

# SWOT-ANALYSIS

## CONCERNING KNOWLEDGE AND TECHNOLOGY TRANSFER IN SAXONY, LOWER SILESIA AND ÚSTI REGION

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Extract

Version 1  
05 2017

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## Introduction

The aim of the analysis is to provide an assessment of the status quo of cooperation and transfer between science and industry in the border triangle Saxony, Lower Silesia and Ústí Region, as well as its current and future framework conditions.

First, analysis provides three regional sections describing conditions in terms of socio-economic situation, available transfer activities and funding structures. Second, regional analyses are merged in one transnational SWOT-analysis looking at the border triangle as a whole innovation system.

## 1. Saxony (Germany): Current status

### 1.1. General preconditions

An important framework condition is the ratio of population with a high **level of education**. When looking at the educational background of the working population in the age between 25 and 64 years, 60.1% of them passed a vocational training (in Germany: 48.0%) and 30.5% have an university degree (Germany: 26.8%).

To date, manufacturing industry has a strong impact on the economic power of the region. The ratio regarding the **gross value** added with 31% is similar to the German average (year: 2015). **Structurally dominant** in the region regarding the manufacturing industry are the **branches** manufacture of fabricated metal products, mechanical engineering, automotive and plant engineering. In addition, new innovative branches are establishing over the last decades as e.g. microelectronics, environmental and biotechnology.

Characteristic for the region is a strong dominance of **small-scale companies**.

98.0 % of the enterprises have less than 49 employees (year: 2014; Germany: 96.7%). This goes along with the absence of headquarters of larger, research-intensive corporations.

Saxony comes with excellent **universities**. There are to find four universities. Furthermore, there are also five universities for applied science and seven universities of cooperative education.

Additionally, Saxony offers an above average density of **non-university research facilities** in comparison to whole Germany, which manifests itself in the existence of 45 non-university research institutions (e.g. Fraunhofer Gesellschaft, Leibniz Gemeinschaft, Helmholtz Gesellschaft, Max-Planck Gesellschaft). Moreover, in April 2014 18 Saxon non-profit industrial research institutions founded the Sächsische Industrieforschungsgemeinschaft e.V. (SIG; Saxon Industrial Research Community), which wants to strengthen the transfer-oriented, market-preparatory research according to the interest of Saxon SMEs.

Based on “Regional Innovation Scoreboard 2016” (elaborated by the European Commission), Saxon cities ‘Dresden’ and ‘Chemnitz’ are ranked as “Innovation Leaders”. Saxon City of ‘Leipzig’ is described as “Strong Innovator”.

The intensity of **patent applications** in Saxony is quite low. While Saxony has 20 per 100,000 inhabitants, Germany has 59 per 100.000 inhabitants (year: 2016). Reasons for this can only be assumed.

Saxon enterprises tend to **cooperate with partners** when developing innovations. Preferred partners are customers and suppliers (51%), enterprises active in the same business field (50%), external consultants (42%), universities (33%) and further partners (36%).

An own investigation shows, that the willingness to cooperate is very strongly pronounced, even on cross-border and transnational level.

Although the region has a nationally outstanding endowment of public financed R&D infrastructure, the **spill over effects** remain on a low level. Universities appear in a limited extent as cooperation partner or source of advice for Saxon enterprises.



Saxon enterprises as well as research institutions still perceive many of the already known **barriers** that prevent technology transfer and/or cooperation between science and economy.

## 1.2. Transfer activities

In Saxony, nearly all universities and some universities for applied science have transfer offices or centres providing various activities and services for supporting the transfer of technologies. Most of non-university research institutions have departments responsible for transfer.

Since the 1990s, in Saxony various transfer-supporting organisations with very different ownerships (public, private) have been come into existence providing a wide range of activities and services.

Furthermore, in Saxony there exists a well-developed infrastructure of 20 innovation centres providing a wide range of transfer supporting activities.

Additionally, different network and cluster organisations promote the cooperation between science and economy (e.g. Silicon Saxony, MFD e. V. [Dresden Material research association] and Biosaxony network).

## 1.3. State of funding structures supporting transfer and cooperation between science and economy

In 2014, Saxon expenditures in **research and development related to GDP** amount to 2.66%, whereof 1.14% are spend by the business sector. Thereby, Saxony lies under the German ratio of 2.88%, whereof 1.95% come from business sector. Both, Saxony as well as Germany fall below the 3.0% agreed upon in the Lisbon-Strategy.

About 60% of all Saxon R&D-active companies participated in **funding programmes**; this support quota is clearly above the German average of 52% (year: 2014).

Within the Saxon **Innovation Strategy**, knowledge and technology transfer between science and economy plays an important role. It is implemented by the means of various tools, all funding the joint development of innovations and technologies of science and economy.

On national level, various **programmes promote the cooperation** between science and economy as well as the commercialisation of research results out of research institutions (e.g. The Central Innovation Programme for SMEs [ZIM], EXIST programme, WIPANO - Transfer of knowledge and technology through patents and standards, Innovationsforum Mittelstand, Innovative regional growth cores).

On EU-level, funding by Horizon 2020, InnovFin - EU funding for innovation, EUREKA, COST must be emphasised. All these programmes and initiatives offer for example the opportunity for transnational collaboration between Saxony and the monitored project region.



## 1.4. Regional SWOT-Analysis in terms of (transnational) cooperation between science and economy: Saxony (Germany)

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ considerable financial promotion of R&amp;D collaborations by the Free State of Saxony and Germany</li> <li>▪ strong, innovative branches: high innovation rates, e.g. microelectronics, mechanical engineering</li> <li>▪ excellent research infrastructure</li> <li>▪ distinctive tendency of R&amp;D implementing enterprises to collaborate</li> <li>▪ high density of transfer supporting structures, e.g. innovation centres as supports for R&amp;D and innovation</li> <li>▪ high level of education of school leavers, employees</li> </ul>	<ul style="list-style-type: none"> <li>▪ dominance of small-scale enterprises with low staff and low R&amp;D and financial capacities,</li> <li>▪ lack of qualified personnel for R&amp;D, esp. in SMEs, what reduces absorptive capacity for scientific knowledge</li> <li>▪ absence of research intensive headquarters of corporations</li> <li>▪ low ratio of R&amp;D expenditures from business sector</li> <li>▪ low intensity of patent application</li> <li>▪ low spill-over effects from science to economy</li> <li>▪ barriers preventing cooperation between science and economy</li> <li>▪ lack of applicability of research results elaborated in scientific institutions</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Saxon innovation strategy emphasises transfer what promotes cooperation between science &amp; economy with concrete measures</li> <li>▪ Available regional, national and EU funding programmes and initiatives supporting transfer and the collaboration between science and economy</li> <li>▪ high level of willingness to cooperate with scientific institutions in SMEs, also on cross-border and transnational level</li> </ul>	<ul style="list-style-type: none"> <li>▪ demographical change: reduction of labour force, caused by various reasons</li> <li>▪ high funding intensity leads to dependency of research institutions/universities to public support</li> <li>▪ concentration on specific fields comes along with risk to neglect other fields</li> <li>▪ decreasing public funding on the part of Free State of Saxony as well as EU after 2020</li> </ul>



## 2. Lower Silesia (Poland): Current status

### 2.1. General preconditions

Lower Silesia is one of the fastest **growing regions** in Poland. Wrocław, the capital of the region, is the 3<sup>rd</sup> biggest **academic centre** in Poland with University of Wrocław, Wrocław University of Science and Technology, Wrocław University of Economics, Wrocław University of Environmental and Life Science, Wrocław Medical University as a most important institutions responsible for research activities.

The most important industries in terms of production value include: mining and extraction, motor vehicle parts and accessories manufacturing, electronic products manufacturing, plastic and metal products manufacturing and foodstuff production.

In 2015, 334,000/ 113,000 people of economically active population were respectively at the level of post-secondary/vocational secondary and general secondary **education**. With regard to basic vocational and lower secondary, primary and lower, there were 305,000/ 75,000 economically active people respectively.

In terms of enterprise structure **small SMEs** sector dominates, particularly microenterprises (96.3%). 65.3% of all persons employed in Lower Silesian companies work in the SMEs sector.

In 2014, the **R&D expenditures in relation to GDP** amounted to 0.74% and has been gradually growing for several years. However, as for the average share of innovative enterprises (from the industrial and services sector) amounting to 14.2% in 2015, Lower Silesia Voivodeship took 6<sup>th</sup> place in the country. The share of innovative enterprises in the industrial and services sectors amounted to 15.3% (4<sup>th</sup> place in the country) and 8.6% (6<sup>th</sup> place), respectively. In 2015, the **cooperation of companies for innovative activity** was at relatively low level, although above the national average. Among industrial enterprises, 6.8% of companies (4<sup>th</sup> position in the country) declared such a cooperation (3.2% in the case of the services sector - 2<sup>nd</sup> position in the country).

In general, innovation rankings (such as the one carried out by the Polish Agency for Enterprise Development), Lower Silesia Voivodeship is at the forefront of Polish regions. The latest report prepared by Bank Pekao SA in 2014 also indicates favourable trends in innovation of micro- and small enterprises in the region. According to the report, micro- and small companies from Lower Silesia implemented more product and process innovations than on the average in Poland. In the last 12 months, 30% of companies from Lower Silesia launched product innovation, while 16% delivered process innovation.

In recent survey of innovation of European regions, Lower Silesia Voivodeship was ranked among the so-called moderate innovators; only five Polish voivodeships qualified for this group.

### 2.2. Transfer activities<sup>1</sup>

An existing institution for identification and description of transferable technologies is for example the Regional Patent Information Centre at Wrocław University of Science and Technology.

Existing methods for dissemination of transferable technologies are for example

- the platform presenting transferable technologies ([www.explore-fp7.eu](http://www.explore-fp7.eu)),
- the portal of the transfer of the knowledge (<http://www.innowacyjnregion.pl>),
- the Inventions' base (<http://biznes.pwr.edu.pl/badania-i-rozwoj/baza-wynalazkow>),

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<sup>1</sup> In this part of the document we focus on the example of Wrocław University of Technology and Science - one of the key institutions in Lower Silesia involved in the process of technology transfer. In the diagnostic part of the Strategy, an analysis of the technology transfer will be extended to involve other institutions operating in this area.



- the Knowledge Repository (<http://repozytorium.pwr.edu.pl>) and
- the Atlas of Open Resources of Science ([e-scienceplus.pl](http://e-scienceplus.pl)).

There also exist methods and formats for establishing contacts between science and economy like seminars for industry (e.g. International Dissemination Seminar related to MODCLIM project), brokerage events (e.g. SmartMatch 2016), accelerations programs (e.g. MIT Enterprise Forum Poland), „Campus Recruitment” fair and a number of trainings, workshops and information days.

Wrocław University of Science and Technology initiated and established the Centre for Science and Economy Cooperation (CSEC) in order to improve cooperation between science and economy. Its activity is focused on tasks supporting and initiating undertakings of all types in cooperation with representatives of business environment.

With respect to the **state of networking and joint advancement of technologies** in Lower Silesia there is still room for improvement. In 2015, 6.8% of total enterprises based in Lower Silesia cooperated in terms of innovation activity in the industry sector (Poland 5.5%). The analogous figure for services was 3.2% (Poland 2.6%). However, one should indicate increasingly growing number of such collaborations, for example Cluster of Innovative Manufacturing Technologies CINNOMATECH or Knowledge and Innovation Community for Information and Communication Technology Cluster. Contract research cooperation as well as research collaboration in Lower Silesia are in the phase of development.

In 2015, the share of **patent applications** in Lower Silesia in a total number of patent applications in Poland amounted to 9.5%. It ranked fifth among all 16 Polish NUTS-2 regions. In the period of 2008-2016, Wrocław University of Science and Technology was a leader among other universities in Poland in terms of number of patents and utility designs IPRs.

### 2.3. State of funding structures supporting these methods and forms of transfer

With respect to **funding structures** for supporting the transfer of technologies between science and economy, European funds are one of the determining factors of the model of technology transfer in Poland. There will be about 360 million € provided for financing of projects under Priority Axis 1 *Entrepreneurship and Innovation* in the Regional Operational Programme 2014 - 2020 for the Lower Silesia region. Additionally, Lower Silesia launched the Programme of financial support for micro, small and medium-sized enterprises. Fund aims to promote the economic development of the region by supporting micro, small and medium-sized enterprises including financing technology transfer initiatives.



## 2.4. Regional SWOT-Analysis in terms of (transnational) cooperation between science and economy: Lower Silesia (Poland)

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ The second position within Poland in terms of participation of industrial production in the Gross Value Added</li> <li>▪ Relative significant share of companies in sectors of medium high and high technologies in the economic structure</li> <li>▪ Strong mining industry (copper and minerals) and innovative IT Health sector</li> <li>▪ Almost 50% of regional enterprises were involved in innovation activities (mostly organisational innovations)</li> <li>▪ Significant science, research and academic potential focused in Wrocław but present also in other cities of the region</li> <li>▪ A state-of-the art equipment in the laboratories of universities in Wrocław</li> <li>▪ High supply of technical solutions and knowledge</li> <li>▪ Large number of young but already experienced scientists</li> <li>▪ Dynamic development of support institutions after joining EU in 2004 (increased understanding of importance of technology transfer, participation of scientific units in international research programmes)</li> <li>▪ Expanded base of network institutions (technology parks, business incubators, innovation centres, guarantee funds, technology transfer centres at research centres)</li> <li>▪ significance of direct technology transfer from university to enterprises</li> <li>▪ openness to new cooperation processes in the economy</li> <li>▪ regional government consistently builds a regional innovation system based on partnerships with business support institutions and science</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low share of R&amp;D expenditures in GDP in relation to better developed areas of EU</li> <li>▪ Moderate innovation level of the Dolnoslaskie region</li> <li>▪ Little interest in innovation by entrepreneurs, constant reliance on ready-made solutions, proven technology</li> <li>▪ Low propensity of enterprises to cooperate with research facilities due to high risk</li> <li>▪ Insufficient awareness of businesses about possibilities of technology transfer</li> <li>▪ Insufficient public support for innovation (law ambiguity, limited financial resources, low awareness of decision makers, risk aversion)</li> <li>▪ Low number of international innovative companies</li> <li>▪ Small number of scientific units having offer for enterprises concerning possibilities of obtaining licenses or easily applicable know-how</li> <li>▪ Low availability of high risk VCs in Poland</li> <li>▪ Poor monitoring and evaluation activities related with innovation supporting activities offered by public institutions</li> <li>▪ Administrative and legal obstacles for financing innovative projects and creating spin-off/ out companies</li> <li>▪ Unfriendly tax system in Poland: lack of tax preferences for implementation of new technologies</li> <li>▪ Low level of experience in using financial instruments used in the field of innovation financing despite their modest availability</li> <li>▪ Lack of central/regional government body responsible only for innovation/technology transfer aspects (unlike to most countries in EU)</li> <li>▪ Innovation centres, which are not a part of R&amp;D institutions, are mainly passive in the process of creating an offer of innovative solutions</li> </ul>



<ul style="list-style-type: none"> <li>▪ Short distances, good communication system between Lower Silesia, Saxony and Usti Region.</li> <li>▪ Good transportation infrastructure Poland - Saxony</li> </ul>	<ul style="list-style-type: none"> <li>▪ Polish affiliates of multinational companies are often provided with innovative products and processes by their headquarters located abroad</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Growing competitiveness of Dolnoslaskie (second biggest GDP in Poland, growing work productivity)</li> <li>▪ Availability of international programmes dedicated to the support of innovations, including EU framework programmes</li> <li>▪ New investment instruments (scale up, bridge alfa)</li> <li>▪ Increasing participation of scientific units and enterprises in international programmes (including the ones financed by the EU)</li> <li>▪ Polish universities obliged by law to cooperate with the social and economic environment and create business incubators, technology transfer centres</li> <li>▪ Growing academic entrepreneurship</li> <li>▪ Transnational exchange of scientists and students</li> </ul>	<ul style="list-style-type: none"> <li>▪ After 2020 significant reduction of pro-development finances in the region</li> <li>▪ Uncertain business environment because of: Poor quality of the management of economic policy at the national level, of Polish law; Uncertainty and variability of government in Poland</li> <li>▪ Poor development of innovation resources (know-how, patents, publications)</li> <li>▪ Risk of saturating the pace of development due to external limitations (staff, office and laboratory space, etc.)</li> <li>▪ No measures to build an innovation culture from the very young age in Poland</li> <li>▪ Dispersion of institutions supporting innovation (lack of concentration of resources, which implies their lower efficiency)</li> <li>▪ Focus on technical infrastructure (buildings, laboratories, research equipment) rather than activities initiating, maintaining transfer</li> <li>▪ Perception of regional potentials only through the prism of cheap labor costs</li> <li>▪ Migratory outflow of qualified staff</li> <li>▪ Weak cooperation between companies</li> <li>▪ Weak transportation infrastructure Poland - the Czech Republic</li> </ul>



## 3. Ústí Region (Czech Republic): Current status

### 3.1. General preconditions

Population (25 - 64 years) with tertiary **education** by region in year 2015 with higher professional and bachelor's level is 22.1 thousand persons (2.3 %) and with master's and doctoral level 41.3 thousand persons (5.1 %).

In Ústí region are three **universities**: J. E. Purkyně University in Ústí nad Labem (UJEP), Faculty of Czech high study technical in Děčín (ČVUT) and Financial-administration University in Most.

Other scientific institutions are UNICRE, Hop institute Žatec, Research institute of balneology, Research institute of brown coal, Dental institute Šluknov, Material Centre in Ústí nad Labem, Scientific and technology park in Ústí nad Labem and the Research institute of anorganic chemistry.

**Innovation productivity** - mainly innovation productivity of industry - of the region is low, so the transfer of innovation is low too. In comparison to whole Czech Republic in Ústí region, the second lowest number of employees works in the field of research and development.

An important improvement for fostering the **cooperation of science and economy** and their joint development of innovations was the foundation of Centre of innovation in Ústí region in 2015. Currently, the absorptive capacity of enterprises for incorporating scientific knowledge is relatively low, caused by structure of industry.

In comparison with EU average, the Czech Republic is relatively strong in the areas of human resources, finance and support as well as private investments. Weak points are in a sphere of generating intellectual property and in the category of openness and attractiveness of research system. In a comparison with other 13 regions, monitored in the duration of 2012 to 2014, Ústí region was third worst according to the study COMPARISON OF INNOVATION POTENTIAL OF THE CZECH REGIONS (Winklerová, 2016).

The state of **transnational cooperation** in terms of knowledge and technology transfer is in relation to Poland very low. There exists a more intensive transnational cooperation with partners from Germany. For example in the former projects INPOK, PROTRANSFER, Vernetzte FuE für KMU in der sächsisch -tschechischen Grenzregion/ Propojení VaV pro MSP v sasko-českém příhraničí (Cross-linked Research and development for SMEs in the Saxon-Czech border region), which already tried to improve framework conditions for transnational collaboration of science and economy.

### 3.2. Transfer activities

Starting from our defined TRANS<sup>3</sup>Net reference model of transnational transfer processes, in the Ústí Region there are to find various transfer activities and services, for example

- the Database of patents (<https://www.upv.cz/cs/sluzby-uradu/databaze-on-line/databaze-patentu-a-uzitnych-vzoru/narodni-database.html>),
- Database of trademarks registered in Office of Industrial Property and World Intellectual Property Organization <https://www.upv.cz/cs/sluzby-uradu/databaze-on-line/databaze-ochrannych-znamek/narodni-database.html>).
- The Innovation Centre in Ústí region has a map of research organisations, where you can forage according to specific criteria over the whole Czech Republic (<http://icuk.cz/inovacni-infrastruktura>).
- In Ústí region, many events like innovation exchanges, cooperation exchanges, round tables, and workshops were provided. For example Entrepreneurial forum in Ústí nad Labem, which is organised since year 2015 every year with the participation of political representatives and representatives of companies.



- Innovation Centre in Ústí region organises also many events like lectures, workshops and offers services for development of entrepreneurship, innovations and research application. In Ústí region there is the cluster “Klaster Bioplyn”, which started working in the year 2010.

Selected data on **patent activity** of private enterprises in the Ústí region in 2015 show that 13 patent applications were submitted and eight patents were granted. At the end of 2015, 44 patents were valid.

### 3.3. State of funding structures

One of the most important sources for **financing the R&D and the cooperation between science and economy** on national level (e.g. usable also on the level of Ústí Region) is the Technology Agency of the Czech Republic.

This Agency is managing a various scheme of programmes on with various objectives, e.g. this year (2017) it opened two calls for the support of cooperation between Czech Republic and Germany: programme Delta (Industry 4.0) and EUREKA in specific fields of IT, energy etc. Both programmes also aim to support cooperation of enterprises and the research sphere.

Innovation vouchers financed by national as well as private sources aims to support micro-enterprises and SMEs to innovate and increase their competitiveness.

EU financing represents, thanks to its volume, an extremely important source for financing transfer processes between science and economy. The most important programmes in the European Union programme period 2014-2020 are:

- Operational Programme Enterprise and Innovations for Competitiveness,
- Operational programme Research, Development and Education,

Both programmes serve primarily for supporting cooperation between firms and research institutions or universities. The output of projects covered by these programmes are new products or solutions applicable on the market. Main applicants are firms and universities.



### 3.4. Regional SWOT-Analysis in terms of (transnational) cooperation between science and economy: Ústí Region (Czech Republic)

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Location near German and Poland borders</li> <li>▪ Successful universities</li> <li>▪ Experience with transnational cooperation (individual)</li> <li>▪ Developed branches of industry respected in abroad</li> <li>▪ Mutual trust of cooperating institutions</li> <li>▪ Interest in innovation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Language barrier between Czech Republic, Poland and Germany</li> <li>▪ General lack of experience with transnational cooperation and presentation of its results</li> <li>▪ Lack of finance for technology transfer and joint cross-border projects</li> <li>▪ Exclusive Orientation on automotive, approved methods</li> <li>▪ Individual fails in innovation transfer leads often to lower trust and willingness to cooperate and transfer</li> <li>▪ Low educational level of inhabitants in practice fields like engineering</li> <li>▪ Declining attractiveness for direct foreign investment due to growing labour costs, problems with lack of labour force, lack of suitable areas for development of new plants and halls</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Deepening of cooperation between science and research, also in new fields of study (autonomous mobility, energetics and smart concepts in various fields)</li> <li>▪ More intense orientation on development of new technologies, also in new branches (autonomous mobility, energetics and smart concepts in various fields)</li> <li>▪ National and EU funding for transfer and innovation projects between science and economy</li> <li>▪ Establishment of further supporting platforms for R&amp;D cooperation and technology as well as innovation transfer on national as well as international level (e.g. existing Research-educational platform of the Ústí Region fostering cooperation between universities and employers in the Ústí Region)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Preference of other priorities</li> <li>▪ Further strong orientation on simple production without R&amp;D or new innovative branches and research fields</li> <li>▪ Loss of know-how</li> <li>▪ Ongoing persistence of current administrative barriers that may slow down development of cooperation in R&amp;D and knowledge, innovation and technology transfer</li> <li>▪ Loss of young educated inhabitants</li> <li>▪ Lack of common projects leads to lower common base of trust and acquaintance of possible partners and accordingly to a potential slowdown of further cooperation</li> <li>▪ Low innovativeness of firms</li> </ul>



## 4. SWOT-analysis of transnational collaboration

Following analysis tries to summarise the main common topics of the regional analyses with regard to a transnational collaboration between science and economy aiming to jointly develop innovations and to transfer knowledge and technologies.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ excellent and strong research landscape, which provides a lot of research results</li> <li>▪ economic potential of enterprises in all three regions</li> <li>▪ common core branches in mining, health and medicine, raw materials, automotive</li> <li>▪ large part of regional enterprises aware of the importance of innovation and technology transfer</li> <li>▪ infrastructure for supporting transfer and cooperation between science and economy available (e.g. technology or innovation parks and centres); specialised on the needs of regions where they are localised</li> <li>▪ transfer of technology and cooperation between science and economy is already taking place</li> <li>▪ openness for cooperation in the development of innovation between science and economy exists</li> <li>▪ well-educated workforce esp. in science is available</li> </ul>	<ul style="list-style-type: none"> <li>▪ low propensity and risk aversion esp. of SMEs to cooperate with research institutions → perceived barriers on both sides</li> <li>▪ lack of large and international business headquarters</li> <li>▪ insufficient public support for transfer and innovation esp. in Poland and Czech Republic</li> <li>▪ low availability of venture capital</li> <li>▪ bureaucracy barriers when taking advantage of public financial support for innovation as well as low level of experience in using public support, esp. in SMEs</li> <li>▪ language and cultural barriers</li> <li>▪ Weak transportation system between Poland and Czech Republic</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ international funding programmes, esp. EU for cross-border and transnational cooperation</li> <li>▪ increasing participation of different actors in EU funding programmes also brings actors of border triangle in touch</li> <li>▪ regional strategies emphasising technology transfer and innovation</li> <li>▪ promotion of knowledge commercialisation out of scientific institutions by various programmes and initiatives</li> <li>▪ already existing funding programmes supporting the transnational collaboration between transfer and innovation actors (e.g. EUREKA)</li> <li>▪ spatial proximity of regional actors in the border triangle facilitates face-to-face encounters between potential partners (but currently especially the transport infrastructure between Poland and Czech Republic must be extended)</li> </ul>	<ul style="list-style-type: none"> <li>▪ R&amp;D predominantly carried out in public research institutions</li> <li>▪ low level of funding R&amp;D from business sector</li> <li>▪ Focus on technical equipment, not on building linkages and networks between relevant innovation actors</li> <li>▪ Brain drain due to (e)migration</li> <li>▪ Lack of financial support for R&amp;D and technology transfer between science and economy after the expiry of EU programmes</li> </ul>



## 5. Outlook

The SWOT-analysis of transnational collaboration defines the common starting points for intended transnational network of transfer promoters in the border triangle. On the one hand, it gives hints for action fields that will be dealt with by the network of transfer promoters in order to improve conditions for collaboration. In this connection, it is also the basis for elaborating recommendations for policymakers. On the other hand, it also opens up the possibility to learn from each other and to share good practice examples and experiences on transnational level.

### Further information

- TRANS<sup>3</sup>Net reference model of transnational transfer processes (<http://141.30.75.25/trans3net/wp-content/uploads/2016/10/Report-on-national-understandings-of-transfer.pdf>)



## TRANS<sup>3</sup>Net -

# Increased effectiveness of transnational knowledge and technology transfer through a transnational cooperation network of transfer promoters

### > Consortium

#### Germany (Saxony)

- Technische Universität Dresden, CIMTT Centre for Production Engineering and Organisation (LP)
- Bautzen Innovation Centre GmbH
- Wirtschaftsförderung Erzgebirge GmbH

#### Poland (Lower Silesian Region)

- Lower Silesian Voivodeship
- Wrocław Regional Development Agency
- Wrocław University of Science and Technology, Faculty of Mechanical Engineering in cooperation with CAMT Fraunhofer Project Center

#### Czechia (Ústí Region)

- Economic and Social Council of the Ústí Region
- District Chamber of Commerce Děčín
- J. E. Purkyně University in Ústí nad Labem, Faculty of Science



### > Contact

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