# CHALLENGES FOR INNOVATION-BASED COMPETITIVENESS OF THE CZECH REPUBLIC

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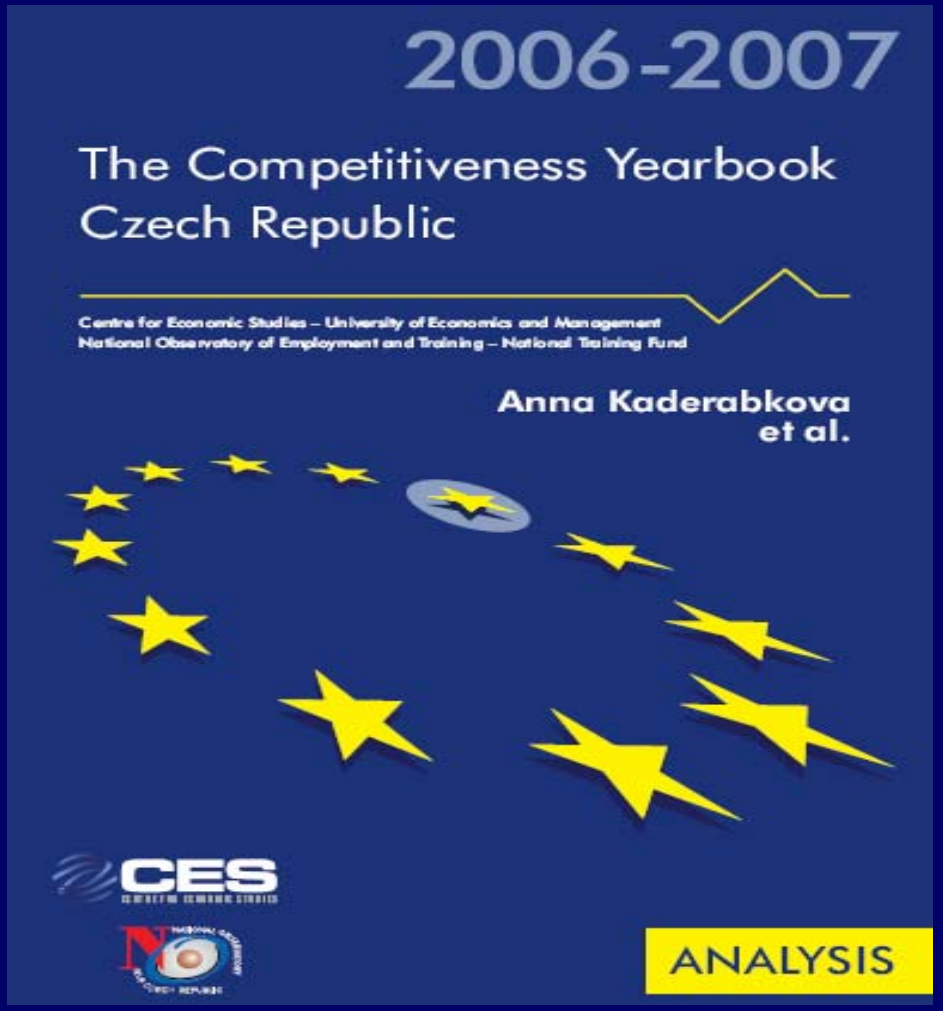
# Competitiveness yearbook 2006 - 2007

- Growth and stability
- Globalization
- Competitiveness
- Institutional quality
- Innovation performance
- Human resources quality
- Industries and regions



# Competitiveness and globalization

- speed-up of growth dynamics, improvement of static and dynamic efficiency;
- increasing world market share and inclusion in supranational value chains (FDI)
- convergence of economic level exhausting cost advantage;
- development of internal innovation capacity is necessary (innovation based competitiveness);
- new competitiveness resources: unique, continuously innovated products and processes with high value added, produced and applied by high-skill workers in flexible environment;

# Competitiveness and globalization

- competitiveness of the EU: further development of Lisbon strategy, prospects of ERA, differences in innovation performance within EU, specifics in position of new EU members;
- emerging markets: fast-growing innovation performance and supply of quality-intensive capacities with low costs, penetration into segments with higher technology intensity;
- competition for quality-intensive factors: foreign investment into research; production and brain mobility;

# Research and innovation for competitiveness

- technology catch-up: absorption capacity thanks to system changes, external openness, technology transfer, development of education and research capacities;
- FDI sector: increasing share of industries with higher technology intensity, but low knowledge intensity (R&D, skills), low share of science-based industries with high value added
- low productivity of NIS: missing human and technology resources and superior quality infrastructure, or low efficiency of their exploitation;

# Research and innovation for competitiveness

- inefficient support system of innovation performance, low level of innovation demand of business sector, weak link of key innovation agents
- rise and development of superior innovation capacities and innovation environment not effectively supported – neither systematically, nor specifically
- increasing resources for education and research have only weak innovation impact, technology level of production and innovation performance growing but slowly

# Research and innovation for competitiveness

- medium technology intensive industries not sufficient for a more remarkable shift of competitiveness in the new EU members
- efficient innovation system necessary with dynamic core of superior technologies wrapped in a cluster of knowledge intensive, closely related activities (innovation clusters);
- key role of links between horizontal and vertical support measures (pro-innovation environment and the stress on excellence with strong spillover effects);

# Research and innovation for competitiveness

- necessary systemic approach of new generation of innovation policy linking key agents and innovation system activities;
- discussion on targeted support, shift to vertical policies (technology platforms), new features of innovations (services), their protection and measurability (open innovation)
- linkage of agents and resources of innovation system and their interactions, barriers between institutional sectors
- the role of broader environment for innovation performance – regulation quality, tax policies, conditions for doing business, labour market flexibility, stability and predictability of environment, risk attitudes

# Research and innovation for competitiveness

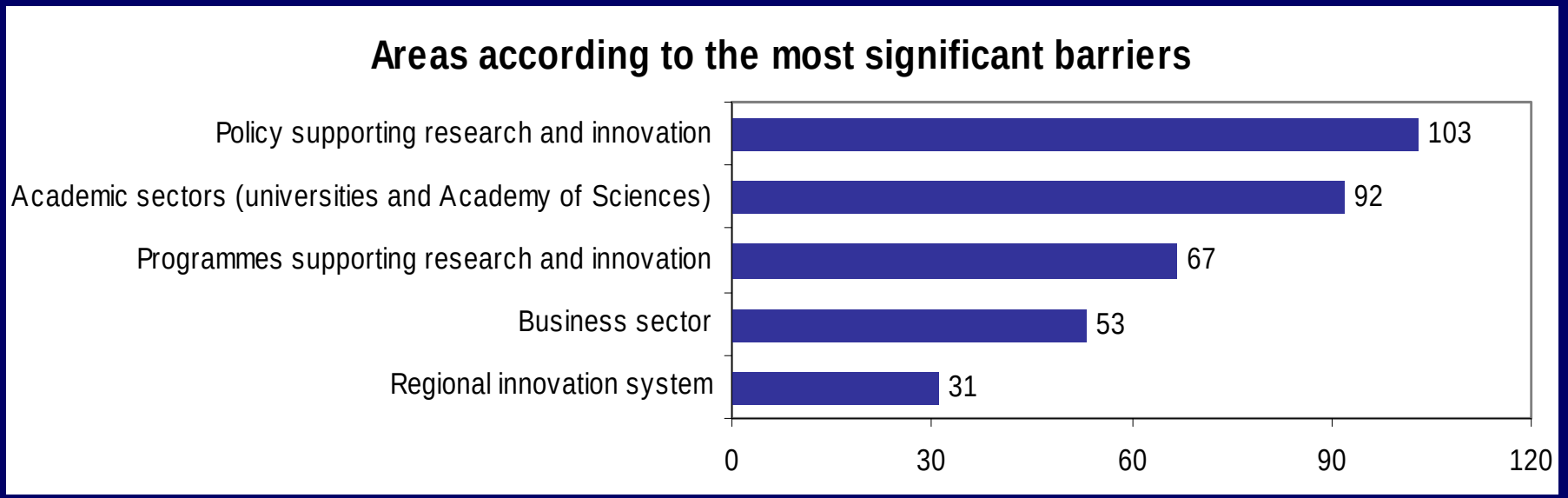
- lagging behind in innovation outputs and their application as compared to inputs, necessary stress on qualitatitive indicators and structure and effects of expended resources, efficient use of public support in infrastructure development
- human resources availability is improving, problem is the low share of middle aged researchers in academic sectors
- weak role of universities as innovation agents, surviving of dual system, inefficiency of management (institutional rigidity), isolation from external (innovative) impulses, insufficient differentiation according to performance

# Inquiry for the Innovation Forum Strategies and Barriers to Innovation-Based Competitiveness of the Czech Republic

- Policy supporting research and innovation
- Programmes supporting research an innovation
- Academic sectors (universities, AS)
- Business sector
- Regional innovation system

# I. The most significant barriers in development of the NIS

- Insufficient motivation/support of commercialization of the results of research at universities and the Academy of Sciences
- Insufficient public spending on support of R&I
- Poor cooperation between the academic sectors and companies
- Framework for support of R&I for competitiveness is missing
- Non-systemic support of R&I
- Low spending of companies on innovation activities



**A. Policy supporting research and innovation**

Low spending on support of research and innovations

Conception framework for support of R&I for competitiveness is missing

Support of research and innovations is non-systemic

**B. Programmes supporting research and innovation**

Too many programmes/activities lead to dilution of resources and capacities

Unsuitable criteria and procedures in project selection

Programmes consider specifics of SMEs

**C. Academic sectors (universities and Academy of Sciences)**

Insufficient motivation or support of commercialization of results

Framework for support of research and innovations for competitiveness is missing

Lack of researchers/their unfavorable structure (age, qualifications);

**D. Business sector**

Low spending of companies on innovation activities

Shortage of innovation-oriented companies capable of participating programmes

Inadequate orientation of business research support;

**E. Regional innovation system**

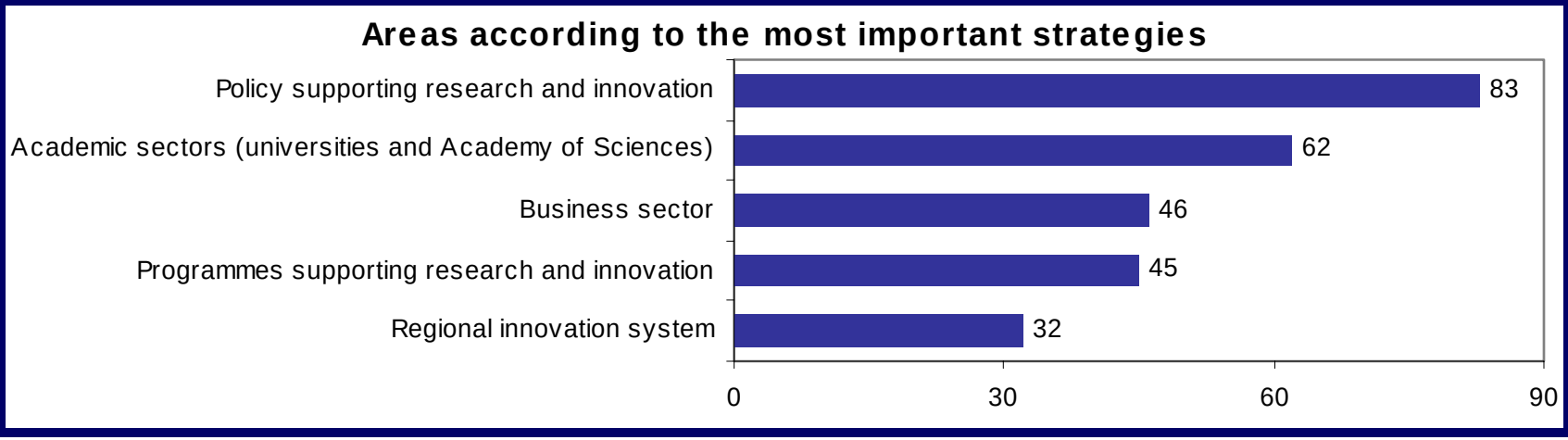
Poor links between knowledge institutions and regional problems

Regional dimension of the national policy for support of R&I is missing

Regional development strategies missing the innovation dimension

# II. The most important strategies for development of the NIS

- Investment in research an innovations is an important social and political priority
- Efficient support of commercialization of the results of research in academic sectors
- Studying science and engineering fields is attractive for high-quality applicants
- Differentiation of university (faculty) financing according to the quality of their research
- Cooperation between businesses and the academic sectors



**A. Policy supporting research and innovation**

Investment in R&I is an important social and political priority

Implementation of long-term thematic priorities of R&I according to a national strategy

Corresponding coordination of management and financing of R&I

**B. Programmes supporting research and innovation**

Cooperation between NIS sectors required in support programmes

Co-financing from public resources is a condition for public support programmes

Consideration of the specific needs of innovative participants in support programmes

**C. Academic sectors (universities and Academy of Sciences)**

Efficient support of commercialisation of the results of research in academic sectors

Studying science and engineering fields is attractive for high-quality applicants

Differentiation of university (faculty) financing according to the quality of their research

**D. Business sector**

Support of cooperation between companies and the academic sectors

Support of start-up innovative companies

Fiscal incentives for R&I implemented according to the needs of companies

**E. Regional innovation system**

Development of innovation infrastructure in the regions (TP, incubators)

Reduction of regional differences in the level of R&I capacities

Motivation of regional agents to participate in the development of RIS

# III. SWOT Analysis

**Strenghts**

- Creative and innovative abilities of citizens
- Favourable educational structure
- Tradition of industrial research
- Partial examples of significant research and innovation achievements;
- Increasing inputs into research and infrastructure quality;

**Weaknesses**

- Short-horizon, non-systematic, non-coordinated support of R&I
- Low level of activity and administration of supported programmes
- Insufficient connection of academic sectors with practice
- Low innovation demand
- Low managerial skills in RaI and exploitation of R&I results

# III. SWOT Analysis

**Opportunities**

- Efficient use of resources from EU structural funds
- Participation in international cooperation
- Development of progressive technologies
- Use of knowledge transfer of foreign companies/experiences
- Increase in participation of private resources in R&I

**Threats**

- Inefficient/unsuitable use of structural funds
- Brain drain (external, internal)
- Lack of specific high-skills/qualifications
- Increasing competition of the less developed countries with growing R&I capacities
- Non-detection of progressive fields and technologies