R&D in the Czech Republic
Basic Facts about the Czech Republic

- **Area**: 78,864 km²
- **Population**: 10,266,000
- **Official language**: Czech
- **Political system**: Parliamentary republic
- **Head of State**: President
- **Currency**: 1 Czech crown (CZK)
- **Capital**: Prague
- **Administrative division**: 14 regions
- **Member of organizations**: EU, NATO, IMF, WB, WTO, OECD
Basic Facts about the Czech Republic

Flag of the Czech Republic

Czech State Emblem

Flag of the President

Small State Emblem

State Seal
## Credit Ratings

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>STANDARD &amp; POOR´S</th>
<th>MOODY´S</th>
<th>FITCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>AA-</td>
<td>A1</td>
<td>A+</td>
</tr>
<tr>
<td>Slovakia</td>
<td>A</td>
<td>A2</td>
<td>A+</td>
</tr>
<tr>
<td>Poland</td>
<td>A-</td>
<td>A2</td>
<td>A-</td>
</tr>
<tr>
<td>Russia</td>
<td>BBB</td>
<td>Baa1</td>
<td>BBB</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>BBB</td>
<td>Baa2</td>
<td>BBB-</td>
</tr>
<tr>
<td>Hungary</td>
<td>BB+</td>
<td>Ba1</td>
<td>BBB-</td>
</tr>
<tr>
<td>Romania</td>
<td>BB+</td>
<td>Baa3</td>
<td>BBB-</td>
</tr>
</tbody>
</table>

Source: Czech National Bank, July 2012
R&D Basic Indicators I.

Source: Czech Statistical Office, 2013
R&D Basic Indicators II.

Source: Research, Development and Innovation Council, 2013
R&D Expenditure in 2011 (GERD)

R&D expenditure by **source of funding**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Share of GERD</th>
<th>Share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprises</td>
<td>46.9%</td>
<td>0.87%</td>
</tr>
<tr>
<td>Public sector</td>
<td>37.0%</td>
<td>0.69%</td>
</tr>
<tr>
<td>Foreign sources</td>
<td>15.2%</td>
<td>0.28%</td>
</tr>
<tr>
<td>Other sources</td>
<td>0.8%</td>
<td>0.02%</td>
</tr>
</tbody>
</table>

R&D expenditure by **sectors of performance**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Share of GERD</th>
<th>Share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprises</td>
<td>60.3%</td>
<td>1.12%</td>
</tr>
<tr>
<td>Higher education sector</td>
<td>21.6%</td>
<td>0.40%</td>
</tr>
<tr>
<td>Public sector</td>
<td>17.5%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Non-profit organizations</td>
<td>0.5%</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

*Source: Czech Statistical Office, 2013*
R&D overview

- State expenditure 1,3 bln. USD per year
- 0,56 % of scientific papers per year (world).
- Total 52 300 FTE in R&D
- Researchers 29 200 FTE in R&D
- 60% of R&D&I capacities located in Prague
- Prague + Brno = 80%
Total Expenditure on R&D - Comparison

Percentage of GDP

Source: Eurostat, 2013
The Research, Development and Innovation Council (RDI) is an advisory body to the Government of the Czech Republic according to the R&D Act (Code number 130/2002 Coll.).
Technology Agency of the Czech Republic

Prepares and implements programmes of applied research, experimental development and innovation

Programmes:

--- ALFA Programme
  - supports projects of applied research and experimental development especially in the field of advanced technologies, materials and systems, energy resources and the protection and creation of the environment and the sustainable development of transport.

--- BETA Programme
  - programme of public procurement in research, experimental development and innovation for the needs of public administration bodies

Source: Technology Agency, 2013
Technology Agency of the Czech Republic

Programmes:

-- GAMA Programme

- Supports verification of the applied research & experimental development results in terms of their practical application
- Supports preparation for subsequent commercialization of R&D outputs

-- DELTA Programme

- Supports collaboration in applied research and experimental development projects through joint projects of enterprises and research organizations supported by the Technology Agency of the Czech Republic and major foreign technological and innovation agencies (having at the time of publication of the public tender established collaboration with TA of the CR).

Source: Technology Agency, 2013
Programmes:

-- OMEGA Programme

- supports applied social science research and experimental development.
- Main objective: to strengthen research activities in the field of applied social sciences

-- Competence Centres

- supports creation and operation of R&D and innovation centres in progressive fields with a strong application potential and perspective to boost growth of the competitiveness of the Czech Republic.

Source: Technology Agency, 2013
Grant Agency of the Czech Republic

-- Established in 1993 as an independent state institution supporting basic research

-- Provides financial support for scientific projects both for established scientific teams and young emerging researchers with a high potential of achieving recognized results

-- Supports bilateral cooperation and projects of basic research in the framework of European international programmes

-- Contributes to the creation of attractive conditions for professional career of young emerging researchers

Source: Grant Agency of the Czech Republic, 2013
R&D Financial Support Tools

Czech Government supports R&D activities through the use of various tools:

-- **Deduction of all R&D costs** – companies can deduct R&D costs from their tax base and at the same time include them in eligible costs

-- **Grants** from the National Research Programme

-- **Investment incentives** to support companies setting up or expanding technology centres and centres for industrial R&D

-- **Grants from EU** structural funds supporting the creation or extension of the R&D capacities and supporting innovative projects

*Source: CzechInvest, 2013*
Large Research Infrastructures

-- Budget more than € 50 mil./ USD 66 mil.

Sustainable operation of current project nuclear plants, develop. of gen. III+IV reactors

SUSEN
Sustainable Energy

ELI
Extreme Light Infrastructure

Most intense lasers world-wide

Functional genomics, cellular and structural biology, virology, protein and tissue engineering, diagnostic

BIOCEV
Biotech. and Biomedicine Center

IT4INNOVATION
Large computer facility combining IT research and applications

ICRC
International Clinic Research Center

Prevention, detection and cure of cardiovascular and neurological diseases

CEITEC
Central European Instutute of Technology

Nano- and Microtech, advanced materials, biotech, genomics, proteomics, brain research

Source: CzechInvest, 2013
TOP 10 Universities

The evaluation - TOP 10

- Brno University of Technology-Faculty of Mechanical Engineering
- Czech Technical University in Prague-Faculty of Civil Engineering
- Institute of Organic Chemistry and Biochemistry of the ASCR
- Charles University-1st Faculty of Medicine
- Czech Technical University in Prague-Faculty of Electrical Engineering
- Palacký University, Olomouc-Faculty of Science
- Masaryk University-Faculty of Science
- Charles University-Faculty of Science
- Institute of Physics of the ASCR
- Charles University-Faculty of Mathematics and Physics
EU programmes 2014 - 2020

HORIZON 2020

-- Financial instrument for implementing the Innovation Union – initiative aimed at securing Europe’s global competitiveness

-- Strengthening of EU’s position in science, in innovative industrial sectors and in addressing major social and environmental challenges

-- Total budget of €80 billion

-- Strong focus on developing European industrial capabilities in:
  -- micro- and nano-electronics, photonics, nanotechnologies, advanced materials and manufacturing, biotechnology

EU programmes 2014 - 2020

Programme for the Competitiveness of enterprises and SMEs (COSME)

- This programme will ensure continuity of initiative already undertaken under the Entrepreneurship and Innovation Programme (EIP) as a part of the CIP programme (2007 – 2013)

Objectives:
- facilitating access to finance for SMEs
- creating favourable conditions for business creation and growth
- helping small businesses operate outside their home countries
- encouraging an entrepreneurial culture in Europe
- increasing the competitiveness of EU companies
- Planned budget of €2.3 billion

Source: Competitiveness and Innovation Framework Programme (CIP), 2013
Present initiatives with China

I. Oriental Institute of the Czech Academy of Sciences, Department of East Asia

-- Contacts exist on an individual basis
-- The sinologists travel to China regularly, especially at linguistic and historical institute Chinese Academy of Sciences.
-- Researchers at the Chinese Academy of Sciences visited Oriental institute several times.
Present initiatives with China

Current projects:

-- Theory of traditional Chinese medicine, Taoist qigong and Taoism (Vladimír Ando)
-- History of Medieval China (Mr. Jakub Hrubý)
-- Silk Roads and China, the history of religion in China (Mr. Vladimír Liščák)
-- Modern Chinese phonetics, prosody in particular, lexicography of Chinese (Mrs. Hana Třísková)
-- Chinese Lu Xun Library (holds a special collection of Chinese books (about 67,000 volumes).
-- Nový Orient (New Orient) is a quarterly (until 2003 a monthly) **Czech language journal** founded in 1945 (www.orient.cas.cz)
Present initiatives with China

II. Charles University, Institute of Far East

- serves as a bridge between European, American, and East Asian Sinology, closely co-operating with the CCKF Interuniversity Centre for Sinology at Harvard University. Regularly invites also scholars from PRC.

Existing teaching and research programs

- Chinese language and linguistics (both modern and classical), classical Chinese literature, modern literature, Chinese art and archaeology, intellectual history of China, Non-Han nationalities of China, their languages, history and culture and their relations with the Han Chinese.

- International Sinological Center (CCK–ISC) at Charles University (Taiwan funded Chiang Ching-kuo)
Present initiatives with China

- **Cooperation** with universities: Beijing Daxue, Renmin Daxue, Beijing Waiyu xueyuan, Suzhou Daxue, Hong Kong, Macao

- 7 annual scholarships for language **fellowship** in the PRC (students of Sinology) - intergovernmental agreement

- **Project:** MULTI is an Action 2 Erasmus Mundus project funded by the European Commission to promote scientific exchanges between Europe and the Industrialized countries of South-East Asia (Brunei, Hong-Kong, Macau, Singapore, Taiwan).
  
  - Deconstruction and construction of national traditions and science in China (Mrs. Olga Lomová, Mr. Jiří Hudeček)
  
  - Cultures as Metaphors of the World (Mr. Miroslav Petříček, Mrs. Olga Lomová) (comparative studies project)

http://udlv.ff.cuni.cz
Present initiatives with China

III. Palacký University Olomouc, Department of Asian Studies

Cooperation with Universities: Beijing Foreign Studies University, Chunan Normal University Changsha

The key areas research are:

– Particularly cultural anthropology
– Chinese Grammatology with a focus on Chinese characters
– Phonology and lexicography in modern Chinese
– Confucius Academy

• Project: Innovation of Chinese branch of philology at the University of Palacky in Olomouc with a focus on graduates in practice (Chinese for practice)

http://www.ff.upol.cz/en
Present initiatives with China

IV. Masaryk University Brno, Department for the Study of Cultures in China

Cooperation with universities: Shanghai University of Finance and Economics, Chongqing University, Hong Kong Institute of Education

The key areas research are:

– The split between the approaches of sinology and Chinese studies fields
– They typically solely focus either on traditional culture from the philological perspective or on contemporary society from various perspectives neglecting the past.

• Project: Study of Religions Programme Innovation at Masaryk University with Special Regard to Culture of China and Japan (Táňa Dluhošová)
Present initiatives with China

- **Annual** Czech-Slovak Conference of sinology
- *Bilateral Agreement with Graduate Institute of Teaching as a Second Language, National Normal University, Taiwan* ???
- Students and teachers **exchange**
- They currently **host a graduate** student conducting teaching experience:
  - Mandarin Chinese – Conversation
  - Writing in Chinese Language

www.phil.muni.cz/wksc
Present initiatives with China

V. The Institute of International Relations

China's Political and Economical Expansion into Europe (East, Central, South Europe, and Balkan States): The Strategic Finding for Czech Republic and its Upgrading of China Policy (Rudolf Fürst)

Web: www.iir.cz

Other research institutions:

- Institutes of Academy of Science, Czech Technical University in Prague, National Gallery in Prague, Brno University of technology (they publish their results in Chinese journals)
Future co-operation with China

-- **Beijing Genomics Institute (BGI) Shenzhen** - R&D in the field of molecular genetics and proteomics

-- **Universities** wish to continue ongoing activities and develop further cooperation

-- ???
Important scientist

Jaroslav **Heyrovský** 1890 - 1967
- Physical chemist, Nobel Prize for chemistry (1959)
- Father of polarography, inventor of the polarograph (1924)
- Founder of the Czechoslovak Polarographic Institute

Otto **Wichterle** 1913 - 1998
- Chemist, inventor of gel contact lenses and of the first Czechoslovak synthetic fibre “silon”
- Founder of the Institute of Macromolecular Chemistry in Prague

Antonín **Holý** 1936 – 2012
- Chemist, inventor of successful treatment for AIDS and type B viral hepatitis
- Dr. Holý holds over 60 patents and has co-authored 600 scientific papers
Useful Links

R&D&I Council
www.vyzkum.cz

VISIT
Czech Republic

The Official Czech Republic Website
www.czech.cz

Czech Trade

Trade Promotion Agency
www.czechtrade.cz

Investment and Business Support
www.czechinvest.cz

Ministry of Foreign Affairs
of the Czech Republic

Ministry of Foreign Affairs
www.mzv.cz
Embassy of the Czech Republic to People’s Republic of China

www.mzv.cz/beijing

Email: commerce_beijing@mzv.cz