothermal gradient and thermal flow ( $G=0.049^{\circ}\text{C/m}$ ,  $q=76\text{ Mw/m}^2$ ) which are well above the European average of  $G=0.03^{\circ}\text{C/m}$ . This data clearly indicate high potential of Osječko-baranjska County in using geothermal energy. There are three geothermal boreholes in Osječko-baranjska county: Slavonija -1, Bizovac -4 i Mandarinci -1.

In Vojvodina, there is also a great potential in the use of renewable energy. The greatest potential is in the use of agricultural biomass and geothermal energy. Concerning biomass use, there is a room for improvement concerning better organisation as it generally refers mainly to individual consumers. The only example of greater use is building of heat boiler of 18 MW in TE-TO Sremska Mitrovica.

There is clearly a large potential for improvement in the energy sector. In response to that, both countries have developed a set of national level strategic documents in relation to the energy sector:

CROATIA: Strategy of Energy Development 2009–2020 (the general aim of the Strategy of Energy Development is to implement measures for energy efficiency in industry sector, transport, housing and services), Croatian national action plan for renewable sources of energy for 2020 (adopted in October 2013), and National Energy Efficiency Programme 2008–2016 which foresees a saving of 9% (19.77 PJ) by 2016.

SERBIA: Energy sector Development Strategy of the Republic of Serbia up to 2025 (the strategic priorities of energy sector development are energy security, development of energy market and transition towards sustainable energy system), Strategy for Management of Mineral Resources 2011-2030, Second National Energy Efficiency Action Plan (NEEAP 2013-2015), National Renewable Energy Action Plan of Republic of Serbia 2009-2020.

Croatian counties are obliged by the Energy Act to develop own energy efficiency programmes, but most of them are still in the process of preparation in 2014. The systematization of data, as well as their compatibility on regional and local level represents a challenge to regional and local level planning of energy efficiency.

Osječko-baranjska County has prepared energy efficiency programme, while others are in different phases of preparation. Local level institutions are preparing Sustainable Energy Action Plans, with only some of them finalized.

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<sup>7</sup> Source: HERA – the list of biofuel producers (Vukovar Biodizel d.o.o.)

The existing regional and local strategies mainly focus on measures in relation to the public, transport, agriculture and public awareness rising, while concerned experts express concern with insufficient emphasis on the housing sector.

### 3.4. Risk prevention and environment management

A large part of the Croatian programme area is still contaminated with mines from 1990/1991 that presents a security issue for the population – primarily in usage of land suitable for agriculture. According to data from Croatian Mine Action Centre, a large part of Croatian programme area is still facing problem with mined territory, especially Osječko-baranjska county (102 km<sup>2</sup>), Požeško-slavonska County (38 km<sup>2</sup>) and Vukovarsko-srijemska county (28 km<sup>2</sup>). The problem is especially highlighted in Osječko-baranjska county, where, in addition to contamination of forests along the left bank of the river Drava, agricultural land in five local governments and Kopački rit Nature Park, lives over 15% out of the total population living in twelve mine-contaminated counties.

Republic of Serbia is also still affected with explosive remains of war from 90's conflicts. After floods in May 2014, and potential migrating of mines from surrounding mine suspected areas, Serbian authorities are facing with more complex issues with regard to explosive remains.

Problems with land mines are also encountered in the Danube river near Bogojevo and Jemena on Sava River in the Serbian part of the programme area. This problem is increasing since Sava and Danube river are now border of EU.

At the moment, Serbian Mine Action Centre is developing 3 Project proposals on Sava and Danube river, and monitoring 2 locations because of potential migrations of mines, and collecting data for the area around Plavna settlement.

First of all, this is potential danger not just for the people who live around this area but for the river tourism as well. Also, this is a big threat for developing of projects on Sava and Danube river. Properly tackling this issue will contribute to the economic development of the programme area and ensure the safety of its inhabitants.

Programme area can be considered as potentially endangered by the climate changes, having in mind the possible effects and its natural and economic environment.

Signs of climate changes can be seen in both countries as:

- average air temperature raised steadily within the last decade,
- steadily trend of reduction in annual precipitation level,
- trend of evaporation compared to the air temperature trend,
- increased occurrence rate of extreme weather events that can be attribute to the climate change.

Air quality in Croatia is in general favorable, with the exception of larger cities (i.e. Osijek) which have higher concentration of small dust particles contaminating the air mostly as a result of the transport system.

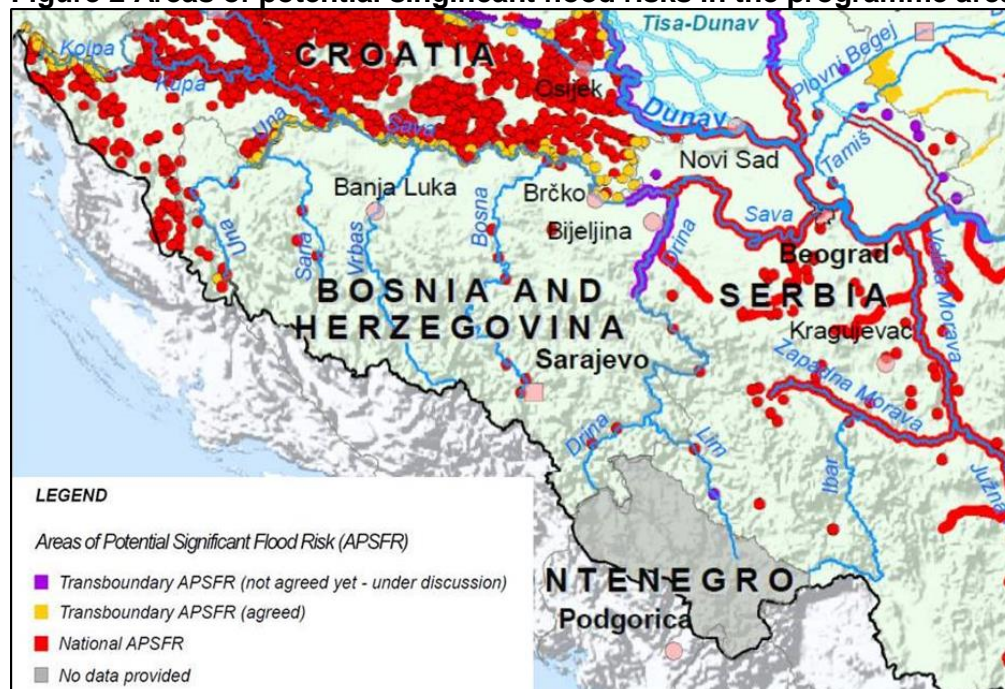
Soil quality is also considered extremely good, since the content and level of chemicals in the soil is much lower than maximum permitted values.

The cross-border region is situated in the Danube river basin (rivers Sava, Drava, Tisa) and any environmental issues linked to the Danube clearly require joint action. In this respect the major common environmental challenge is the prevention of floods. A large part of the area is threatened by flooding, mainly due to snowmelt and rainfall. In the period 1965-2011, over 70 major floods occurred in Croatia and Serbia and continue to take place. The floods are mainly along the Danube and Sava rivers due to capacity overflows, affecting areas larger than 100 km<sup>2</sup> and at least 200 households or 500 inhabitants each time. A lack of integrated



monitoring and management systems for flood prevention and alerts has contributed to catastrophic consequences in the region, occurred in May 2014.

**Figure 2 Areas of potential significant flood risks in the programme area\***



\* Graphical representation of the territory covered by the Programme is without prejudice to the settlement of the dispute regarding the extension of the state border between the Republic of Serbia and the Republic of Croatia

Key stakeholders in the water management are:

- The line ministry responsible for flood management (Ministry of Agriculture), in charge of the policy development and coordination with other countries.
- Croatian Waters, in charge of planning, organization, financing and implementation of the prevention measures relating to water management and establishment of the National Centre for Flood Defence.
- National Meteorological Institute, in charge of data provision.
- National Protection and Rescue Directorate in charge of management and intervention of different catastrophic events, including floods.

As an EU country, Croatia adopted the Floods Directive (2007/60/EC), integrated with overall water management and pollution prevention and Serbia as an EU candidate country is expected to adopt the same Directive.

The programme area is rich in surface waters. It is intersected with large rivers Danube, Sava, Drava and Tisa and high density DTD canal network. Only 1% are domicile waters, so the cross border influences should be considered as important.

Untreated and inadequate treated effluents from settlements, industry, agriculture and other sources highly contaminate aquatic ecosystems. This results in high discrepancy of surface water quality from legal requirements on the both side of the border. The most vulnerable are small watercourses with low self-purification capacity and Danube Tisa Danube Sava canal network. The most serious problems are intense eutrophication and heavy metals accumulation in aquatic ecosystems. Increased levels of nutrients, as a result of untreated sewage effluent and agricultural run-off carrying fertilizers, lead to eutrophication.

Heavy metal concentrations exceed target limits for aquatic environment and the most prominent problem is their deposition in sediments, as well as the accumulation of the other priority and priority hazardous substances, as pesticides and mineral oils.

Concrete measures to reduce disaster risks and to improve prevention, preparedness and response to disasters must be implemented, based on the disaster risk assessment and disaster risk reduction strategy. We can conclude that key risks, which need to be addressed are: floods, draughts, mined areas and mines flushed by the floods and pollution.

#### **Conclusions:**

- *Environmental dangers such as mine suspected territories and hot spots present a security problem for local inhabitants and need to be addressed.*
- *The border region is rich in protected areas and biodiversity which need to be further protected and valorised.*
- *Environment pollution, spatial urbanization, global climate changes and flood prevention actions are a potential threat for biodiversity protection.*
- *Lack of cross border cooperation in monitoring and management of protected areas and NATURA 2000 areas.*
- *The border region has a potential for increasing production of renewable energy – especially from agricultural waste (biomass) and thermal waters.*
- *The border region is rich in water resources and requires joint action in the field of flood prevention and water quality monitoring.*
- *Lack of cross-border cooperation in exchanging information on monitoring water quality and emission reduction activities in the water.*
- *Eutrophication and heavy metals accumulation in aquatic ecosystems.*
- *Pollution from agriculture presents a potential threat to the environment.*

## **4. SUSTAINABLE TRANSPORT AND PUBLIC INFRASTRUCTURE**

Appropriate infrastructure and developed transport systems are of particular importance for the economic development of the counties and districts participating in the Cross-border Programme.

In order to use the advantages of geographical location of the programme area, it is important to develop the transport sector not only in accordance with their needs, but also with international needs and to integrate the transport networks into the trans-European transport network (TEN-T)<sup>8</sup>.

Within the programme area, the most important cross-border traffic routes include roads, railways and waterways. The network of local and regional roads is relatively well developed and functional. The situation in the railway traffic is to be improved by modernization of railroads and trains in order to enable faster and safer transport of goods and passengers.

The programme area has 10 border crossings for road, rail and waterway traffic:

**Table 14: Border crossings**

Border crossing	Passengers	Cars	Trucks	Buses	Trains	Boats
1.Principovac-Sot	390,737	167,771	8,380	678		
2.Principovac-Ljuba	156,455	65,154	5,856	15		
3.Batina-Bezdan	547,722	205,276	9,241	2,414		

<sup>8</sup> The Trans-European Transport Networks (TEN-T) are a planned set of road, rail, air and water transport networks in Europe. The new TEN-T policy aims at transforming East West connections, removing bottlenecks, upgrading infrastructure and streamlining cross border transport operations for passengers and businesses throughout the EU. The programme area is crossed by the Rhine-Danube corridor, one of the nine major TEN-T corridors.



4.Erdut-Bogojevo	1,251,642	391,194	59,200	1,335		
5.Ilok-Bačka Palanka	1,476,421	595,189	55,971	8,906		
6.Ilok-Neštin	349,260	130,576	1,163	5,172		
7.Tovarnik-Šid	823,063	273,454	109,075	4,044		
8.Bajakovo-Batrovci	7,019,863	1,820,467	343,510	48,555		
9.Erdut-Bogojevo					38	
10.Tovarnik-Šid	231,290				6,085	

Source: Ministry of Interior of the Republic of Croatia, 2012.

Through better connectivity between and within the regions the competitiveness of the economies of both countries can be influenced thus enhancing trade, accessibility and mobility and creating wealth and jobs.

#### 4.1. Transport infrastructure

##### 4.1.1 Road and Motorway transport

Central and Eastern Croatia (Pannonia) has the least developed road infrastructure of Croatia. The density of the road network is only 88% of the national average. The worst county from this point of view is Požeško-slavonska. Road infrastructures are in poor state and insufficiently equipped to allow for optimal transport services and traffic safety. The most frequent deficiencies include:

- inadequate road width
- lack of pavements
- mixed local and transit traffic.

It is important to emphasize that road transport accounted for 66% of the total transport of goods and 40% of passenger transport.

The most important roads in terms of cross-border traffic are:

- Highway E70 Zagreb – Belgrade – Pan-European corridor 10 – branch A
- Highway E75 Budapest – Belgrade – Pan-European corridor 10 – branch B
- European road E73 Ploče – Sarajevo – Osijek – Budapest – Pan-European corridor V – branch C
- National road N2 Osijek – Novi Sad.

**Table 15: Road length in the programme area (km)**

NUTS 3	All roads	Highways	Magisterial roads	Regional roads	Local roads
Osječko-baranjska	1675	72	466	652	485
Vukovarsko-srijemska	944	50	256	434	204
Požeško-slavonska	681	-	219	199	263
Brodsko-posavska	906	128	135	448	195
<b>Programme area Croatia</b>	<b>4208 km</b>	<b>250 km</b>	<b>1076 km</b>	<b>1733 km</b>	<b>1147 km</b>
North Bačka	623	-	123	97	403
Mačva	3,056	-	257	523	2,276
Srem	1,091	110	149	372	571
South Bačka	1,268	-	255	519	494
West Bačka	616	-	153	167	295
<b>Programme area Serbia</b>	<b>6654 km</b>	<b>110</b>	<b>937 km</b>	<b>1678 km</b>	<b>4039 km</b>

Source: Croatian Transport Development Strategy 2014-2030, Municipalities and regions in Serbia, 2012, Republic Statistical Office

The density of the road network in the Serbian programme area is 93% of the national average and especially concentrated in the districts of Mačva (193%) and a relatively low density and West Bačka (51%). The mobility of population in Bačka could be increased by constructing local roads.

**Table 16: Number of vehicles**

NUTS 3	Number of motorcycles	Number of cars	Number of buses	Number of cars per 1000 inhabitants
Osječko-baranjska	8,426	84,994	225	278
Vukovarsko-srijemska	4,559	45,790	134	255
Požeško-slavonska	2,520	24,384	121	312
Brodsko-posavska	4,532	41,716	79	263
<b>Programme area Croatia</b>	<b>20,037</b>	<b>196,884</b>	<b>559</b>	<b>273</b>
North Bačka	1,737	44,822	146	241
Mačva	1,700	64,966	275	219
Srem	2,098	71,475	136	230
South Bačka	6,207	151,190	684	245
West Bačka	1,284	38,555	164	207
<b>Programme area Serbia</b>	<b>13,026</b>	<b>371,008</b>	<b>1,405</b>	<b>231</b>

Source: Croatian Bureau of Statistics, 2012; Statistical Office of the Republic of Serbia 2012

#### 4.1.2 Railway network

The railway network is composed of international, regional and local railway lines.

In the past, the favourable topography prompted the rapid development of rail transport in the programme area with important traffic centres for passengers and freight located in Vinkovci, Osijek and Novi Sad. Furthermore, the European transport corridor 10 passes through the area (railway Zagreb-Beograd).

With the significant investment in the renewal of railway infrastructure currently under way and being planned, the railway traffic is bound to increase further in the future and the area has the potential of becoming an important railway and logistics hub. Crucial to this ambition is the development of intermodal forms of transportation, in particular with the Danube river (Pan-European corridor VII) for the transport of goods. In this respect, it is important to point out the existence of the “rolling road” terminal<sup>9</sup> in Spačva, which the Croatian Railways opened in 2007.

The modernisation of the Pan-European corridor Vc on the Croatian territory has encountered major delays. The railway infrastructure is outdated and damages inflicted by the war have only been partly repaired. A lack of resources at the national level makes it difficult to address investment needs in tracks, signalling systems, stations and electrification. As a result, the overall state of rail tracks remains poor, unable to meet the minimum speed of 50 km/h, as required by the EU. The journey time by passenger train from Belgrade to Zagreb (380 kilometres) takes 6-7 hours according to the official timetable. Because of the speed limits, railway transport cannot compete with road transport especially for long distance travels. On the other hand, developing the railway transport can contribute to reducing the noise and greenhouse gases.

<sup>9</sup> A rolling road is a form of combined transport involving the conveying of road trucks by rail.

Croatia plans to modernise the railroad connection Zagreb-Belgrade within the next five years; in particular with the EU Cohesion Fund for rehabilitating the Strizivojna-Tovarnik section. On the Serbian side of the border, rehabilitation of the Stara Pazova-Sid section (83 km, two track road, for the speed up to 160 km/h) is planned within the next five years.

In addition, there are other important regional railways: Vinkovci-Drenovci, Vinkovci-Erdut, Tovarnik-Novska. Investment in those lines has been modest so that the functional capacity of these lines has continuously degraded.

The most critical and completely dilapidated sections of railway lines of local importance have been repaired predominantly with reused materials. The level of investment is insufficient given the age and the run-down the infrastructure.

The modernisation of the rolling stock in parallel to the planned line improvements is vital for strengthening the competitiveness of rail transport in comparison with other transport modes.

**Table 17: Railway length in programme area (km)**

NUTS 3	International railways	Regional railways	Local railways
Požeško-slavonska	0,0	0,0	93.308
Brodsko-posavska	126.389	0,0	7.718
Osječko-baranjska	91.135	104.363	48.972
Vukovarsko-srijemska	75.994	59.605	43.482
<b>Programme area Croatia</b>	<b>293.518</b>	<b>163.968</b>	<b>193.48</b>
North Bačka	147.242	69.484	96.628
Mačva	102.2	0	0
Srem	108.786	102.56	32.059
South Bačka	89.379	146.851	105.407
West Bačka	0	0	86.511
<b>Programme area Serbia</b>	<b>447.607</b>	<b>318.895</b>	<b>320.605</b>

Source: Croatian Transport Development Strategy 2014-2030; Serbian Railways JSC (Length of railways by category)

#### 4.1.3 Inland waterways and inland ports

The total length of navigable inland waterways within the programme area is around 1000 km, of which:

**Table 18: Waterway**

Waterway	Croatia	Serbia
<b>Danube</b>	137.5 km	137.5
<b>Sava</b>	250 km	207 km
<b>Drava</b>	198 km	-
<b>Tisa</b>	-	164 km
<b>Total</b>	<b>585.5 km</b>	<b>508.5 km</b>

In total 287.4 km of the Croatian part and 344.5 km of the Serbian part of the programme area rivers comply with the requirements of an international class of waterway<sup>10</sup>. Traffic of larger vessels is not possible on the entire length of these rivers.

**Table 19: Waterway mark**

Waterway mark.	Waterway-route	Requested class according to AGN	Length km
<b>E 80</b>	Danube from Batina to Ilok	VI c	137.5
<b>E 80 – 08</b>	Drava to Osijek	IV	22.0
<b>E 80 – 10</b>	Future multi-functional Danube – Sava canal from Vukovar to Šamac	Vb	61.5
<b>Total length international waterway acc. AGN:</b>			<b>220.0</b>

Source: AGN (European Agreement on main inland waterways of international importance)

Rivers in the programme area have been relatively underused as transport corridors. Once the navigational conditions are brought back to pre-war levels and upgraded, there is a potential for inland waterways to be used in combination with railway transport as an alternative to the currently dominant road transport network, as well as in other types of multimodal transport.

Importantly, the Danube waterway forms the Pan-European Corridor VII, which flows from Germany to the Black Sea (Port Constance), and is one of the main European cargo transport routes with considerable growth potential.

The main river ports in the programme area situated along these inland waterways are included in the table below.

**Table 20: River ports in the programme area**

Rivers	Croatia	Serbia
<b>Danube</b>	Vukovar	Apatin, Bogojevo, Bačka Palanka and Novi Sad
<b>Sava</b>	Slavonski Brod	Sremska Mitrovica
<b>Drava</b>	Osijek	-
<b>Tisa</b>	-	Senta

The Croatian ports are classified as TEN-T ports. The river ports suffered heavy damage during the war. Their infrastructure is in poor state and inadequate for quality services. The only international and the largest inland port in Croatian part of the programme area is Vukovar, which is the Croatian entry in the Rhine-Danube corridor.

Regarding the Serbian programme area, presently, the ports do not have the critical mass required to achieve optimum efficiency. Over time, transport flows will concentrate on selected ports. The ports need to focus on selected markets, cooperate with other ports in the region and be careful not to over-invest in order to keep the costs at a competitive level. Novi Sad is one of the main international ports along the Danube. The terminals where the various commodities are handled are mainly located in the same port area, however not necessarily all in the public ports ('luka') and operated by one common port operator. All reported port areas are connected to the road network and all have connections to the rail, except for the new port at Smederevo, Kovin and Bačka Palanka.

<sup>10</sup> The European Agreement on Main Inland Waterways of International Importance provides a classification of waterways based on their navigability by the different categories of vessels. A higher the classification means that the waterway is navigable by larger vessels.

A large part of Danube – Tisa – Danube channel network runs through the programme territory (420.8 km out of 929 km) providing good conditions for irrigation, navigation and flood prevention.

#### **4.1.4 Air Transport System**

Two major airports are situated in the Programme Area: Osijek Airport and Novi Sad Airport.

Novi Sad Airport is located next to the village of Cenej, 10 km north of Novi Sad, on the eastern side of the highway E-75. Currently, it is mainly used for sport and agricultural purposes. However, plans are underway to develop the airport for commercial flights operated by low-cost airlines, as well as “mini-business” flights and freight traffic<sup>11</sup>.

Osijek Airport is situated in Klis, 13 km from Osijek. It has been renovated in 2003 and consists of a passenger and a cargo terminal with open and closed storage areas. The total passenger traffic amounted to 20,430 in 2009 which is 14% of the total capacity of the airport. Cargo transport from African and Middle Eastern countries to Osijek are being operated since December 2004. Goods are transhipped on trucks and sent to their final destinations in EU countries. The arrival of new partners creates a realistic basis for the continuous increase in international cargo traffic.

Both airports are extremely important for transport development and, with the expected arrival of low cost airline companies, for tourism development in the programme area and beyond.

#### **Conclusions:**

- *The programme area is at the junction of the main rail and road traffic routes connecting western and central Europe with south-east Europe. It is crossed by major Pan-European corridors and is part of the TEN-T networks.*
- *Major investment into transport networks is necessary to ensure economic development.*
- *Railway infrastructure is well developed but in serious need of restructuring and modernization.*
- *The major waterways crossing the programme area offer a great potential for inland water transport and connection between central and south-eastern Europe.*
- *External border influences border crossing procedures.*
- *Inland waterways are insufficiently interconnected.*
- *Waterway development has potential and should be interlinked with TEN-T.*
- *Port infrastructure need to be renovated and transformed into multimodal logistics centres and embarkation points for passengers, capable of servicing vessels.*
- *Airports in Osijek and Novi Sad are suitable for commercial flights operated by low-cost airlines and cargo transportation (in particular of fresh agri-food exports), which can benefit the regional economy.*
- *Intermodal transport combining air, rail, road and water networks represent a major opportunity for economic development.*

#### **4.2. Public utility infrastructure (water supply and sewage system facilities)**

In the programme area there is a vast institutional capacity for water supply and sewage system.

According to the data presented in the Implementation Plan for the Water Utility Directives (2010), Croatia rates well in relation to water supplies standards, but the levels of water treated by the appropriate sewage systems are not satisfactory. Out of the total number of

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<sup>11</sup> The Government of the Autonomous Province of Vojvodina presented the project for the new airport in Cenej in 2012 with aim of building it by the end of 2015.

settlements with the built sewerage system, 44% also have a wastewater treatment plant (WWTP)<sup>12</sup>. In other words, only 27% of total population is encompassed with WWT utility. Out of 43.6% of population served with collection of wastewater, 61% have systems that include treatment.

An opportunity for the water management in the programme area is seen in the fact that Decision on Designation of Sensitive Areas<sup>13</sup> designated the Danube river basin as sensitive area for which higher degree of treatment is envisaged.

Overall, the coverage ratio (share of the population able to connect to the public water supply system) on the level of the Republic of Croatia is on the average 80-82%. The connection ratio (share of the population connected to the public water supply system) is somewhat lower and it is estimated at is on the average 74%.

In general, bigger urban centres have higher rates of connectedness to both the water supply and waste water treatment than smaller towns and villages.

Croatia has negotiated a transition period for the full implementation of the Water Utility Directives until 2023, when the water supply and waste-water management system will have to be fully aligned with the EU standards.

The four counties vary in their compliance rate with the requirements of Water Utility Directives. In 2014 they are estimated as follows:

- Osječko-baranjska: 72%,
- Požeško-slavonska: 72%,
- Vukovarsko-srijemska: 79%,
- Brodsko-posavska: 47%.

In the Serbian part of the programme area, public water supply relies exclusively on groundwater. 16% of settlements in the Bačka and Srem region do not have access to public water supply. There are 14 WTP's, mainly with inadequate treatment. There is non-compliance with the requirements of the Drinking Water Directive (1998/83/EC). Drinking water quality is unsatisfactory in terms of both, microbiological and physicochemical parameters. The most serious problem arises in municipalities with arsenic contamination (Subotica, Bački Petrovac, Srbobran, Temerin, Šid and Odžaci). This problem is most prominent in the Bačka region.

Only 37% of the population in the Bačka and Srem region is connected to public sewerage. There are seven UWWTP's (only one with tertiary treatment and two of them out of service).

Water services are provided by Public Utility Companies, which are established on municipal administrative divisions. Much of the water supply and waste water infrastructure has not been well maintained in recent decades and there is a substantial maintenance backlog. Many PUC's do not achieve cost recovery for the water services that they provide, partly as a result of the relatively low tariffs that are charged and partly because of lower than optimal scales of operation and non-specialised operational practices with a lower degree of efficiency.

The most important tasks in water sector are achievement of drinking water quality compliance, provision of wastewater collection and appropriate treatment to all agglomerations over 2000 P.E. and PUC reform (tariffs, regionalisation and private sector participation, corporatisation and governance, ownership of assets).

There is no city with full waste water collection coverage. Only Novi Sad has more than 90% of population connected to sewerage. Only 10% of wastewaters are treated which is very low in comparison with EU standards (87%) and only 7% of population is connected to operating

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<sup>12</sup> Water Management Strategy, 2008

<sup>13</sup> Official Gazette No. 81/10



facilities. Treatment is inadequate and insufficient. There is only one UWWTP with tertiary treatment.

#### 4.3. Solid waste management

An immediate environmental challenge of the bordering area is waste management. The target area is lacking an integrated waste management system. A great number of non-sanitary landfills, the so-called “wild” dumpsites, represent a serious threat for the environment as well as the hazardous waste which is not regulated in a satisfactory manner. In general, waste management is underdeveloped in the Croatian programme area and this represents a significant weakness of the environment-related public facilities. All Croatian counties have established their waste management strategies and a national strategy is being implemented, with a great opportunity of utilising EU funding for the establishment of the regional waste management centres.

The locations have been designated for most of the counties and the Accession Treaty obliges Croatia to establish all of the centres by 2018.

As of 2007, Croatia is enforcing specific legislation related to the separate collection and reuse of special categories of waste, which showed good results in practice, especially the collection and recycling rate for packaging waste.

Regarding the Republic of Serbia the general objective of National Waste Management Strategy (2010-2019) is “to develop a sustainable waste management system in view of reducing environmental pollution and environmental degradation”, and is accompanied by 17 specific objectives, of which 12 are short-term (2010-2014) and six long-term (2015-2019), including four with quantified targets (increase number of citizens included in the system for waste collection to 75% by 2013, establish 12 regional waste management centers in each period, and achieve re-use and recycling of packaging material waste of 25% of its volume). The document also outlines concepts for the management of municipal, hazardous and individual waste streams, as the basis for proposing a framework based on harmonized laws, responsibilities, permits and national, regional and local plans, and technical parameters, all of which place 27 regional waste management centers at the center of municipal waste management, one national center for hazardous waste management, and a network for treating medical waste, with other waste streams left for future consideration.

The general state of waste management in the South-Plain Region is inadequate and it poses public health and environmental hazards. Municipal waste is mostly disposed on landfills, without pre-separation and redrawing secondary raw materials from municipal waste streams, as well as hazardous waste. Landfills that do not comply with national regulations and EU standards and the numerous uncontrolled dump sites are a serious threat to the environment and human health. The most acute problem regards hazardous waste, which is not separately collected and dumping without processing on regular waste dumps. There is no hazardous waste facility. Data on waste volume, origin and disposal are incomplete and hard to estimate. The main reason is a lack of information on waste volume, characteristics and classification of waste. Novi Sad is marked as hot spot. It is an urgent task to develop waste management, which is in accordance to National waste management strategy short-term goals. Environment pollution resulting from inadequate waste management is a significant problem in the region.

#### **Conclusions:**

- *The border area is still not fully aligned with European standards in waste-water and waste treatment.*
- *There is a vast institutional capacity for water supply and sewage system.*
- *Programme area is lacking an integrated waste management system.*
- *Lack of information on waste volume, characteristics and classification of waste.*

## 5. TOURISM AND CULTURAL AND NATURAL HERITAGE

### 5.1. Tourism

The whole programme area has a favourable climate, cultural and natural potential for further development of touristic offer – all these advantages open the possibility for the area to develop various types of tourism: ecological and cultural tourism, rural tourism, health and recreational tourism, wine tourism, nautical tourism, gastronomic tourism, event tourism, excursions, hunting and fishing and recently also cruising, transit and business tourism.

Tourism and especially rural tourism is becoming increasingly important throughout the programme area.

In Serbia, the tourism sector share is only 2.5% of GDP and 5-6% of total employment whereas in Croatia plays more important role in national economy. In 2013, share of tourism in the overall economy was estimated to 16.5% (7.2. billion EUR) whereas the sector numbered 84.200 permanently employed representing 6.3% of total employed persons in Croatia. There were 12.5 million arrivals and 64.8 million overnight stays registered in Croatia in 2013.

Croatian tourism is mainly based on the coastal areas outside the programme area, but within the last 10 years, the role of continental tourism has become more important for local economies in Slavonia and Baranja. Croatian Strategy for development of tourism 2020 recognises potential for diversification of touristic offer in continental Croatia in the following areas: cultural tourism, rural tourism, cycle-tourism and gastro-tourism. Within the programme area, the most visited county is Osječko-baranjska, where in particularly Baranja region is recognised for its rural tourism and gastronomy. As regards to Vukovarsko-srijemska county, nautical tourism shows potential as only in the period from March to November 2012, 235 cruiser dockings were noted, with 28,639 passengers in total.

Most important attractions in the area are towns of Osijek and Vukovar, Kopački rit Park of Nature and the Papuk mountain, wine routes in all four counties (Ilok, Kutjevo, Baranja, Đakovo, Erdut, Feričanci), rich archaeological sites (Vukovar, Vučedol), thermal spas and resorts (Lipik and Velika) and many others.

The Serbian Tourism Development Strategy starts from the position that Serbia's tourism potential is unrealised (just 2.5% of GDP and 5-6% of employment) and its offer under-developed for historic reasons, with the industry having been starved of investment. Strategy recognises potential for diversification of touristic offer in following areas: nature and environmental tourism, rural tourism, cultural tourism, business tourism, gastro tourism and river cruising with using of the Danube as a mainstay of the branding of Serbia internationally. South Bačka District is most popular touristic destination in programme area of Serbia with 262,992 overnights in 2012. Cultural and religious tourism is developed in Srem (16 monasteries of mountain of Fruška Gora) and on several locations in Bačka (castle Dundjerski, Novi Sad fortress, etc.).

Fruška Gora National Park, offers numerous possibilities for the stronger development of active tourism. Lower valleys of the mountain contain orchards and centuries-old vineyards. Wine and gastro tourism show growing trend in the whole region.

An important part of the tourist offer of Serbian eligible territory is sports – especially horseback riding, bicycle, sailing, rowing and golf. Two lakes – Paličko and Ludoško, in the north part of the eligible territory are valuable tourism resources – for sports (sailing regattas), health (lake mud is being used for therapeutical purposes), hunting and fishing.

North Bačka and Srem are famous by vineyards and wine routes (Palić and Fruška Gora wine route). As for hunting the eligible territory has eight hunting areas (Plavna, Koviljski rit, Apatinski rit, Kamariste, Subotičke šume, Karadjordjevo and Morović). Regarding spa tourism that has a long tradition there are four spa's in the Serbian part of the programme area (Kanjiza, Vrdnicka, Junaković and Stari Slankamen). All of them are rich in therapeutic waters but still not exploited enough due to the deteriorated infrastructure. On the south of the territory is Obedska Bara – nature protected area, one of the most famous nature reserves in Europe.

Starting from 2001, when it was established, musical festival Exit is being large tourist attraction. It is considered as one of the best festival venues in the world. It is being held in Petrovaradin fortress in Novi Sad.

**Table 21: Number of tourism overnights in the programme area**

NUTS 3	Number of overnights 2008	Number of overnights 2012	Accommodation capacities (rooms, apartments and camping sites)
Osječko-baranjska county	188,926	168,122	1 076
Vukovarsko-srijemska county	85,395	60,538	632
Požeško-slavonska county	16,720	19,299	193
Brodsko-posavska county	42,231	35,585	278
<b>Croatian programme area:</b>	<b>333,272</b>	<b>283,544</b>	<b>2,179</b>
Srem District	89,755	103,481	1,037
South Bačka District	240,401	262,992	2,299
West Bačka District	89,755	61,302	520
North Bačka District	119,082	113,833	1,082
Mačva District	227,098	212,685	950
<b>Serbian programme area:</b>	<b>766,091</b>	<b>754,293</b>	<b>8,067</b>

Source: Croatian Bureau of Statistics, 2012; Institute for tourism, Statistical Office of the Republic of Serbia, 2012

A decline in number of overnights can be noticed in most parts of the programme area. Some of the reasons for the negative trend could be: economic crisis, decrease in number of international sports events and insufficient accommodation capacities.

**Table 22: Employment in accommodation and food service activities<sup>14</sup>**

NUTS 3	Number of legal entities	Number of people employed
Osječko-baranjska county	412	1685
Vukovarsko-srijemska county	114	408
Požeško-slavonska county	125	145
Brodsko-posavska county	166	205
<b>Croatian programme area</b>	<b>817</b>	<b>2,443</b>
Srem District	82	213
South Bačka District	341	1420

<sup>14</sup> Sector I, according to NACE classification

West Bačka District	46	189
North Bačka District	98	405
Mačva District	65	249
<b>Serbian programme area</b>	<b>632</b>	<b>2,476</b>

Source: Croatian Bureau of Statistics, 2012, Statistical Office of the Republic of Serbia, Accommodation and food service activities, 2013;

The main problems of tourist sector in both sides of the border are: poor tourism infrastructure, lack of high-standard accommodation facilities, low level of marketing of cultural heritage, lack of information exchange within the tourism industry and co-operative marketing, undiversified tourist offer, lack of local entrepreneurship initiative due to heavy bureaucracy, incoherence between public and private sector, lack of integrated destination management system, lack of trained personnel and 'continuing education' training programs, low level of organized tourist offer in the form of products and itineraries visible on the market.

### **Conclusions:**

- *Continental tourism is a significant industry being developed in the last 10 years in the border region.*
- *Tourism diversification is a contributor to a rural development, cultural heritage valorisation and cross-border cooperation.*
- *There is a potential for the development of certain tourism niches: hunting, bird-watching, cultural tourism, cycle-tourism, nautical, wine, memorial tourism, etc.*
- *The programme area has the potential of developing into a competitive continental tourist destination by placing additional emphasis on destination management, visitor oriented services aligned with market trends and sensitive to consumer needs.*

### **5.2. Cultural cooperation**

The rich and unique cultural heritage reflects the programme area's long and eventful history. In Croatia the oldest so far discovered traces of settlements in the area of present-day Osijek date from the Neolithic. Urban-type settlements date from the Roman period. Furthermore, the town of Vinkovci is considered as one of the oldest settlements in Europe, thus being one of rare places in the world with continuity of settlement for more than 8000 years, with proven traces of Starčevačka culture dating back to 6300 b.c.

In Serbian part of the programme area exceptional archaeological sites can be found in the vicinity of Sremska Mitrovica: Sirmium, the capital of the Roman province of Lower Pannonia and later one of the four capitals of the Roman Empire under Diocletian, Tetrarchy, and its surroundings (Imperial Palace, Grain Square, site 85, sites on the Sava, Basilica of St. Demetrius, *villa rustica*). Other important archaeological sites are: Basijama in the Lower Petrovac, Gomolava in Hrtkovac, Kalakaca in Beška, Gradina on Bosut, Titelski plateau in Celarevo and old vineyards in Čurug.

The presence of ethnic territory provides a rich cultural variety. This is partly because it has an above average percentage of members of minorities living on both sides of the border area. The minorities have an established institutional background, cultural and educational institutions creates organizations and bilingual and minority education, which is a favourable condition for cultural exchange. Cultural cooperation has been and still is an important tool to build bridges between communities. It helps foster mutual understanding and overcome prejudices and stereotypes in a region still deeply marked by the war.

A series of cultural festivals are held annually which attract some participation from both sides of the border ("Vinkovačke jeseni", "Iločka berba grožđa", Otočko proljeće",

“Babogredski konji bijelci”, Vukovarske adventske svečanosti, “Zlatne žice Slavonije” Ravangrad Wine Fest, FEMUS, EXIT, Tamburica fest, IFUS etc.).

The programme area also boasts a number of museums and art galleries, which showcase local artists and promote artistic and cultural expression in all of its forms. There is a rich array of media outlets (press, television, radio and internet) on both sides of the border, which play an important role in the economic, political and cultural life of the programme area. However, independent media outlets, in particular, face challenges to ensure economic sustainability.

The region is also rich in architectural and industrial heritage, some of which is protected under national legislation. However, the lack of resources for preserving this heritage for future generation remains a source of concern. This heritage also represents an important asset for the region through the development of tourism and cultural and recreational activities.

The main monuments and sites of historical and artistic interest include:

- Numerous churches and monasteries
- Rich architectural heritage
- Industrial sites
- Old castles and fortifications
- Many archeological sites
- Historical sites
- Traditional buildings and open-air museums.

The programme area's position at the interface of different languages and cultures offers an especially promising potential in the field of culture. There are many interesting objects of cultural heritage, various museums and numerous active social and cultural clubs. A number of cultural goods are officially protected by UNESCO. Spring procession of “Ljelje” (queens) from Gorjani and “Bečarac” (popular genre of music in eastern Croatia deeply rooted in the cultures of Slavonia, Baranja and Srijem) are inlisted on the UNESCO List of the Intangible Cultural Heritage of Humanity.

Cultural cooperation between towns and municipalities, institutions and NGO's boosted with implementation of Croatia-Serbia CBC Programme 2007-2013. Continuation of the successful cooperation will contribute in promotion of the area as an attractive tourist destination and will have a positive affect on the development of tourism and economic growth in general.

### **Conclusions:**

- *The programme area has a rich and diverse cultural heritage reflecting its long and eventful history at the crossroads of landscapes, cultures and trade routes.*
- *The wide range of buildings and sites of historical, archaeological and artistic interest in the programme area offers plenty of opportunities for cultural exchanges and joint activities.*
- *Cultural cooperation and exchange can help heal wounds from the past, foster mutual understanding and contribute to the economic development of the programme area.*
- *Richness of ethnicities on both sides of the border*



## 6. YOUTH AND EDUCATION

The education system in Croatia begins in preschool institutions. Children who are six and a half or over must attend compulsory elementary education, which lasts 8 years. There is an adult education system as well for those over the age of 15 who fail to complete elementary education.

Early involvement in the education system is crucial for the future success of a child in the education system. It is planned to introduce a system of compulsory pre-school year before the regular starting school for all children which already exists in Serbia.

Following elementary education, secondary education enables everyone, under equal terms and according to one's capabilities, to acquire knowledge and skills required for work or continuation of education. The secondary school level includes the grammar schools, with grammar programme, art schools and vocational schools. Grammar schools include 29% of all students in secondary education. Vocational education and training serves to develop general competences necessary for continuation of education and lifelong learning, and acquirement of professional competences necessary for successful entry to labour market, professional development and competitiveness of an individual, but also entire economy. It is important to implement measures for co-financing public transport for students which makes education more accessible, particularly for students in less developed areas.

University studies are organised and implemented at universities which comprise several faculties, and may be at the level of undergraduate, graduate or postgraduate studies. After completing a three or four-year undergraduate course, students are awarded the title of Bachelor (univ. bacc.) and after a further one or two years of graduate studies, the title of Master (mag.). Postgraduate studies last three years and end with the defence of a doctoral dissertation.

Today, 90 public and 32 private higher education institutions are operating in Croatia. The largest number of students, 67.5%, are enrolled in university courses in faculties.

In the academic year 2011/12, total of 152,857 students were enrolled in higher education institutions, and 36,448 of them graduated.

The education system in Serbia is organised as well through preschool and elementary education, secondary schools and higher education institutions.

Primary (compulsory) education lasts for eight years, starting at 7 years old, and is divided into two cycles, each one lasting four years. Prior to these cycles, a preparatory educational period of one year is mandatory. Secondary education is provided in high schools. The certificate awarded at the end is the *Secondary Education Certificate*. Secondary vocational schools offer both general and vocational (practical and theoretical) education for direct entry in the world of work and further education. The vocational qualification is acquired at the level of first form and second form, then third and fourth form and specialization after secondary education lasting for one year.

There are three types of higher education institutions in Serbia: universities (univerzitet), colleges of applied sciences (visoka škola strukovnih studija) and colleges of academic studies (visoka škola akademskih studija). Faculties usually have the status of a legal body, but they cannot exist independently as they need to be a constituent part of a university.

Universities are the only teaching and research higher education institutions in the country and provide all three cycles of higher education as well as some forms of lifelong learning.

Serbia has altogether 8 public and 9 private universities, 47 state-funded colleges of applied studies and 17 private colleges of applied studies. The number of colleges of academic studies is 8 in total: 3 are state funded and 5 are private.

In the academic year 2011/12, total number of students who were enrolled in higher education institutions was 200 000.<sup>15</sup>

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<sup>15</sup> Source: Tempus, Higher Education in Serbia, European Commission 2012

Quality, level and accessibility of education in Serbia are still lagging behind EU standards, with just 19% of the economically active population having completed college or university against 30% in the EU. However, the share of those who completed this tertiary education and are unemployed (17%) is extremely high, when contrasted with EU average (6.3%). Also, illiteracy among over 10 year olds has fallen dramatically over the last 20 years, from 6.1% (1991) to 1.9%.<sup>16</sup>

**Table 23: Number of schools and students**

NUTS 3	Number of elementary schools	Number of students	Number of high schools	Number of students	Number of institutions for higher education	Number of students
Osječko-baranjska county	186	24,452	52	14,092	17	9,361
Vukovarsko-srijemska county	92	16,015	27	8,468	2	4,999
Požeško-slavonska county	63	6,844	15	3,977	1	2,785
Brodsko-posavska county	115	14,188	15	7,254	3	4,973
<b>Croatian programme area</b>	<b>456</b>	<b>61499</b>	<b>109</b>	<b>33791</b>	<b>23</b>	<b>22118</b>
Srem District	114	24,411	20	10,483	1	498
South Bačka District	109	49,819	45	24,448	24	45,997
West Bačka District	49	14,169	17	7,156	2	983
North Bačka District	47	14,739	12	7,500	6	5,108
Mačva District	207	24,231	18	11,689	3	1,816
<b>Serbian programme area</b>	<b>526</b>	<b>127,369</b>	<b>112</b>	<b>61,276</b>	<b>36</b>	<b>54,402</b>

Source: <http://www.dzs.hr/>; Croatian Bureau of Statistics, 2012; Statistical Office of the Republic of Serbia, 2012

**Table 24: Number of students by University**

Croatian programme area	Number of students	Number of study programmes/faculties	% of total number of students
University of Osijek	1145	138	0,76
Polytechnics of Požega	1726	6	1,15
Polytechnics of Slavonski Brod	917	4	0,61
Polytechnics "Lavoslav Ružička" in Vukovar	1147	3	0,77
<b>Serbian programme</b>			

<sup>16</sup> Source: Danube-Serbia, January 2014

area			
University of Novi Sad	52,088	200	22.5

Source: <http://www.azvo.hr>, Agency for Science and Higher Education Croatia, 2011; Statistical Office of the Republic of Serbia, 2012

### 6.1. Education system and labour market

For the time being, there is no comprehensive analysis that would systematically examine the responsiveness of the education system to the labour market needs in any of two countries.

Structure of persons in Croatia in employment by educational attainment in 2012 is as follows: 14.7% persons with uncompleted or completed primary school, 61.5% with secondary school and 23.8% with tertiary education. On the other hand, the structure of unemployed has retained the same pattern, but with a lower share of highly educated: 15.4% persons with uncompleted or completed primary school, 69.2% with secondary school and 15.4% with tertiary education.

Of the total number of employees in Serbia, 57.6% completed a secondary education, while 22.8% of the employed received higher education. Analysis of employment rates according to the level of education shows that the rate is highest for those completed a secondary education and the lowest for those who did not go to school, or did not receive elementary education in full – 19,5%. On the other hand, the structure of unemployed is as follows: 17.4% with uncompleted or completed primary school, 65.5% with secondary school, and 17% with tertiary education.

It can be concluded that the overall education level of Serbian population is low, with a high percentage of illiterate and low qualified adults and does not match the needs of the economy. Secondary education represents the highest educational attainment for almost half of the labour force aged above 15. According to the EUROSTAT data, only 14% of the population aged 15 and above has completed higher education.

Overall, the gap between supply and demand of skilled workforce remains and the education system continues to educate a workforce that does not necessarily correspond to the needs of the economy. As a consequence, the main features of the labour market are high unemployment of people with lower and intermediate education, and high long-term and youth unemployment.

In general, the population in the programme area has relatively high rates of secondary education, low rates of higher education and the workforce has relatively low skill levels. Therefore, there is a significant mismatch between the education programmes and the requirements of the labour market and very low levels of provision of adult education and training.

Educational system, especially in vocational education and training should keep up with the labour market demands and priorities in each sector, especially the ones which are of primary importance for further development of economy. Special effort should be put in development of VET qualifications and curricula on the basis of labour market research and analysis.

Further on, increased investment in human capital is necessary throughout the programmes of life-long learning. This requires well-trained, flexible and mobile personnel in all sectors and from all qualification levels. In order to adapt to rapidly changing work environments, personnel will be expected not only to build their professional knowledge but also skills and competencies. In Croatia, the share of people from 25-64 year old who participate in education and training is only 2.9%, which is low comparing to EU average of 8.9%.

There are various reasons why people do not undertake learning activities - lack of knowledge of what is on offer, poor quality of existing learning offers in the local communities, costs, or simple lack of interest. When it comes to the issues of geographical coverage, the major gaps exist in less prosperous and rural areas. Therefore, in order to increase the participation of people especially youth in education programmes, all respective authorities and institutions in whole programme area should work on raising the awareness of life-long learning and benefits that stem from it. In doing so, the challenge for relevant institutions in the programme area is to increase the overall volume of participation in life-long learning by motivating, encouraging and supporting people to participate in learning in all its modes, formal and informal.

## 6.2. Youth

Croatia has been facing a severe problem of birth-rate decline and demographic aging of the population while the overall population of Croatia is continuously decreasing. The CBS forecasts a further decline of the Croatian population by 700,000 (-16%) by 2050, while share of youth (15-24 years of age) may drop from 13% to 10%.

Additionally, the problems of youth unemployment is significantly pronounced and it is connected with the lack of initial work experience, lack of skills for the labour market needs and lack of professional mobility and the unwillingness to participate in training and retraining programmes.

Concerning the long-term unemployed, those most at risk are young people without any working experience. Due to the fact that many employers prefer to hire workers with experience and demonstrated ability, young persons need special attention and help for entering the labour market. According to the February 2013 CBS data, there were 62,282 unemployed persons with no work experience, out of whom 35,571 were high school graduates (57.1%) and 11,295 (18.1%) were highly educated persons with no work experience. Unemployment rate of youth (15-24) in 2012 was 43%, much above EU-27 average 22.8%.

Serbia is facing the same challenge, where particularly worrying is as well the situation of young people in the labour market. The unemployment rate of people aged 15-24 in Serbia was 46.1% in October 2010, compared to 20.3% in the EU-27, and according to the EUROSTAT data, 11.2% of young people are neither in education nor working. These figures highlight the problems faced by young people in making a smooth and quick transition from education to work. They also point to inadequate qualifications among young people and the failure of the education system to equip young people with the skills and knowledge required by the labour market. The highest proportion of inactive people is also found among the younger persons of the population, 23.7% of inactive people being younger than 35 years.

There is a great need for improving the knowledge of students and young persons thus preparing them to enter in the world of entrepreneurship, knowing the basic principles underlying modern society, taking a positive attitude to obligations, legal framework and responsibilities of the society with a view to creating a more favourable environment for professional development and development of a knowledge-based society.

**Table 25: Youth and unemployment**

NUTS 3	Number of youth (15-24)	Total population	Share of youth (15-24) in total population	Unemployment rate of youth (20-24)	Unemployment rate of youth (25-29)
<b>Croatian programme area</b>	93.787	721162	13%	14,3%	13,1%
Osječko-baranjska county	38.627	305,032	12,6%	13.4%	13.7%

Vukovarsko-srijemska county	23.254	179,521	12,9%	14.4%	13.1%
Požeško-slavonska county	10.455	78,034	13,3 %	15.6%	13.9%
Brodsko-posavska county	21.451	158,575	13,5 %	13.7%	11.7%
<b>Serbian programme area</b>	<b>189820</b>	<b>1601573</b>	<b>11,8%</b>	<b>14,2%</b>	<b>14,1%</b>
Srem District	37642	312278	12%	14.1%	14.5%
South Bačka District	74650	615371	12.1%	13.6%	14.1%
West Bačka District	21871	188087	11.6%	14.6%	13.7%
North Bačka District	19678	186906	10.5%	13.9%	14.2%
Mačva District	35979	298931	12%	14.7%	13.8%

Source: Croatian Bureau of Statistics – Author's calculation; Croatian Employment Service, June 2014; Statistical Office of the Republic of Serbia, 2012

### **Conclusions:**

- The border region has two strong University centres – Novi Sad and Osijek that can have a stronger role in providing quality labour force.
- Vocational education is not appropriate for the needs of the labour market.
- Problems of youth unemployment are significant in the whole programme area.
- Youth unemployment is connected with a lack of initial work experience and lack of skills for the labour market.
- Increased investment in human capital is necessary through life-long learning programmes.
- In the programme area, there is a significant mismatch between the education programmes and the requirements of the labour market and very low levels of provision of adult education and training.
- Additional programmes for life-long learning and prequalification is needed in order to improve quality of labour force in the region.

## **7. LOCAL AND REGIONAL GOVERNANCE, PLANNING AND ADMINISTRATIVE CAPACITY BUILDING**

### **7.1. Local and regional self-government system**

Two partner countries have similar local self-government systems so the general issues and challenges related to service delivery and planning and administrative capacity building are also similar.

The current local self-government system in Croatia was fully established in 1993 according to which local self-government units are (rural) municipalities and cities/towns, and regional self-government units are counties. Croatian programme area comprises a total of 104 local self-government units – 92 municipalities, 19 towns and 4 regional government units, i.e. counties.

The main urban areas are the towns of Osijek (108,048 inhabitants), Slavonski Brod (59,141 inhabitants) and Vinkovci (35,312 inhabitants).

**Table 26: Territorial constitution of the programme area**

NUTS 3	Area km <sup>2</sup>	Population density	Towns	Municipalities	Settlements
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Osječko-baranjska county	4.155	73,4	7	35	263
Vukovarsko-srijemska county	2.454	73,2	5	26	85
Požeško-slavonska county	1.823	42,8	5	5	277
Brodsko-posavska county	2.030	78,1	2	26	185
<b>CROATIA TOTAL:</b>	<b>56,594</b>	<b>75.7</b>	<b>126</b>	<b>429</b>	<b>6755</b>
Srem District	3,485	89.6	1	6	109
South Bačka District	4,026	152.8	1	10	77
West Bačka District	2,488	75.6	1	4	37
North Bačka District	1,784	104.8	1	3	45
Mačva District	3,721	80.3	2	8	228
<b>SERBIA TOTAL:</b>	<b>88,602</b>	<b>81.2</b>	<b>24</b>	<b>125</b>	<b>8168</b>

Source: Statistical Yearbook, Croatian Bureau for Statistics, 2012; Statistical Office of the Republic of Serbia, 2012

Local/regional governance system in Serbia is regulated by the Law on Territorial Organization, adopted in 2007. The basis of territorial organization and local government are municipalities, cities and settlements.

Administrative districts are not a form of local government or a part of the territorial organization, but a form of the state administration.

The Serbian part of programme area has 5 districts, 6 cities, 31 municipalities and 496 settlements. Main urban areas are Novi Sad (343,648 inhabitants), Subotica (140,847 inhabitants), Sombor (85,127 inhabitants), Sremska Mitrovica (79,385 inhabitants) and Šabac (115,287 inhabitants).

The settlement structure in general is characterised by a large number of small and medium sized towns and only 4 cities with more than 100,000 inhabitants.

Local or regional governments need to develop strategic documents to define the future objectives, which should be measurable, achievable, realistic and clear. These documents aim to help in planning the strategic development of the unit.

## 7.2. Public service

Local and regional governance should perform their tasks as a professional, accountable, flexible and transparent civil service at local/regional level, user-oriented through its quality services and founded upon professional values. Provision of public services needs to be aligned with the needs of the users. The emphasis is on building value in a professional and impartial service.

As the civil service aims to improve the quality of service, human resource management system must be central to its efforts. Some of the main areas identified for improvement within the human resources management system are: recruitment process, competency system for given jobs, methodology for validation of competence of civil servants, the system of assessment and monitoring of civil servants based on monitoring the efficiency of their work and connection of that evaluation to the system of career development and progress.

In Croatia, there is only a three-year undergraduate program for public administration so there is potential to establish a system of education at graduate level.

Emphasis must be put especially on the need for more objective selection of the most competent candidates for promotion to management positions, opening wider range of options for different ways of career development with the aim to decrease turnover within and outside the civil service. In order to retain highly competent and motivated employees, it is necessary to develop and implement the reform of the system of rewards and promotion, which should be more functional and more applicable to the needs of modern public administration.

To ensure transparency of employment or to provide public servants transfer in a transparent manner, EU has developed an application for quick and safe data sharing and exchange (CIRCA). Croatia has embraced this tool as a way to encourage mobility of public servants and help them in finding a new job, motivate them and stimulate them to be more creative and more effective and therefore more satisfied at work.

It can be concluded that the lack of a professional human resource management system for civil servants in local and regional governments is an ongoing challenge in both countries.

Croatian Government Programme for the period 2011-2015 aims to establish a new public administration, which will provide effective service for citizens and business entities. In this respect, the Committee for the Coordination of informatization of the public sector was established. This means that ICT in public sector is coordinated from one location which creates conditions for balanced and expeditious development of electronic services.

Serbia is also facing slow process of public administration reform despite the number of strategies (Strategy of Public Administration Reform, Strategy for Professional Training of Civil Servants, Regulatory Reform Strategy, Strategy for Development of e-Government).

The clear analysis of the challenges facing Serbian Public Administration Reform (PAR) is well founded in the legacy of centralisation of the 1990s, and good use is made of international comparisons of employment and wage costs. The 2 objectives for PAR ("creation of a democratic state based on the rule of law, accountability, transparency, effectiveness and efficiency, and creation of a public administration directed towards the citizens, capable of offering high quality services to the citizens and private sector, against payment of reasonable costs") provide a guiding vision, and the 5 principles (decentralization, de-politicisation, professionalization, rationalisation and modernisation) set a clear agenda. The strategy also covers regulatory reform which set the scene for the later strategy (including impact assessment and cost-benefit analysis), and public policy-making. The Serbian Strategy for Development of e-Government cross-refers to the PAR Strategy and the Strategy for Development of Information Society as well as the EU's e-Government Action Plan adopted in 2006 and i2010 initiative. E-government is very loosely defined as involving the use of information and communication technologies (ICTs) to achieve more efficient and effective work of the government and public authorities in support of governance, economic growth and reducing the burden of administration. Nine "general objectives" are specified that are, in reality, a mixture of principles, indicators, further elaborations of the vision, and aspirations: high user satisfaction with public services; all citizens benefit from e-government; reduction of administrative burden for businesses and citizens; increasing the efficiency of public administration using ICT; cross-border interoperability, particularly with the EU; impact on the free movement of people, goods, capital and services; enhancing transparency and accountability through innovative use of ICT; strengthening citizen participation in democratic decision-making; privacy and security. Strengthening the rule of law and good governance are central not just to the achievement of the EU reform agenda, they are also essential for the achievement of sustainable socio-economic development. These are indispensable elements that are essential to secure creation of growth and attracting investment, economic development and job creation and dealing with common challenges such as the fight against organised crime and corruption.

Reforms are underpinned with the principles of an independent, transparent, accountable and efficient judicial and legal system, with a government that applies fair and equitable laws to all of its citizens.

The fight against corruption represents an integral part of the process aimed at making the civil service democratised and modernised and at protecting citizens in exercising their rights while using public services. To strengthen integrity, accountability and transparency in the work of civil servants at local/regional levels, training programmes should be delivered, including those to make civil servants familiar with basic attitude of ethics, integrity and morals.

#### Conclusions:

- Both countries have similar and fully established local/regional governance system
- Settlement structure is characterised by a large number of small and medium sized towns
- The delivery of services must be in full compliance with the needs of the users
- Civil servants at local/regional level must be competent to deliver qualitative and effective public services
- Support to strengthening the human and organisational capacities of local and regional governance must be given
- Access to training programmes to all civil servants at local and regional level must be increased
- Recruitment process, competency system for given jobs, methodology for validation of competence of civil servants, the system of assessment and monitoring of civil servants are the main areas identified for improvement within the human resources management system
- Enhance and increase the availability of the existing training programmes and manners of informing civil servants in the area of anti-corruption.

## 8. COMPETITIVENESS AND SME DEVELOPMENT

### 8.1. SME's

In 2012, there are 6,514 SME's registered in the Croatian part of the programme territory that makes only 8% of all SME's in Croatia.

**Table 27: Number of SME's in Croatian programme area**

NUTS 3	2012	2011	2010	2009	2008	Difference in % 2012/2010	Difference in % 2012/2008
Osječko-baranjska county	3,507	3,555	3,544	3,357	3,303	-1.0%	6.2%
Vukovarsko-srijemska county	1,274	1,334	1,257	1,179	1,138	1.4%	12.0%
Požeško-slavonska county	529	526	515	572	474	2.7%	11.6%
Brodsko-posavska county	1,204	1,281	1,256	1,150	1,090	-4.1%	10.5%
<b>Croatian programme area</b>	<b>6,514</b>	<b>6,696</b>	<b>6,572</b>	<b>6,258</b>	<b>6,005</b>	<b>-0.9%</b>	<b>8.5%</b>

Source: Croatian chambers of commerce, 2013.

In Croatia, number of enterprises per km is at 39% of the national average with the least employment in SMEs and the lowest generation of value added. This is the result of significant number of small companies, limited financial and managerial capacities of

entrepreneurs, lack of innovation (including usage of advanced technologies) and export capacity.

However with the decline in big industry and agricultural production, the SME sector presents an opportunity for strengthening of local and regional economies.

In the five year period (2008-2012), there has been a growth of SME's of 8.5% in the Croatian part of the programme area.

**Table 28: Number of SMEs in Serbian programme area**

NUTS 3	2008	2009	2010	2011	2012	Difference in % 2012/2010	Difference in % 2012/2008
Srem District	2,878	2,904	2,957	3,047	3,062	3.6	6.4
South Bačka District	9,953	10,040	10,274	10,315	10,457	1.8	5.1
West Bačka District	1,654	1,710	1,714	1,702	1,684	-1.8	1.8
North Bačka District	3,333	3,404	3,390	3,362	3,297	-2.7	-1.1
Mačva District	422	395	371	382	386	4%	-8.5%
Republic of Serbia	88,630	88,586	89,860	90,764	91,030	1.3	2.7
AP Vojvodina	23,245	23,473	23,644	23,719	23,729	0.4	2.1

Source for number of SMEs in Serbian programme area-

Source for Vojvodina and Serbia level: Statistical office of the Republic of Serbia

In 2012, there were 18,500 registered SME's in the Serbian part of programme area that makes 20% of all SME's in Serbia. The change in number of SMEs also shows a steady growth (excluding North Bačka and Mačva District). The density of SME's is higher on Serbian side with 13.45 enterprises per 1000 inhabitants then on the Croatian side with 9.25 enterprises per 1000 inhabitants.

On the other hand, annual turnover of Croatian SMEs is significantly higher than Serbian SMEs.

**Table 29: Annual turnover of SME's in the programme area in 2011**

NUTS 3	Turnover, in mil. EUR
1. Osječko-baranjska county	4,926.7
2. Vukovarsko-srijemska county	2,588.9
3. Požeško-slavonska county	903.9
4. Brodsko-posavska county	1,917.9
<b>Croatian programme area total</b>	<b>10,337.4</b>
Srem District	1,002.5
South Bačka District	3,660.3
West Bačka District	590.9
North Bačka District	1,299.1
Mačva District	881.2
<b>Serbian programme area total (without Mačva)</b>	<b>7,434</b>

Source: FINA 2012 Croatia, MRDL SG Serbia 2012; Statistical Office of the Republic of Serbia

Exchange rate: Croatian National Bank, Annual average midpoint exchange rates;

EUR=7.434204HRK; National Bank of Serbia, Annual average exchange rates of the dinar against the world's leading currencies; EUR=101.9502

The *Global Competitiveness Report's* competitiveness ranking is based on the Global Competitiveness Index (GCI), which was introduced by the World Economic Forum in 2004.

Defining competitiveness as the set of institutions, policies and factors that determine the level of productivity of a country and SMEs, GCI scores are calculated by drawing together country-level data covering 12 categories – the pillars of competitiveness – that together make up a comprehensive picture of a country's competitiveness. The 12 pillars are: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation.

Both Croatia and Serbia are lagging behind of competitiveness compared with EU member states. According to the Global Competitiveness Report 2014-2015 Croatia is ranked as 77 which is lower than 2013 and Serbia as 94, which is by 10 places higher than 2013.

Regional competitiveness index, which is based on five indicators (average income per capita, the average source income per capita, unemployment rate, population trends and the share of educated people in the population aged 16-65 years), aims to describe the level of development of local/regional government units. Three out of four Croatian counties were ranked at the bottom of the table in 2013, while Osječko-baranjska county achieved a growth by 3 places compared to 2010.<sup>17</sup>

In general, SMEs in the programme area should be supported to strengthen their ability to compete in domestic and international markets, and have a more significant impact on the economy, particularly in generating the export revenues. Furthermore, by expanding their product ranges and quality, SMEs have better chance to increase turnover, internationalise their products and create more jobs. More emphasis also should be put on improving the business environment in which SMEs function, and implement support mechanisms that would improve the situation of SMEs throughout their life cycle and help them to access new markets. Furthermore, the focus should be placed on strengthening the preconditions for greater number of innovative products, by increasing investment in research and development and bringing together the academic community and the business sector to be able to cooperate and increase the competitiveness of the economy of the programme area.

Croatia established Strategy of development of entrepreneurship for the period 2013- 2020. The overall objective of the Strategy is increasing competitiveness of small businesses in Croatia. Different financial instruments are available to entrepreneurs such as loans with subsidized interest rates, guarantees, funds for economic cooperation and micro-loans.

As regards to business support institutions in the programme area, there are traditionally local and regional chambers of commerce and crafts but also more recent support institutions. In Croatian counties there are seven business incubators, one technology park, 13 support centers and six local and regional development agencies. All of them are providing some sort of assistance to local entrepreneurs.

In Serbian districts, there are business incubators in Novi Sad, Subotica and Bački Petrovac, as well as Economic-Technological Park in Subotica. Each district also has its regional development agency.

## 8.2. Main economy sectors

Concerning the most important economic sectors in the programme area, agriculture, food processing and production and metal industry present main industrial activities. However, there is a potential for agricultural diversification and strengthening of food processing. The economy of the programme area copes with the problems related to the need for restructuring the agriculture, decline in industrial production and lack of R&D and innovation.

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<sup>17</sup> National Competitiveness Council - Regional competitiveness index, 2013



The agriculture is more important in the economy of the programme area than in the national economies of the two countries. Slavonija, Baranja and Vojvodina (regions covering programme area) are traditionally oriented to agricultural production due to the favourable pedological, hydrological and climatic conditions. Despite a declining trend in recent years, in Croatia, the agriculture sector accounts for 5.5% of GDP and 13.8% of total labour force. Despite favourable agriculture and climate conditions, the four counties make only 18% of total export from agriculture and food production of Croatia.

The economy of Serbian part of the programme area is also mostly based on developed food industry which is a result of fertile land that makes up to 80% of its territory. The most common agricultural products are corn and industrial herbs.

Agriculture as a sector has faced significant problems in the last 20 years: the size of farms and parcels is too small and is not following the trends in Europe, most of farmers are still growing traditional cultures such as wheat and corn whose market prices are declining. A key challenge for the agricultural producers is to achieve the needed competitiveness and survive on the global market. This cannot be done without the support of the regional scientific, educational and technical institution and the introduction of the new technologies in the field of agriculture.

Four Croatian counties have a long tradition of industrial production, with significant industrial potential, divided in the following branches: food processing, wood and paper, textile and clothing (especially leather), chemical and metal industry and construction.

Food and beverages industry is the most represented in Osječko-baranjska county (30% share in the industrial producing) and in second place is the production of paper products, with the share of about 18%. Metal industry is significantly represented in Brodsko-posavska county.

Vojvodina is the most developed part of Serbia with the following industries represented: metal industry, chemical industry, electrical industry, oil industry and construction industry. In the past decade, ICT sector has been growing rapidly and has taken significant role in Vojvodina's economic development.

Vojvodina Metal Cluster – VMC, was created in 2011 as an initiative of companies from metal sector in Vojvodina. VMC brought together over 110 enterprises in the metal industry from Vojvodina, aiming at increasing market competitiveness. Through cluster activities enterprises were provided with service of coordination of joint appearance on the export markets, possibilities of joint procurement of materials and equipment, modern and innovative approach in research and development, certification and standardisation, efficient education of employees, new development projects and access to funding sources, marketing and adoption of European standards. VMC enterprises employ in total about 6500 workers and have annual turnover of about €350 million.

Vojvodina promotes its investment potentials through the Vojvodina Investment Promotion (VIP) agency, which was founded by the Assembly of the Autonomous Province of Vojvodina.

It is important to mention an explosion of IT companies in the programme area, especially in Osijek and Novi Sad. Seven new companies opened up in Osijek in 2013, bringing the total number of IT firms to 69. Exports in the IT industry in the last four years had grown for 460%, with 247 workers producing 10 million euros profit in 2011 alone.

One of the best practice examples of connecting the economy sector with R&D is Schneider Electric DMS Ns. It was established in the year 2000 as a spinoff of the Faculty of Technical Sciences and today it has more than 1000 employees, more than 30 of them with PhD,

showing strong capacity for research, development and innovation capacity. Its strong ties with students and faculty make stable inflow of labour, excellent use of new knowledge used in industrial solutions worldwide – main product of the company, software for electrical distribution utilities operation is used in more than 50 companies in over 130 Dispatching Control Centers.

It can be concluded that general problems regarding industry in the programme area are: relatively low technological level and obsolete technologies, need of new recognizable products, high competition from Eastern Europe countries, low added value production from raw material /manufacturing production phase (wood industry), lack of educated personnel, engineers and highly-skilled workers, low level of technical and technological equipment and knowledge (construction industry), lack of professional management staff.

However, there is a potential for development of other industrial branches such as IT sector and further improvement in the food processing sector by branding local products, initiating EU protecting procedures and bringing innovative solutions in the production process. There is a need to connect the manufacturing sector with other sectors, especially transport and tourism, which might increase the competitiveness of the region.

### **Conclusions:**

- *The SME sector presents an opportunity for strengthening of local and regional economies.*
- *The IT and creative industry shows growing trend in the programme area*
- *The density of SME's is higher on Serbian side with 13.45 enterprises per 1000 inhabitants then on the Croatian side with 9.25 enterprises per 1000 inhabitants.*
- *There is a steady growth of SME's in the programme area within the last five years*
- *The border region has sufficient number of SME support institutions but their activities need to be strengthened diversified to meet needs of all entrepreneurs.*
- *Even though there is a higher number of SMEs in Serbian part of programme area, annual turnover achieved by Croatian SMEs is significantly higher*
- *SMEs in the programme area should be supported to strengthen their ability to compete in domestic and international markets*
- *Lack of R&D and innovation in SME's in the programme area.*
- *By expanding their product ranges and quality, SMEs have better chance to increase turnover and create more jobs.*
- *One of the opportunities of the programme area in the field of agriculture is investment in valorization of local products through initiating EU protection procedure that could lead to an increase of product's added value and standardized production systems.*
- *Programme area has the potential for agricultural diversification and strengthening of food processing.*
- *Explosion of IT companies in both sides of the border*

## 9. REASERCH, TECHNOLOGICAL DEVELOPMENT, INNOVATION AND ICT

### 9.1. R&D and innovation

The level of research & development (R&D) and innovation is low throughout the programme area. Both countries have a relatively low level of R&D spending (Croatia 0.75% while Serbia 0.99% of GDP in 2012)<sup>18</sup> in contrast to the European average of 2.01%, mainly deriving from public sources (Croatia – 56%; Serbia – 61%). However, despite the overall low gross expenditure on R&D, both countries spend more on R&D than other EU countries at similar income level.

The number of patent applications at European Patent Office per million inhabitants is also below the European average – 5.7 in Croatia and 23.3 in Serbia, compared to the EU average of 108.6. While R&D spending data are not available per a county, it can be concluded on the basis of the number of research institutions that R&D potential is concentrated around a few university centres (Zagreb and Osijek in Croatia and Belgrade, Nis and Novi Sad in Serbia) and around a few bigger companies with potential for R&D spending. University of Novi Sad is located in the programme area and its research capacity should be used in project consortia.

Eastern Croatian counties have the least patents from 1997 to 2008 compared to other counties. The highest number of patents submitted (186) and granted in this period had Osječko-baranjska county.<sup>19</sup> There is a huge potential to strengthen the innovation sector by simplifying the procedures for patent submission.

Within the Croatian programme area, the strongest university Centre with a research potential is Josip Juraj Strossmayer University in Osijek with 11 faculties, four departments and one academia. Osijek has an Institute for Agriculture (dating from 1878), which is a nationally significant research institution. Osijek also hosts a Tera Technopolis, a technology development centre and incubator.

At the end of 2011, the J.J. Strossmayer University of Osijek, Food Technology Faculty, Agricultural Faculty, Agriculture Institute Osijek and Croatian Food Agency have formally set the grounds for the establishment of Scientific Food Excellence Centre in Osijek, but the project is still in its initial phase though advancements have been made in terms of new joint initiatives in the field of research.

On the Serbian side of the border the strongest university Centre with a research potential is University of Novi Sad with 14 faculties. University also has two scientific institutes and Association of centres for Interdisciplinary and Multidisciplinary Studies and Research (ACIMSI) comprising of ten different centres. Institute of Food Technology (FINS) is one of the leading research institutes in the field of food and feed science and technology and dissemination of knowledge in Serbia and South Eastern Europe. Their research and business strategy are consistent with national and European strategy of research and development priorities in agriculture and food areas. University of Novi Sad currently has more than 550 ongoing projects.

Most of the county/district development strategies of the programme area concerned recognise insufficient orientation of the regional businesses towards R&D as their developmental weakness and plan measures that should lead to the improvement of such situation.

In Croatia, a set of Competitiveness Clusters is being established for the key industrial sectors, based on the triple helix principle (bringing together industries, research institutions

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<sup>18</sup> Source: The World Bank

<sup>19</sup> Regional Development Strategy for the Republic of Croatia 2011-2013

and local and regional governments), most significantly: food and processing industry, wood industry, pharmaceutical and health industry, energy, with a set of others in different phases of establishment. These have a potential to be drivers of not only nationally, but also regionally and locally based development of R&D. The Smart Specialisation Strategies for 2014-2020 are in preparation and will presumably be aligned with the strategies of the key competitiveness clusters.

Apart from the nationally formed competitiveness clusters, it is important to note that Croatian programme area is the seat of more than 12 business clusters. Most of those clusters are representing different sectors of agriculture related to production, rural tourism, food, wood and metal processing industry.

Universities in Serbia are making a substantial contribution, particularly on a regional level by linking industry and academic institutions and enabling knowledge transfer among them. As forms of support to entrepreneurship development, the Faculty of Technical Sciences has participated in the establishment of the ICT Cluster, the Cluster of Creative Industries of Vojvodina and the Science and Technology Park. The aim of these activities is to educate and motivate students in their area, to start their own business or how to help in the realization business that meanwhile has started.

In general, actions to encourage effective cooperation between research institutions and the SME sector in the programme area should be supported in order to improve the competitiveness of enterprises. Results of this cooperation will enable the R&D and academic community, interested in cooperation with private sector, to strengthen their capacities to apply their research in enterprises and offer required services to SMEs. It will seek to improve public sector understanding of the needs of the business sector for new technological solutions, as well as to create opportunities to increase the level of applied research within public R&D institutions. The cooperation will further promote development of innovation infrastructure, as well as diversification and upgrade of the services provided through the existing ones. Implementation of those solutions and use of the facilities will enable SMEs in the sector to develop competitive products and cut their production costs.

### **Conclusions:**

- *The spending of GDP on R&D is in both countries is significantly below EU average.*
- *Most of the R&D spending comes from public funding whilst there is lack of R&D investment in private sector.*
- *The border region has a number of business support institutions and universities that could have more active role in promotion of R&D and innovation.*
- *Both countries lack specialization strategies for development of smart industries.*
- *Cooperation between research institutions and the SME sector should be strengthen in order to increase competitiveness of enterprises*
- *Implementation of innovative bussines solutions will enable SMEs in the sector to develop competitive products and cut their production costs.*

## 10. Abbreviations list

Abbreviation	Full name
AGN	European Agreement on Main Inland Waterways of International Importance
ca	circa
Capita	'head' = person
CBC	Cross-Border Cooperation
°C/m	Degree per meter
EC	European Commission
EU	European Union
EU27	The average of the 27 member states
EXIT	Music Festival in Serbia
FEMUS	Festival in Serbia
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GPS	Global Positioning System
GVA	Gross Value Added
Gwh	Gigawatt-hour
Ha	Hectare
HRK	Croatian Kuna
IFUS	Street Art Festival in Serbia
ICT	Information and Communication Technology
IPA	Instrument for Pre-Accession
Km <sup>2</sup>	Square kilometre
Km/h	Kilometres per hour
Mtoe	Million Tonnes of Oil Equivalent
Mw	Mega Watt
NACE	Statistical Classification of Economic Activities in the European Community
NEEAP	National Energy Efficiency Action Plan
NGO	Non Governmental Organisation
No.	Number
NUTS	Nomenclature of Territorial Units for Statistics
PDO	Protected Designation of Origin
PJ	Peta Joule
PUC	Public Utility Companies
R&D	Research and (Technological) Development
RDA	Regional Development Agency
RES	Renewable Energy Sources
RH	Croatia
RS	Serbia
SME	Small and Medium Enterprises
t	Tonnes
TEN-T	Trans-European Networks on Transport
UWWTP	Utility Waste Water Treatment Plant
VET	Vocational and Educational Training
VIP	Vojvodina Investment and Promotion Fund
VMC	Vojvodina Metal Cluster
WHO	World Health Organisation
WTP	Water Treatment Plant
WWT	Waste Water Treatment
WWTP	Waste Water Treatment Plan