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Regional Analysis for European Structural and Investment Funds on the Case of Slovenia-Austria Cross-Border Cooperation 2014–2020

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Abstract

In 2012, the EU Commission provided each member state with a country position paper outlining the analysis of the Commission of the main challenges and funding priorities relevant for the European Structural and Investment Funds (ESI) in the programming period 2014–2020, including in relation to European Territorial Cooperation. These position papers have guided the ensuing dialogue with the Commission in particular in relation to the prioritisation of development needs and concentration of support, as well as in terms of the presentation of information. In this chapter, authors are presenting relevant social, economic and environmental aspects of the programme area and describe how the cooperation programme's strategy in the case of cross-border cooperation between Slovenia and Austria for 2014–2020 period has contributed to the delivery of the Union strategy for smart, sustainable and inclusive growth and for achieving economic, social and territorial cohesion.

Keywords: regional analysis, Cross-Border Cooperation Programme Slovenia-Austria 2014–2020, economic, social and territorial cohesion, Slovenia, Austria

1. Introduction

This chapter examines the relevant social, economic and environmental aspects of the programme area, to define the framework, in which the programme of cross-border cooperation between Austria and Slovenia is implemented.

The regional analysis is divided into thematic areas, which include general aspects such as population statistics and labour market as well as specific aspects such as innovation, research and development (R&D) as well as environmental indicators, referring to community and national guidelines for 2014–2020 and to the Europe 2020 strategy. Identification of strengths

and weaknesses, opportunities and threats and, where appropriate, the differences within the programme area is shown in the SWOT analysis, in the third section of this chapter. The cooperation programme's strategy took account of the Common Strategic Framework and the relevant elements of the Commission position paper for the countries involved.

In the chapter, the following is to be outlined:

- the geographical coverage of the programme area and an analysis of the situation of the programme area as a whole in terms of the needs', addressing where appropriate, missing links in cross-border infrastructure;
- how the cooperation programme will address these needs and challenges and thereby contribute to the delivery of the Union strategy for smart, sustainable and inclusive growth, where appropriate with reference to existing national, regional and cross-border/transnational/macroeconomic/sea-basin strategies coherent with the Union strategy for smart, sustainable and inclusive growth, and the ex ante evaluation.

Data used relates to the NUTS level 3. Partly, if no data on NUTS level 3 was available, NUTS levels 1 and 2 data was used, which affects the precision of the analysis.

2. Socio-economic analysis of the programme area

2.1. Programme area and regional structure

For the programme area, the following Austrian and Slovenian NUTS 3 regions were identified to be included in the cross-border cooperation Slovenia-Austria 2014–2020:

- Slovenian NUTS 3 regions: Gorenjska, Koroška, Savinjska, Podravska, Pomurska, Osrednjeslovenska, Goriška and Zasavska;
- Austrian NUTS 3 regions: Oststeiermark, West- and Südsteiermark, Graz, Obersteiermark Ost, Obersteiermark West, Unterkärnten, Klagenfurt-Villach, Oberkärnten and Südburgenland.

The border between Slovenia and Austria was established with the Treaty of Saint Germain-en-Laye in 1919 and the Austrian State Treaty in 1955. The total length of the land and river border between the countries is 330 km. On May 1, 2004, with Slovenia becoming a member state of the European Union (EU), the border turned into an internal border, which quarantines free movement of goods, capital, services and people. Until December 2007 the Slovenian-Austrian border was the southern border of the Schengen area, which dissolved with Slovenia's membership of the Schengen area. Both events have highly contributed to a more intensive cooperation between the border areas. In **Table 1** eligible regions within the programme area are shown.

The programme area covers 38,353 km². The Slovene-Austrian border is 330 km long. The programme area is multifarious and rich in landscape, population and culture. It extends from the Alpine mountain region in the west to the Pannonian lowland in the east.

Slovenia		Austria	
Region	Area (km ²)	Region	Area (km ²)
Gorenjska	2137	Oststeiermark	3362
Koroška	1041	West and Südsteiermark	2226
Savinjska	2384	Graz	1230
Podravska	2170	Obersteiermark Ost	3254
Pomurska	1337	Obersteiermark West	3060
Osrednjeslovenska	2555	Unterkärnten	3376
Goriška	2325	Klagenfurt-Villach	2030
Zasavska	264	Oberkärnten	4132
		Südburgenland	1470
Slovenia	14,213	Austria	24,140

Source: Refs. [1, 2].

Table 1. Eligible area in km² (NUTS 3), January 1, 2013.

2.2. Population development and structure

The main characteristics of the population development and structure in the programme area are decreasing the number of inhabitants and ageing of population. Urban centres are more inhabited as there are a lot of migrations from peripheral areas to the centres happened in the last years.

The programming region consists of almost 3,500,000 inhabitants. The population structure among the participating regions differs and is presented in **Table 2**.

A big problem for the whole programme area presents ageing of population, ascribable to a low birth rate and increasing life expectancy. In January 1, 2013, the ageing index for all named regions exceeded 100.

2.3. Regional competitiveness

2.3.1. Economic strength

The cooperation area is characterised by dynamic core regions (Ljubljana, Celje, Kranj, Maribor, Graz, Klagenfurt and Villach) with some prospering urban areas on one side, while on the other side, it also has a series of rural and peripheral subregions with a significantly lower level of economic development.

Table 3 shows GDP per inhabitant in each NUTS level 3 region in absolute terms, as a percentage of the EU 27 average and regional GDP growth rates (2009–2010). In absolute terms GDP average was 24,500 euro per inhabitant in 2010, while in 2009 it was 23,500 euro per inhabitant, and in 2008 prefinancial and economic crisis, it was 25,000 euro per inhabitant.

NUTS 3	Inhabitants (January 1, 2013)	Population change 2007–2013 (in %)	Population density (January 1, 2013)
Oststeiermark	266,394	−0.7	79.2
West and Südsteiermark	189,889	−0.4	85.3
Graz	410,094	6.1	333.3
Obersteiermark Ost	163,272	−4.0	50.2
Obersteiermark West	102,282	−3.6	33.4
Unterkärnten	151,440	−3.0	44.9
Klagenfurt-Villach	277,846	1.7	136.8
Oberkärnten	126,187	−2.9	30.5
Südburgenland	97,530	0.1	66.3
Austria	8,451,860	2.0	100.2
Gorenjska	203,984	2.04	95.5
Koroška	72,100	−2.06	69.3
Savinjska	260,217	0.67	109.2
Podravska	323,238	1.10	149
Pomurska	118,022	−3.31	88.3
Osrednjeslovenska	541,718	7.50	212.0
Goriška	119,002	−0.40	51.2
Zasavska	43,502	−3.82	164.8
Slovenia	1,681,783	2.41	101.6

Source: Refs. [1, 2].

Table 2. Inhabitants and population density of the eligible area (NUTS 3), January 1, 2013, and development 2007–2013 (in %).

Among the NUTS level 3 regions in the programme area, GDP per inhabitant ranged from 11,400 € per inhabitant in Pomurska region in Slovenia to 38,500 € per inhabitant in Graz in Austria.

In terms of GDP per inhabitant in each NUTS level 3 region as a percentage of the EU 27 average, **Table 4** shows that in the programme area, there are still regions with an average GDP per inhabitant below the EU 27 average, in Slovenia (except Osrednjeslovenska) GDP per capita is even more than 30% below the EU 27 average.

Table 3 shows also the GDP growth between 2009 and 2010. The highest growth rates were recorded in the region West and Südsteiermark (9.5%), followed by Oststeiermark (7.5%), Obersteiermark West (6.9%) and Südburgenland (6.5%). A lot of regions in Slovenia had negative GDP growth in 2010, while the Zasavska region with 1.7% had the most positive growth within Slovenian regions.

NUTS 3	Regional GDP per inhabitant (current market price), 2010	Regional GDP per inhabitant as a percentage of the EU 27 average (EU 27 = 100)	Regional GDP growth rates 2009–2010
Oststeiermark	24,300	99	7.5
West and Südsteiermark	23,000	94	9.5
Graz	38,500	157	1.9
Obersteiermark Ost	27,700	113	–2.8
Obersteiermark West	24,700	101	6.9
Unterkärnten	24,400	100	5.2
Klagenfurt-Villach	34,000	139	5.6
Oberkärnten	22,600	92	–1.3
Südburgenland	21,300	87	6.5
Austria	34,100	140	3.0
Gorenjska	14,400	59	0.7
Koroška	13,000	53	–0.8
Savinjska	15,700	64	1.3
Podravska	14,500	59	–0.7
Pomurska	11,400	47	–0.9
Osrednjeslovenska	24,500	100	–1.2
Goriška	16,400	67	–0.6
Zasavska	11,800	48	1.7
Slovenia	17,300	71	0.0

Source: Ref. [3].

Table 3. Regional GDP per inhabitant (current market price), in absolute terms and as a percentage of the EU 27 average 2010, Regional GDP growth rates 2009–2010.

2.3.2. Business demography

The following section presents statistical data on business demography in the eligible area on NUTS level 2,¹ treating aspects such as the total number of enterprise births and their survival rates. Business demography is an important subject for discussion about increasing the level of employment, since it is one of the main priorities of the EU growth strategy. The birth of new enterprises is often seen as one of the key determinants of job creation and economic growth. In **Table 4**, the data on enterprise birth and deaths are presented.

Looking at birth rates in the eligible area, the number of newly born enterprises in the year 2010 in Burgenland was about 797, in Carinthia about 1686. In these two regions, the highest

¹Data on NUTS 3 level is not available.

NUTS 2	Enterprise births (2007)	In 2010 still active	Survival rates after 3 years	Enterprise births (2010)
Burgenland	693	502	72.44%	797
Kärnten	1571	1145	72.88%	1686
Steiermark	4039	2352	58.23%	3648
Austria	26,970	19,384	71.87%	26,172
Vzhodna	5149	3588	69.68%	6509
Zahodna	7612	5315	69.82%	8816
Slovenia	12,761	8903	69.77%	15,325

Source: Refs. [1, 2, 4].

Table 4. Enterprise births and deaths 2010 (NUTS 2).

3-year survival rates were recorded (Burgenland 72.44%, Kärnten 72.88%); both are above the Austrian average.

In Styria 3648 enterprises were founded in the year 2010, caused mainly by enterprises in Graz; however, the survival rate of enterprises founded in 2007, with 58.23%, is below the Austrian average.

In Slovenia in the Zahodna region, there was 8816 enterprise births in 2010, and in Vzhodna region, the number of enterprise births was lower, 6509. In comparison with Austria, Slovenian enterprises had slightly lower survival rate after 3 years (Austria 71.87%, Slovenia 69.77%).

2.4. Labour market

2.4.1. Employment

The financial crisis in 2009 hit the whole eligible area. Within Austria in 2009, the effects of the crisis on employment affected most hardly Styria (besides Carinthia) and extended into 2010.

In 2010 employees in the NUTS 3 region Graz accounted for 248,600—therefore the number of employees increased by 1.4% from 2006 to 2010. The decrease of employed persons in the NUTS 3 region Graz was the lowest within the Styrian NUTS 3 regions in the year 2009. The eastern part of Upper Styria (Obersteiermark Ost) was hit more severe by decreasing employment in the crisis year 2009 (also indicated by trends for the time period 2006–2010). The western part of Upper Styria (Obersteiermark West) was disproportionately affected by decreasing employment. Decreases in employment stabilised in 2010—this is reflected in employment trends for the period 2006–2010. The firm structure of Obersteiermark West corresponds mainly with the Styrian average; however, smaller firms are higher represented in this part of Styria. Employment trends of the eastern part of Styria (Oststeiermark) were above the Styrian average in the period 2006–2010 (+1.0%). Although employment decreased in the year of the financial crisis, it increased in 2010. Similar trends are observed for West- und Südsteiermark: in these regions employment decreased in the year of the financial crisis 2009

and increased in 2010. Carinthian regions were also hit hardly by the financial crisis. However employment in Carinthian regions increased in 2010 (indicating a positive trend for the period 2006–2010). Similar trends can be observed for Südburgenland. Employment increased by 0.4% in the period 2006–2010. The number of persons in employment and annual growth rate of employment between 2006 and 2010 is shown in **Table 5**.

Also in Slovenia the impact of financial crisis on employment can be seen. Only Osrednjeslovenska with the highest number of persons employed (314,300), followed by Podravska (140,200), Savinjska (119,900) and Goriška region (53,800), had positive annual growth rate of employment between 2006 and 2010. Effects of the crisis on employment affected most hardly Pomurska and Zasavska region.

In terms of persons employed by economic activities, there are large differences between the regions in the eligible area. Details are shown in **Table 6**.

Table 6 shows that Oststeiermark in Austria and Pomurska in Slovenia had about one quarter of employees in the primary sector in 2010.

NUTS 3	Number of persons in employment	Annual average growth rate 2006–2010 (in %)
Oststeiermark	122,300	1.0
West and Südsteiermark	76,700	0.6
Graz	248,600	1.4
Obersteiermark Ost	71,100	–0.3
Obersteiermark West	45,100	0.3
Unterkärnten	64,600	0.2
Klagenfurt-Villach	146,100	0.6
Oberkärnten	53,900	0.0
Südburgenland	39,100	0.4
Austria	4,229,800	0.9
Gorenjska	80,300	–0.1
Koroška	28,900	–1.2
Savinjska	119,900	0.2
Podravska	140,200	0.5
Pomurska	45,600	–1.4
Osrednjeslovenska	314,300	1.2
Goriška	53,800	0.1
Zasavska	14,800	–1.3
Slovenia	962,500	0.5

Source: Ref. [3].

Table 5. Number of persons employed, 2010 (NUTS 3) and annual average growth rate 2006–2010 (in %).

NUTS 3	Total—all NACE activities	A	B-E	F	G-J	K-N	O-U
Thereof in %							
Oststeiermark	122,300	19.0	19.1	8.3	23.8	9.6	20.3
West and Südsteiermark	76,700	15.6	20.7	8.7	24.9	9.4	20.7
Graz	248,600	3.1	13.8	5.9	25.7	18.3	33.1
Obersteiermark Ost	71,100	5.3	27.8	6.3	25.5	10.5	24.8
Obersteiermark West	45,100	11.5	22.4	6.7	24.2	9.3	25.9
Unterkränten	64,600	14.4	24.0	8.7	22.9	9.4	20.6
Klagenfurt-Villach	146,100	4.4	12.7	5.7	29.1	16.0	32.0
Oberkränten	53,900	14.7	13.5	11.1	31.2	8.2	21.3
Südburgenland	39,100	12.5	16.1	9.2	26.6	9.0	26.6
Austria	4,229,800	5.7	15.8	6.9	28.8	15.2	27.6
Gorenjska	80,300	7.3	30.4	8.0	25.3	10.8	18.3
Koroška	28,900	13.1	34.9	6.6	17.3	7.6	20.4
Savinjska	119,900	10.3	31.4	9.3	23.4	8.8	16.7
Podravska	140,200	9.2	22.8	8.8	22.0	16.5	20.6
Pomurska	45,600	19.5	22.4	9.2	21.3	7.2	20.4
Osrednjeslovenska	314,300	3.3	12.9	8.1	27.3	22.6	25.8
Goriška	53,800	10.2	27.1	10.4	19.1	9.9	23.2
Zasavska	14,800	8.1	34.5	7.4	18.2	12.8	18.2
Slovenia	962,500	8.4	22.5	8.6	24.1	15.0	21.5

Source: Ref. [3].

Table 6. Number of persons employed, 2010 (NUTS 3), by economic activities (NACE Rev. 2) (in %).

The secondary sector plays an important role in terms of employees in the Slovenian regions, as in Koroška (34.9%), Zasavska (34.5%), Gorenjska (30.4%) and Goriška (27.1%) as well as in Obersteiermark Ost (27.8%) in Austria.

The tertiary sector is especially in the central areas of Klagenfurt-Villach, Graz (Austria) and Osrednjeslovenska (Slovenia) providing jobs for employees.

2.4.2. Unemployment

Unemployment rates differ between the Austrian and Slovenian parts of the region. In 2010, the unemployment rates of all Slovenian participating regions were higher than for Austrian participating regions. Podravska and Pomurska regions had the highest unemployment rate within the programme area. Details are shown in **Table 7**.

NUTS 3	Registered unemployment rate	Registered unemployment rate of woman	Registered unemployment rate of men
Oststeiermark	5.7	5.1	6.2
West and Südsteiermark	7.1	6.6	7.5
Graz	7.6	6.6	8.4
Obersteiermark Ost	6.9	7.3	6.5
Obersteiermark West	6.7	6.8	6.6
Unterkärnten	8.3	8.2	8.3
Klagenfurt-Villach	9.0	8.3	9.6
Oberkärnten	9.8	9.7	9.9
Südburgenland	8.3	7.8	8.6
Austria	7.0	6.5	7.4
Gorenjska	8.9	9.03	8.83
Koroška	12.2	15.60	9.47
Savinjska	12.7	14.28	11.48
Podravska	14.1	15.35	13.02
Pomurska	17.3	19.38	15.67
Osrednjeslovenska	10.1	9.65	10.49
Goriška	10.3	9.94	10.59
Zasavska	14.7	14.95	14.39
Slovenia	12.0	12.61	11.47

Source: Refs. [2, 3].

Nace Rev. 2: agriculture, forestry and fishing (A); industry (except construction) (B–E); construction (F); wholesale and retail trade, transport, accommodation and food service activities, information and communication (G–J); financial and insurance activities; real estate activities; professional, scientific and technical activities; and administrative and support service activities (K–N); public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation; and repair of household goods and other services (O–U).

Table 7. Unemployment rate 2010 (NUTS 3).

In Slovenia the unemployment rate of women was higher than the unemployment rate of men, while in Austria there was higher unemployment rate of men. Pomurska, Koroška and Podravska regions registered more than 15% unemployment rate of women, while unemployment rate of man was higher than 15% only in Pomurska region.

As already mentioned unemployment rates was much higher in Slovenian regions comparing with Austrian. In Austrian NUTS 3 regions of the eligible area, Graz had 7.6% unemployment rate. In terms of gender gap, women have been more affected by unemployment than men. In 2010 the unemployment rate of men compared to women was 8.4–6.6% in Graz.

Among the Styrian regions of the eligible area, Oststeiermark had the lowest unemployment rate (5.7%) in 2010; especially the district of Weiz contributes with an unemployment rate of

4.2% to this positive result. The unemployment rate of women (5.1%) was lower than of men (6.2%).

The unemployment rate within NUTS 3 level was 8.3% in Unterkärnten, 9.0% in Klagenfurt-Villach and 9.8% in Oberkärnten. In all the regions, the unemployment rate was above the average of Austria.

Also the unemployment rate of Südburgenland is above the average of Austria, which recorded an unemployment rate of 8.3%; the unemployment rate of woman with 7.8% was lower than those of men with 8.6% in 2010.

2.5. The regional innovation system: education, research and development and innovation potential

2.5.1. Education level

The strategic framework for European cooperation in education and training adopted a benchmark to be achieved by 2020 that the share of early leavers from education and training should be less than 10%, a level already reached in 2011 by the eligible area regions [5]. Early leavers from education and training may face heightened difficulties in the labour market; data is presented in **Table 8**.

In Slovenia in the year 2012, 4.4% (EU 27 12.8%) of those aged 18–24 were early leavers from education and training, with at most a lower secondary education. The overall share of early leavers from education and training fell by 0.7 percentage points between 2008 and 2012; the share was even lower in Zahodna Slovenija [6]. In Austria the share of early leavers from education and training was higher than in Slovenia; Styria, however, had a large reduction of 3.2 percentage points between 2008 and 2012.

The strategic framework for European cooperation in education and training was adopted in May 2009. It sets a number of benchmarks, including one for tertiary education, namely, that by 2020 the proportion of 30–34-year olds with tertiary educational attainment should be at

NUTS 2	2008	2009	2010	2011	2012
Burgenland	–	–	–	–	–
Kärnten	8.3	:	7.1		
Steiermark	8.1	7.5	7.1	4.6	4.9
Austria	10.1	8.7	8.3	8.3	7.6
Vzhodna Slovenija	4.8	5.6	5.3	4.7	5.0
Zahodna Slovenija	5.3	5.1	4.7	3.7	3.8
Slovenia	5.1	5.3	5.0	4.2	4.4

Source: Refs. [2, 3].

Table 8. Early leavers from education and training, 2008–2010 (in %).

NUTS 2	2008	2009	2010	2011	2012
Burgenland		17.8	20.5	19.8	18.0
Kärnten	21.3	25.5	20.2	19.4	25.0
Steiermark	20.4	17.2	20.2	20.5	22.1
Austria	22.2	23.5	23.5	23.8	26.3
Vzhodna Slovenija	25.9	25.6	28.3	32.9	35.9
Zahodna Slovenija	36.4	38.5	42.2	43.0	42.7
Slovenia	30.9	31.6	34.8	37.9	39.2

Source: Ref. [3].

Table 9. Population aged 30–34 with tertiary education, 2008–2012 (in %).

least 40% [7]. Just over one-third (35.8%) of the population aged 30–34 in the EU 27 had a tertiary education in 2012. In **Table 9** population aged 30–34 with tertiary education in Austria and Slovenia is presented.

In Slovenia the proportion of 30–34-year-old men and women with tertiary educational attainment was already 39.2% and even higher in Zahodna Slovenija with 42.7% in 2012. Vzhodna Slovenia increased the share of 30–34-year olds with tertiary educational attainment by 10.0 percentage points between 2008 and 2012. Austria, as a well-performing economy, scores low, especially the NUTS 3 level regions, reaching at least above 20%, with the exception of Burgenland, which reached 18.0%. This is linked to their different education systems.

2.5.2. Research and development

The size of the research and development expenditure shows small differences at member state level. According to 2011 Eurostat data, R&D spending in terms of % of the GDP was 2.75% in Austria, while in Slovenia spending was below 2.47%, both countries spending higher than EU 27 average (2.02%).

Breaking down R&D expenditure by sector, the business enterprise sector in Austria with 1.90% spending is among the best performing among member states in this respect (almost 150% of the 1.29% EU 27 average), while Slovenia, with 1.83%, is also in the higher half of the EU 27 member states. Government spending shows bigger difference between Austria and Slovenia (0.14% for Austria and 0.35% for Slovenia). Data for the higher education sector shows that the sector is more active in R&D in Austria (0.73% GERD), less in Slovenia (0.29% GERD).

However, in Slovenia and in Austria, total internal R&D expenditures show some local differences. Details are shown in **Table 10**.

Steiermark in Austria and Zahodna Slovenija in Slovenia have a prominent position with gross domestic expenditure on R&D as high as 4.6 and 3.10% in 2011.

NUTS 2	2007	2009	2011
Burgenland	0.7	0.7	0.6
Kärnten	2.5	2.5	2.8
Steiermark	4.2	4.3	4.6
Austria	2.5	2.71	2.75
Vzhodna	0.93	1.21	1.68
Zahodna	1.86	2.34	3.10
Slovenia	1.45	1.85	2.47

Source: Refs. [2, 3].

Table 10. R&D expenditures 2011 by regions (NUTS 2) in % of GDP.

Among the Slovenian NUTS 2 regions, Zahodna Slovenija expended much more for R&D than Vzhodna Slovenija (3.10 vs. 1.68% of GDP) in 2011.

Among the Austrian NUTS 2 regions, in 2011 the highest R&D intensity was recorded in Styria (4.6%); Carinthia with 2.8% was still on the Austrian average. R&D expenditures in 2011 compared to 2009 were increasing by +17.4% in Styria and +24.1% in Carinthia. In Südburgenland R&D plays a crucial role for the economic development; however, the region reported R&D expenditure accounting for less than 1% of their GDP.

Austria's more advantageous position in the field of R&D is also clear in terms of researchers in full-time equivalents (FTE). The data about R&D personnel is shown in **Table 11**.

In Slovenia the total number of FTE researchers was 15,269; in Austria it was 61,170 in 2011 [3]. The number of R&D personnel is increasing over the last years; nevertheless all NUTS 2 regions could increase the number of R&D personnel.

NUTS 2	R&D personnel (in full-time equivalents)		
	2007	2009	2011
Burgenland	385	464	574
Kärnten	2526	2726	3049
Steiermark	9996	10,665	12,129
Austria	53,252	56,438	61,170
Vzhodna	2471	3041	4061
Zahodna	7898	9371	11,208
Slovenia	10,369	12,410	15,269

Source: Ref. [3].

Table 11. R&D Personnel (in full-time equivalents) from 2002 to 2011 by sectors of performance.

	Total enterprises	Thereof innovative enterprises (%) ²	Product/process and organisational/marketing innovation	Organisational/marketing innovation only	Product/process innovation only
% of all innovative enterprises					
Burgenland	481	49	53	32	24
Kärnten	948	56	50	23	15
Steiermark	2074	51	57	21	21
Austria	15,968	56	55	22	22
Slovenia	4158	49	50	30	21

Source: Refs. [1, 3, 9].³

Table 12. Enterprises by type of innovation, 2008–2010.

2.5.3. Innovation potential and innovation policy

Innovation is often considered key to maintaining our competitiveness on the global market, creating jobs and improving the quality of life. One of the main objectives of European policies is to encourage innovation in Europe, by providing incentives to stimulate and improve this economic driver [8].

As it can be seen from **Table 12** among the eligible areas, the higher shares of innovative enterprises during the period 2008–2010 were observed in Austria (56% of all enterprises); in line with Carinthia, which has the same amount of innovative enterprises. In the EU 27 member states (excluding Greece), more than half of all enterprises (53%) reported innovation activity; hence, Austria reported innovation activity above, Slovenia below the EU 27 average.

As regards the types of innovation that enterprises engage in, **Table 13** shows innovation broken down by three categories of innovators: product and/or process innovators only (excluding organisational and/or marketing innovation), organisational and/or marketing innovators only (excluding product and/or process innovation) and enterprises that developed both categories, product/process innovation and organisational/marketing innovation.

In Austria and Slovenia, as well as in the Austrian NUTS 2 regions, the share of innovative enterprises that combine product/process and organisational/marketing innovation is the highest.

In terms of combined product/process and organisational/marketing innovation by size class, **Table 14** shows that this combined innovation activities are also developed by a large group of small enterprises. However, it is also important not to lose sight of business structure of the regions, whereas 64% of Austrian and 57% of Slovenian enterprises are characterised by small- and medium-sized enterprises.

²Including enterprises with abandoned/suspended or ongoing innovation activities.

³All Core NACE activities related to innovation activities (B, C, D, E, G46, H, J58, J61, J62, J63, K and M71).

NUTS 1 and 2	Innovative enterprises ⁴ of total enterprises	Thereof product/process and organisational/marketing innovation	Thereof product/process and organisational/ marketing innovation by size class		
			From 10 to 49 employees	From 50 to 249 employees	250 employees or more
Burgenland	49%	53%	62%	31%	7%
Kärnten	56%	50%	64%	25%	12%
Steiermark	51%	57%	61%	25%	14%
Austria	56%	55%	64%	27%	10%
Slovenia	49%	50%	57%	32%	12%

Source: Refs. [1, 3].

Table 13. Enterprises by size class, 2008–2010.

2.6. Environment and energy

One of the key goals of the European Union is the protection of the environment and the conservation of the natural heritage like rare and valuable natural phenomena such as minerals and fossils, subterranean caves, gorges, springs, waterfalls, rapids, lakes, bogs, streams and rivers with banks, seaside and landscapes. In order to achieve this aim, the European Union launched various policies, programmes and projects and adopted several environmental legislations in order to diminish air, water and land pollution, to reduce waste and noise and to guarantee an overall sustainable economic, social and environmental development for member state citizens and people beyond the EU border.

Environmental protection is an increasingly important item on the Austrian social and economic policy agenda. Because of the complex nature of the problems related to environmental pollution and the traditional distribution of public tasks among a number of regional authorities, measures for protecting the environment are taken by the federal authorities and by province governments and municipalities [10].

In the field of environment, Austria is one of the leading countries in Europe. The standards in force in Austria are very stringent by European comparison. In the fields of waste management, chemicals or air pollution is related to boiler installations. Also in agriculture ecological criteria have increasingly been taken into account. The Environmental Information Act aims at enhancing transparency in the field of environmental information and access to environmental data. Since 2003 Austria has been a party to the Aarhus Convention, therefore information is available to the public, and the collection of data about the environment is computer based. Austrian legislation is thus increasingly taking citizens’ health and environmental concerns into account [10].

⁴Including enterprises with abandoned/suspended or ongoing innovation activities.

Due to the implementation of EU Water Framework Directive, the water quality of Austria's lakes was raised to excellent levels. In order to classify the system, a detailed, state-of-the-art computer-based documentation of all Austrian rivers and lakes was prepared. For environmental protection Austria elaborated a national concept for the rehabilitation of protective forests and took the specific steps with respect to emissions of airborne pollutants that led to considerable reductions [10].

Active care of the environment in Slovenia is included into spatial planning and into any other planning of activities affecting the environment. For reducing adverse environmental impact, economic instruments in the forms of environmental tax based on the "polluter pays" principle or an environmental tax reduction in the case of investment in environmental protection have been introduced [11].

With the Environmental Protection Act in 2004, two chapters concerning the control and reduction of environmental emissions and the phasing-out and substitution of hazardous substances were defined. The main aim of the mentioned act is the promotion of development and the use of technologies that prevent, eliminate or reduce environmental burdens.

A lot of areas within the environment and energy can represent a cooperation field within programme area. One of them could be NATURA 2000 areas, another natural park, renewable energy, etc.

In the past 25 years, one of the central working areas has been the conservation of European Union's biodiversity. Beside on that the European Union launched the NATURA 2000 initiative, one of the biggest challenges is to interact the conservation of NATURA 2000 areas with humans' everyday activities. Of course it is crucial that also other policy fields like transportation, tourism, industry, agricultural or energy became sustainable as well [12]. To overcome mentioned challenges, cross-border cooperation for transferring best practices is needed.

One of the cooperation fields could be natural parks, and others could be cooperation for improving air quality, quality of water, reducing the noise and waste, etc.

The air quality has diminished since the industrial revolution. The main cause of the worldwide climate change is anthropogenic greenhouse gas emissions. Negative consequences of these phenomena represent a bear to humans and the environment itself. Health deterioration in a form of lung problems, drought and floods became a part of the everyday agenda. An important step in reducing the anthropogenic greenhouse gas emissions especially CO₂ has been taken in 2005 with the implementation of the EU ETS. Since then, the Slovenian CO₂ emissions have decreased from 20,309 tCO₂ to 19,509 tCO₂ in 2011, and Austria CO₂ emissions have decreased from 92,895 tCO₂ to 82,842 tCO₂. This thematic field thus represents a possible cooperation area especially as most of the CO₂ emissions come from the industry. Companies from both sides of the border could work together and exchange experiences, thoughts and even technologies in order to make their production environmentally friendly [13].

Very important field for cooperation could also be the renewable energy. Promoting the use of renewable energy sources is important both to the reduction of the countries' dependence on foreign energy imports and in meeting targets to combat global warming.

NUTS 1	2004	2005	2006	2007	2008	2009	2010	2011
EU 27	8.1	8.5	9.0	9.7	10.4	11.6	12.5	13.0
Austria	22.8	23.8	25.3	27.2	28.3	30.2	30.6	30.9
Slovenia	16.1	16.0	15.6	15.6	15.0	19.0	19.6	18.8

Source: Ref. [3].

Table 14. Renewable energy share of gross final energy consumption.

The data of renewable energy share of gross final energy consumption between 2004 and 2011 is shown in **Table 14**.

In Austria renewable energy share of gross final energy consumption amounts to 30.9% in 2011 against 30.6% in 2010; this represents an increase of 0.3 point. In Slovenia the renewable energy share of gross final energy consumption fell from 19.6% in 2010 to 18.8% in 2011.

Activities like traffic, constructions or even recreation activities create noise, which can be harmful and unpleasant for humans, animals and the whole environment. Despite that the European Union has taken measures on this topic, noise is a problem, which is considered to be best handled on the regional or local level. Thus this is also an important thematic field, which can be handled within the programme cooperation area.

3. SWOT analysis

The key strengths, weaknesses, opportunities and threats of the Slovene regions have been identified through:

- The analysis of the statistical data
- Existing regional and national development plans
- Regional analysis

Moreover, regional studies and recent direct information of relevant authorities have been taken into regard. Thus, SWOT analysis offers a wider view than the statistics and analyses of the programme area description.

In order to give a clear and complete overview, the strengths, weaknesses, opportunities and threats identified are presented in **Table 15** for the main sectors/fields identified in Regional Development Programmes 2014–2020, also highlighting specific issues of individual NUTS 3 areas where appropriate.

Regions analysed are those eligible NUTS 3 regions from the core programme area in 2007–2013 period including Gorenjska, Koroška, Savinjska, Podravska and Pomurska on the Slovene side. The NUTS 3 area Osrednjeslovenska is included in the programme on the basis of Art 21 (1) of the Regulation No. 1080/2006 on the European Regional Development Fund.

Sector	Strengths
Demography/demographic change/settlements	<ul style="list-style-type: none"> • Relatively high educational level of the population • Increasing shares of young population in urban agglomerations (students, young families) • Polycentric settlement
Economy/urban development	<ul style="list-style-type: none"> • Big cities as growth centres • Companies and knowledge, especially in traditional industries in Slovenia; strong internationally competitive and innovative enterprises in Austria • Strong regional industrial core, for example, manufacturing sector • Well-developed food processing sector • Medium-sized domestic multinationals (global/international companies and brand names) are present in the programming area • Regional centres of economic activity • Well-developed regional portfolio of economic activities • Good regional supply with business services
Human resources/employment	<ul style="list-style-type: none"> • High share of young population enrolled in tertiary education in Slovenia • Growing share of highly educated population • Well-developed education system for all levels • Existing social entrepreneurship • Qualified/skilled labour force/relatively highly skilled regional labour force
Education/research and innovation	<ul style="list-style-type: none"> • Well-established secondary education network • Good regional endowment with R&D infrastructures and research and technology organisations • Universities with high potential in areas of technological, natural and social sciences; diversified study disciplines and programmes • Strong basis of research and innovation performing enterprises in Austria • Developed educational network; high number of NGOs in Slovenia • Some new study programmes based on demand of the business sector • Technology parks enabling concentration and integration of entrepreneurship, knowledge and development
Environment and energy	<ul style="list-style-type: none"> • Rich natural heritage, biodiversity • Preserved natural environment with high share of protected areas (natural parks, Natura 2000), relatively environmentally stable space • Good capacity for dealing with environmental problems • Available natural resources (timber, water, thermal water, etc.) • Quality drinking water • Strong potential for the use of renewable resources—wood biomass, hydro- and geothermal energy, etc. • Availability of serviced land • Interrelatedness of urban space and nature
Traffic infrastructure and mobility	<ul style="list-style-type: none"> • Available transport infrastructure connecting regional centres • Available road network connected to neighbouring regions and macroregions
Tourism and leisure/cultural heritage and cultural resources	<ul style="list-style-type: none"> • Attractive landscape for tourism (nature, cultural heritage) • Well-known international events • Regional centres of tourism as local development incubators • Awareness of the importance of sustainable tourism development • Richness of traditional, culinary and handcrafts • Developed amateur culture and local cultural performers • Rich cultural offers

Sector	Strengths
Demography/demographic change/settlements	<ul style="list-style-type: none"> • Ageing of population in peripheral territories • Negative natural and immigration growth (except for CenSI) • Increasing shares of commuters • Loss of population in peripheral territories
Economy/urban development	<ul style="list-style-type: none"> • Inward orientation, insufficient cooperation within region • Companies adjusting too slow to increased competition and globalisation • Export limited primarily to traditional nearby markets • Low share of knowledge-based services in GDP and exports • Low inflow of FDI • SMEs: lack of entrepreneurial spirit, low level of internationalisation, new SMEs do not grow, lack of financial resources for SME development • Low level of R&D investments with the exemption of urban areas • Low level of innovativeness in companies (especially SMEs), lack of innovation culture, lack of management/marketing competencies despite high self-evaluation, low share of hi-tech products in exports and high share of low value-added products • Low survival rate of startups • Relocation of economic activity abroad due to cheaper labour force in mature sectors, bankruptcies of companies in mature sectors and lack of financial supporting mechanisms • Too weak linkages between research, education and economy • Long-lasting procedures for obtaining construction permits • High prices of land for business use, lack of suitable sites ready for business activities, non-utilisation of abandoned industrial buildings and infrastructure in Slovenia
Human resources/employment	<ul style="list-style-type: none"> • Comparatively low level of population with tertiary education in Austria (due to education system) • Level of registered unemployment above average and still growing, unfavourable age and educational structure of unemployed (above 50 and under 29, long-term unemployed) and growing share of unemployed with higher education • Low level of self-employment • Structural imbalances in labour markets and slow adjustments of educational programmes to labour market needs
Education/research and innovation	<ul style="list-style-type: none"> • Innovation activities of enterprises are highly concentrated • Lack of integration among the economy, universities and research and development institutions in parts of the programming area • Education systems at all levels are rigid and do not react to needs of labour market in Slovenia • SMEs are poorly included in educational and training programmes • Lack of effective investment into research and development which is reflected in poor transfer of knowledge back to the economy in parts of the programming area
Environment and energy	<ul style="list-style-type: none"> • Absence of a regional planning in Slovenia • There are no comprehensive development strategies and protection for defined areas of "natural landscape" in Slovenia • Regulatory barriers for renewable in regional energy markets • Lack of business models for prosumer markets in the field of renewable
Traffic infrastructure and mobility	<ul style="list-style-type: none"> • Third development axis missing and poorly maintained state and local road network • Poor and inefficient public transport system in Slovenia • Bad connections in terms of public transport in peripheral territories in Austria

Sector	Strengths
Tourism and leisure/cultural heritage and cultural resources	<ul style="list-style-type: none"> • Lack of cooperation/integration among tourist service providers in providing full-range offer, weak cooperation among tourist service providers and organisations for marketing and promotion, lack of advanced integrated tourist products and weak integration of cultural heritage with tourism in the region • Short stay of tourists and visitors with low consumption and concentration of supply/offer in the main season and weak "out of season" offer • Fragmentation of cultural events, low cooperation among programmes and associations in the field of cultural activities • Lack of entrepreneurial initiatives in rural areas (a small number of family SMEs)
Sector	Opportunities
Demography/demographic change/settlements	<ul style="list-style-type: none"> • Economic crisis as opportunity — young highly skilled people from Greece, Spain and Portugal as potential brain gain for subregions with high knowledge intensity (e.g. Graz, Klagenfurt-Villach)
Economy/urban development	<ul style="list-style-type: none"> • Strengthening competitive advantages of functional urban areas and promoting active networking with regional centres of the neighbouring countries and regions • Development of an integrated settlement-transport system • Development of dynamic critical mass in leading sectors with the formation of interregional clusters • Good potential for related variety in the economic sectors • Promotion of internationalisation • Increasing recognisability of region as a location for foreign investment and providing land and attracting new investment • Development of a supportive business ecology for SMES and startups • Development of creative industries
Human resources/employment	<ul style="list-style-type: none"> • Availability and quality of the environment as a factor for attracting creative people and investment • Promotion of entrepreneurial talent and self-employment • Live-long learning as basis for enlarging the regional knowledge base • Rapid activation of young people under 26 years and reactivation of those above 50 years with the help of active employment policy measures • Green jobs
Education/research and innovation	<ul style="list-style-type: none"> • Linking schools with industry and adapting programmes to the needs of the labour market with the aim of restructuring the high school and other programmes of education/training and the dissemination of a lifelong learning culture • Strong scientific and entrepreneurial innovation potential in the field of KETs • Establish liaison arrangements among industry, university and research and development institutions
Environment and energy	<ul style="list-style-type: none"> • Building partnerships for a comprehensive programme to protect the environment • <i>Environmental Resources Management (ERM)</i> and revitalisation of degraded areas • Protected nature areas-Natura 2000 as a development opportunity • Production of bio-and alternative fuels from waste • Increasing energy self-sufficiency due to potential of renewable energy sources
Traffic infrastructure and mobility	<ul style="list-style-type: none"> • Moving towards a more sustainable transportation due to changes in travel behaviour

Sector	Strengths
Tourism and leisure/cultural heritage and cultural resources	<ul style="list-style-type: none"> • E-mobility and innovative service-based transport solutions as response to urban congestion problems • Newly developed public transportation system (S-Bahn) in Austria • Regional centres of tourism as local development incubators • The sustainable use of natural and cultural heritage together with existing knowledge and skills in the environment, development of eco-tourism and development of green tourism in Natura 2000 areas • Activation of cultural and artistic potential of the region • Increase the quality of integrated tourist products and joint promotional appearances in order to raise the profile of destination, the development of common brands and their promotion and mobile e-services for the marketing of tourist destinations • Integration of agriculture, tourism, complementary activities and other services in rural areas • Comprehensive revitalisation of cultural heritage
Sector	Threats
Demography/demographic change/settlements	<ul style="list-style-type: none"> • Brain drain • Accelerated processes of ageing population with the exemption of urban agglomerations • Depopulation of peripheral territories
Economy/urban development	<ul style="list-style-type: none"> • Excessive rise of real estate prices in urban agglomerations • Increased development gap with the west/central Slovenia and neighbouring cross-border regions could increase pressure for relocation and diversion of FDI potential by providing better conditions elsewhere • Scarcity and lack of competitiveness of locations in the region would further decrease the attractiveness of the region for foreign investment • Relocation of low-technology manufacturing activities abroad due to cheaper labour costs • Credit crunch—insufficient supply of capital • Limited development and investment funds • Failing in successfully restructuring stagnant industries
Human resources/employment	<ul style="list-style-type: none"> • Shortage of skilled labour force as barrier to growth • Emigration of trained/skilled personnel from the region • Social exclusion • Rising unemployment • Limited access to education and health services • Loss of values and identity
Education/research and innovation	<ul style="list-style-type: none"> • Budgetary austerity could hamper necessary public future investments in RDI • Insufficient enrolment rates in science and engineering at universities • Continued rigidity of the secondary education system without linkage to economic sector • Danger of one-size-fits-all instruments for a very heterogeneous programming area • Low enrolment to deficient education programmes • Lack of cooperation of regional research and development institutions in international consortia due to development gap in Slovenia • Partly slow response of research institutions/departments in companies to new technologies and new research subareas within nanotechnology, biotechnology, environmental technology, etc.
Environment and energy	<ul style="list-style-type: none"> • Climate change (increased water shortages for irrigation, hail and floods)

Sector	Strengths
	<ul style="list-style-type: none"> • Vanishing small areas important for biodiversity conservation(e.g. wet-lands) • Increasing damage due to improper use of flood and land slide areas • Inability of reconciling various interests in the area (agriculture, tourism, nature conservation and cultural heritage) • Mismatch between spatial and development planning • Neglecting ecologically degraded areas • Nonsystemic, unplanned and environmentally problematic use of alternative energy sources
Traffic infrastructure and mobility	<ul style="list-style-type: none"> • Insufficient funding for construction of communication (especially road) networks • Reduction of air connections due to increasing competition in Europe (i.e. airports and airlines)
Tourism and leisure/cultural heritage and cultural resources	<ul style="list-style-type: none"> • Increasing relative competitiveness of neighbouring regions and countries in tourism • Loss of traditional cultural landscape • Slow implementation of public-private partnership model for the development of tourism products and infrastructure • Failure in identifying new trends in tourism • Concentration of tourist accommodation facilities in some locations and large companies

Table 15. SWOT analysis.

4. Conclusion

Economic growth in the future must be knowledge driven due to globalisation. Technology improvement, upgrading services and cost efficiency are challenges for all countries, and some of them are easier to overcome with cooperation between countries.

Regional and SWOT analyses show a lot of opportunities for strengthening cross-border cooperation between Austrian and Slovenian regions.

4.1. Demography

Demographic analysis shows that urban areas in both countries are more attractive to inhabitants [1, 2]. Working and educational opportunities, infrastructure and access to social services and health care are the main factors when deciding the place of living. A modest birth rate combined with a progressing life expectation consequently leads to population ageing, which is a big problem in the whole programme area. On January 1, 2013, the ageing index for all named regions exceeded 100.

Economic analysis of the participating regions shows that there is an increasing need for the economic cooperation and network building in the border regions, especially in areas such as innovation and technological development, research, renewable energy and protection of cultural and natural heritage.

4.2. Education, research and development

Good and diverse supply of education on one hand and the problem of lack of knowledge of RDI partners on the other are showing that research and development in the participating regions could play a strong role in cross-border cooperation in the future. Austria has more advantageous positions in the field of research and development, but as both countries are spending for research and development more than EU 27 average and regarding the good infrastructure for research and development in all participating regions, these could present a good base for strengthening research, technological development and innovation. Research and innovation potential together with high educational level of population in participating regions could serve as the basis for cross-border cooperation with an aim of fostering and strengthening innovation activities in the regions.

As a tool for strengthening innovation activities between Austria and Slovenia, networking will be used. Collaboration between the regions' education and business sectors with the innovation poles is here essential.

4.3. Competitiveness of SMEs

Due to the fact that 64% of Austrian and 57% of Slovenian enterprises are characterised by small- and medium-sized enterprises, one key driver of sector-oriented economic development is the industry clusters, especially among SMEs. To a large extent, the economic undertakings in the cross-border area are covered by various clusters, which take up the role as key players in boosting the progression of economic and innovation activities due to cross-border cooperation.

The primary objective of the cross-border cooperation in the field of SMEs is to strengthen their competitiveness. Within this aim the following activities should be included:

- Transferring the knowledge and technology
- Promoting innovation and development of common services

4.4. Environment and resources

The global pollution of the environment is exposing the necessity to take precautionary steps in order to protect and preserve the world's resources. Active care of the environment can be seen in Austrian and Slovenian participating regions. Austria is characterised with high ecological awareness, but also Slovenia has shown a great and increasing interest in the field of protecting the environment during the last few years. Rich natural heritage, biodiversity, good capacity for dealing with environmental problems and strong potential for the use of renewable resources are the main strengths participating regions have in the field of environment and energy; therefore cross-border cooperation in the mentioned fields could play an important role in the next period.

Close cooperation between regions will be useful for transferring know-how and thus for implementing cross-border solutions in the field of environment and resources.

4.5. Institutional capacity and an efficient public administration

According to the EC, “the quality of public administration has a direct impact on the economic environment and is thus crucial to stimulating productivity, competitiveness and growth” [14]. Consequently, the need for increasing the efficiency and effectiveness of public services and the increased quality of public administration should also be one of the areas for cross-border cooperation between Slovenian and Austrian regions.

Strengthening existing networks as well as the creation of new ones is highly important. Therefore, as already mentioned, novel opportunities should be establishing in order to encourage and foster administrative cooperation as well as cooperation between inhabitants and institutions.

One of the objectives within this field will indubitably be the decrease of administrative burden and thus the contribution to a more effective communication between inhabitants and public sector organisations.

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