

Research and innovation

The partner regions offer a highly developed research and innovation infrastructure on both sides of the border.

There are **8 universities** in the cooperation area (see also chapter Education and Training). There is a wide spectrum of knowledge and infrastructure regarding many scientific disciplines, including, among many others, natural sciences, different sectors of technologies, mechanical engineering, life sciences, material sciences, architecture and construction, economics and management. Many of them are operating with intensive industrial orientation, projects and contacts.

There is a lot of highly interesting cooperation potential in these facilities, which has not yet been used, although there are some cross-border initiatives and single cooperation activities.

It must be taken into regard that these qualified institutions are connected with a transport infrastructure which facilitates interaction and meetings, and enables fast access as one-way trip only takes a maximum of two hours.

Advanced technical colleges and higher education schools (see table in chapter Education and training) are part of the research facilities in both countries. Many of their activities focus on the same fields or represent complementary ones.

In the area outside the universities there are at least two major state-owned **research institutions** established in the cooperation area, namely the Jožef Štefan Institute (JSI) in Ljubljana and the Joanneum Research Company in Graz. Both are based on great tradition, many scientific sectors and clear mission regarding technology transfer. Together, more than 800 scientists and researchers are operating in these non-university institutions. Recently, in early 2006 both companies concluded a bilateral cooperation contract, which promises a series of concrete joint projects. A big opportunity for territorial cooperation can also be observed by involvement of local and regional stakeholders with their specific tasks.

In Kärnten, a remarkable initiative focusing on the strategic use of industrial and scientific synergies at the level of applied research has been carried out by the establishment of the **Lake Side Park** in Klagenfurt. This semi-public institution aims at the cooperation of R&D departments of large international companies with the University of Klagenfurt and the advanced technical colleges in the fields of software and communication technology. The Lake Side Park is to become internationally linked and represents a great potential for cross-border cooperation.

In order to stimulate the business start-up activities in the framework of universities and the academic sphere, a series of university spin-off incubators and science parks has been created; most of them are located in the border region:

- University spin-off incubator of the University of Maribor
- Styrian Technology Park, Pesnica near Maribor
- University spin-off incubator, established by the Regional Development Agency Celje
- University spin-off incubator of the University of Ljubljana
- Science Park in Graz (jointly for all universities in Graz)
- ZAT in Leoben / Steiermark
- BUILD in Klagenfurt / Kärnten

Recently, a cross-border cooperation project regarding spin-off centres has been started, called INNOVIN.

In the Savinjsko region there has been an initiative to build Tehnopolis (a centre which would offer complete support to newly established or young SMEs, an educational centre etc). After laying down the foundations, the construction work had to be stopped due to unpredicted construction problems.

According to the initial plan, Technopolis should become functional within 2 years (during the period 2007-2013).

Additionally, in the last six years a series of **competence centres** have been established in Austria, which are clearly industry-oriented and deal with different fields of advanced technologies: new materials, plastics and polymers, electronics, acoustics, vehicle engineering, industrial design and many more (Steiermark: 17).

In Güssing, Südburgenland, the **European Centre for Renewable Energy** has been established as a special institution representing high competence by applied research activities and a series of good practices carried out in the region.

In Slovenia, **8 centres of excellence** have been established recently in order to promote cooperation of the researchers in the academic and enterprise sector in the fields of supercritical fluids, biotechnology and pharmacy, electronic materials, nanotechnology and nanoscience, environment, ICT, modern automation technology.

The enterprises and research institutions have established four **technology platforms**, namely in ICT, polymers, biotechnology and pharmacy, and automation technology. Especially the enterprises acting in the ICT and polymers platforms are located mostly in the programme area.

These institutions are part of the knowledge-based infrastructure in the cooperation area.

The research centres are strongly concentrated in major urban areas. In Slovenia, R&D in general is still predominantly focused on basic research, though measures have been introduced at the national level to strengthen research capacities of the enterprise sector. On the Austrian side, the industrial key players represent the main clients or partners of the research institutions. In this respect, Steiermark represents one of the most research-active regions of entire Austria and is one of the leading EU regions in this field.

Moreover, cooperation between Austria and Slovenia in the field of research and technology development has been supported by a special bilateral agreement signed by both countries.

To summarise the chapter, one of the key assets that the cooperation area provides is high-ranked infrastructure in the fields of science, technology and research, which is made available to its stakeholders – entrepreneurs, researchers and employees. The specific potential based on the infrastructure offers an excellent opportunity to succeed in creation and further development of a sustainable, knowledge-based economy.

Human resources

Labour market

In 2003, the unemployment rate of the participating regions in general was below the EU-25 average (9.1 % - ILO); the rate was exceeded only in the Slovene regions of Pomursko and Podravsko.

In Slovenia, the registered unemployment rate has been decreasing since 1998, with Podravsko being the most and Koroško the least successful. A decrease in the number of unemployed people was a result of the increase of job offers, as well as of the fact that a number of the unemployed had been deleted from the register for various reasons not related to employment. In 2004, the highest unemployment rate was still recorded in the Pomursko region, while the unemployment rates in Podravsko, Savinjsko and Koroško were still above national average.

The Slovene regions are characterised by structural unemployment. Around one half of the unemployed are long-term unemployed. On average, one fifth of the unemployed comprises of young people. Another handicap for the border areas is the brain drain, especially in the sense that university graduates often

find jobs in the dynamic urban centres and do not return to their home regions (Koroško, Pomursko). The share of women in unemployment in 2004 was above 50 % in all Slovene regions except Pomursko. Particularly in Pomursko, there is a high share of semi-skilled and unskilled workers in unemployment; on the other hand, the number of highly skilled workers in unemployment is growing in the Osrednjeslovensko region.

In comparison to Slovenia, the situation in the Austrian regions is better, especially regarding the unemployment of youth and the long-term unemployed. The region Südburgenland shows the highest rate of long-term unemployed people among the Austrian regions. Many of the long-term unemployed are engaged in training courses, and are thus not registered as unemployed as such.

There is also clear evidence that people with low qualifications represent the majority of the unemployed, particularly so among the long-term unemployed.

One of the rising problems linked to structural changes is the increase of flexible working contracts, which very often fail to offer security to workers, and a large amount of part-time jobs. These jobs are mainly accepted by women.

Table 8: Unemployment rate (2004)

NUTS III area	Registered unemployment rate 2004	% of women in unemployment	% of youth in unemployment	% of long-term unemployed
Oststeiermark	6.8	39.4	15.5	2.2
West and Südsteiermark	6.9	41.6	17.9	3.2
Graz	7.0	41.7	15.1	4.5
Obersteiermark Ost	7.4	47.8	18.1	3.9
Obersteiermark West	7.2	45.4	20.3	2.3
Unterkärnten	7.3	41.7	14.0	2.0
Klagenfurt-Villach	7.5	43.9	16.8	4.3
Oberkärnten	8.8	43.1	17.7	3.0
Südburgenland	8.7	42.5	16.8	6.4
AUSTRIA				
Gorenjsko	7.8	53.5	20.6	46.1
Koroško	11.7	53.9	22.5	49.4
Savinjsko	12.9	54.7	25.4	49.8
Podravsko	14.6	55.2	22.9	49.9
Pomursko	16.8	47.0	25.4	49.4
Osrednjeslovensko	7.8	51.7	19.1	47.4
SLOVENIA	10.6	53.1	22.5	48.9

Source: AT:WIBIS-Kärnten, WIBIS-Steiermark, AMS-Austria, OP-Draft; SI: SORS/IMAD.

In the period from 2000 to 2004 the number of jobs increased in the Osrednjeslovensko, Gorenjsko and Podravsko regions, while it decreased in Koroško, Savinjsko and Pomursko. There is high daily commuting to work in Osrednjeslovensko (Ljubljana), which accounts for approximately 30 % of all jobs in Slovenia. Regions with a high share of jobs also include Podravsko (Maribor) with 15 % and Savinjsko with 13 % of the total amount of jobs in the country.

The biggest employment centres on the Austrian side are Graz, Leoben and Kapfenberg in Steiermark, and Klagenfurt and Villach in Kärnten. Südburgenland does not have major job centres at a comparable level due to the rural structure of the region. In Slovenia, the biggest employment centres are Ljubljana, Maribor, Celje and Kranj.

Table 9: Gender aspects in Steiermark

	Men	%	Women	%	Total	%
Employees (2005)	248,726	56	194,401	44	443,127	100
Blue-collar workers 2005	140,000	69	62,891	31	203,212	100
White-collar workers 2005	108,405	45	131,510	55	239,915	100
Sector of marginal part-time workers	9,145	27	24,407	73	33,552	100

In particular, these figures represents a clear indicator for the specific, often disadvantaged situation of many women in economy and employment.

The rates of female participation in the labour market in Burgenland and Kärnten are quite similar:

Burgenland: women 43.5 % (of total employees)
Kärnten: women 44.6 %

Only in the core areas of capital cities and centres (Graz, Klagenfurt and Villach in Austria, and Ljubljana in Slovenia), which exhibit a higher share of services, is the rate of employed women significantly higher.

Additionally, the figures regarding the gross income of the employees provide another evidence regarding significant differences in payment and pay gap between women and men:

Table 10: Average gross income of employees in 2004 (per month in €):

	Men	Women	w/m in %	Total
Steiermark	2,268	1,443	64	1,947
Kärnten	2,206	1,473	67	1,888
Burgenland	1,992	1,347	68	1,729

Source: Austrian social security (umbrella organisation), median-income of employees; Own calculations.

Since the income of women in employment comes up to only about two thirds of the male income, this indicator also shows the different gender positions on the labour market.

The pay gap is an important source of gender inequality. Women earn less due to several reasons. One of the reasons is that women not only have babies, but are also responsible for the main part of child care and care of elderly people. Their labour contracts thus appear less continuous, and women are not able to make up for the lost time by the time of retirement.

In Slovenia, women represent almost a half of all employed persons and mostly work full time, as do their male colleagues. On average, women reach a higher level of education, but nevertheless face more difficulties in finding employment and are thus less likely to self-employ. Moreover, they are employed in lower paid positions and often have poorer career opportunities than men. In regard to the level of education and professional skills, they are paid less than men for the same job positions.

Table 11: Employed according to gender (2005)

	Women	%	Men	%	Total	%
Gorenjsko	36,192	45	44,656	55	80,848	100
Koroško	12,807	44	16,213	56	29,020	100
Savinjsko	44,510	44	57,215	56	101,725	100
Podravsko	52,112	44	66,867	56	118,979	100
Pomursko	19,068	45	23,655	55	42,723	100
Osrednjeslovensko	97,369	46	113,196	54	210,565	100
Slovenia	354,477	45	441,914	55	796,391	100

Source: SORS, 2005.

The data on surplus/deficit of jobs in regions relative to the labour force as percentage of the domestic labour force in 2004 show that Osrednjeslovensko has a surplus of 8.6 %, while all other regions have a deficit ranging from 14 % to 17 % in Savinjsko, Gorenjsko and Podravsko, and even over 20 % in Pomursko and Koroško.

Cross-border commuting has not changed significantly since the previous programming period. Mostly, it has been directed from Slovenia to Austria. Moreover, after Slovenia's accession to the EU, Austria imposed restrictions on the free movement of workers.

The cross-border cooperation in the field of labour market has so far not been very intensive in the sense of collaboration of the labour market institutions (except for the projects of Steiermark in cooperation with the regional ESS as partner). Especially in the light of the expected liberation of the labour market (at least in 2011), this should be improved in order to identify new problems that may emerge and work jointly on proper solutions.

Education and training

The elementary and secondary school system is well developed in both countries, the density of schools in the area is also suitable, whereby most of the secondary schools are located in bigger urban centres.

In particular, higher education and university offer is good. There are 8 universities in the programme area offering various programmes:

- University of Technology in Graz,
- Karl Franzens University in Graz,
- Medical University in Graz,
- University of Music and advanced arts in Graz,
- University of Leoben (Upper Steiermark),
- University of Klagenfurt,
- University of Ljubljana, and
- University of Maribor.

Beside university programmes, there is also a rich offer of higher education colleges. New programmes are being developed in some perspective areas. The availability of higher education programmes is rather weak in Koroško and partly Pomursko region, Slovenia. In general, the range of thematic fields covered by the higher education colleges is very diverse.

In Austria, the main fields are

- industrial engineering,
- infrastructure management,
- industrial design,

- electronics,
- information technology,
- energy and environmental management,
- health management and health promotion,
- tourism management.

In Slovenia, higher education programmes cover fields like

- mechanical engineering,
- electrical engineering,
- construction,
- textile,
- electronics,
- information technology,
- logistics,
- health,
- tourism,
- business and commerce, entrepreneurship,
- organisational sciences,
- agriculture.

In Slovenia, scholarship schemes have been introduced to strengthen links between the enterprise sector and students from a certain region. The major imbalance identified was a lower interest of students for nature and technical sciences; therefore a strong promotion has been launched so as to increase the number of students in this field.

The availability of education and training institutions in the regions has improved, especially in the part of vocational training and lifelong learning. There are a number of public and private organisations providing training for groups of the employed and unemployed.

The qualification structure of the population and employees reflects the education infrastructure and the structure of the jobs offered in the involved regions.

The qualification of the employees in the Austrian regions (2004) shows the following structure:

Highly qualified employees:	21.5 %
Semi-qualified employees:	55.4 %
Low qualified employees:	23.2 %

However, there are significant disparities between the involved regions of the cooperation area. Taking into account the criteria of the employees with university or higher education degrees, the core areas of Graz, Klagenfurt and Villach offer shares between 13 % and 18 % (Graz), while the rural or industrial regions offer shares of the highly qualified employees between 2.2 % (Oststeiermark) and 3.7 % (Östliche Obersteiermark).

The share of population aged 15 and over in Südburgenland (2001) with a university or higher education degree represents the value of 4.8 %. Compared to the Austrian share of 8 %, this indicates a rather low qualification structure of both the population and economic structure. As a consequence, 40 % of the unemployed people in the region are low qualified.

It has been shown that women in Austria attend shorter and cheaper vocational qualification programmes than their male colleagues. Companies mainly invest in highly qualified male employees and workers. Women have fewer opportunities for vocational qualification due to less working time, horizontal segregation and less flexibility and mobility.

Based on the data of the Labour force survey (SORS) for 2004, the education structure of the population aged 15 and over in the Slovene programme area also differs noticeably.

The share of population with higher education, university and post university degrees is above the Slovene average (14.6 %) in Osrednjeslovensko (19.9 %), while Gorenjsko (14.4 %) and Podravsko (14.5 %) are close to the average. In Pomursko, the share is 8.5 %, while Koroško has 12.7 % and Savinjsko 11.5 %. On the other hand, compared to the Slovene average of 54.7 %, the share of population with basic and low level education is above average in Pomursko (70.7 %), Koroško (63.5 %) and Savinjsko (60.1 %), while in Podravsko (52.9 %), Gorenjsko (52.1 %) and Osrednjeslovensko (44.1 %) these shares are lower. It can be said that the educational structure is less favourable in Pomursko, Koroško and also Savinjsko, while the situation is better in the regions of Gorenjsko, Podravsko and Osrednjeslovensko. These data also partly reflect the economies of these regions (eg. agriculture in Pomursko, traditional industries in Koroško, also partly Savinjsko).

Regarding the EU strategy to become a successful part of the future knowledge-based society, the analysis of the qualification structure reveals high potential in population and employees in the core areas on both sides, in Graz, Ljubljana, Klagenfurt – Villach and Maribor. It would thus make sense to use such key potential of human resources for joint strategies and for the integration of rural and industrial areas in the development of the entire region.