SITUATION OF R&D IN SE EUROPE
Case Study: Bosnia and Hercegovina

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Harnessing Science for Society
Venice, March 3, 2005
SITUATION OF R&D in Countries of former YUGOSLAVIA (Western Balkan)
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PRESENT STATUS

• SLOVENIA - EU Member State
• CROATIA - Candidate

• Serbia, Monte Negro, Macedonia, Bosnia and Hercegovina
Number of publication/Population x10.000

- United Kingdom 8,9
- USA 6,6
- Italy 4,0
- Between 2 and 4: Greece, Hungary, Slovakia, Slovenia
- Between 1 and 2: Portugal, Croatia, Bulgaria
- Between 0,5 and 1: Serbia and Monte Negro, Turkey, Romania
- Less than 0,3: Macedonia, Albania, Bosnia and Herzegovina

Source: Scientific Profile Activities in CEEC, ROSTE (2002)
Country by Country
Research in Slovenia

May 2004
SLOVENIA

Basic data

**Area:** 20 273 km²

**Population:** 2 mio.

**Constitution:** Parliamentary democracy

**Population density:** 98.0 per km²

**GDP (2002):** 23.493.000 Mio€

**GDP pc:** 12.759 EURO
The key tasks of the MESS in the field of research are:

• Increase international competitiveness of the Slovene economy
• Increase the quality of life
• Safeguard the natural environment
• Promotion and increase of the turnover of researchers and qualified research professionals from the academic sphere to user organisations and institutions, and transfer of knowledge and technology
GERD as % of GDP (1996-2002)
International co-operation, Number of multilateral projects (1991-2004)

<table>
<thead>
<tr>
<th>Programme</th>
<th>Tempus</th>
<th>COST</th>
<th>PECO</th>
<th>Copernicus</th>
<th>FP4</th>
<th>FP5</th>
<th>EUREKA</th>
<th>NATO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-2004</td>
<td>83</td>
<td>222</td>
<td>67</td>
<td>84</td>
<td>54</td>
<td>364</td>
<td>75</td>
<td>5</td>
</tr>
</tbody>
</table>

- Tempus
- COST
- PECO
- Copernicus
- FP4
- FP5
- EUREKA
- NATO
Number of funded projects and number of coordinators in the FP5 (1999 – 2003) with Slovenian participants

<table>
<thead>
<tr>
<th>Area</th>
<th>No of projects</th>
<th>No of SI coordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>QoL</td>
<td>46</td>
<td>2</td>
</tr>
<tr>
<td>IST</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>Growth</td>
<td>80</td>
<td>6</td>
</tr>
<tr>
<td>Energy/Environment</td>
<td>79</td>
<td>8</td>
</tr>
<tr>
<td>EURATOM</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>INCO</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Inn.-SMEs</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>IHRP</td>
<td>48</td>
<td>14</td>
</tr>
</tbody>
</table>

No of projects: light blue bars
No of SI coordinators: dark blue bars
FP 6 preliminary results: proposals 2003

- 1 Life
- 2 IST
- Joint 2&3
- 3 NMP
- 4 A&S
- 5 Food
- 6 Dev&eco.
- 7 Citiz.
- SME
- MC

- no.part. SI
- no.proj. SI

FP 6 preliminary results: proposals 2003
- S & T Indicators: an overview of Croatia
Figure 1.1. R&D intensity (GERD as %GDP) in Candidate countries - comparing Croatia, (1)

Source data: Eurostat
Notes: 1) EU-15: estimate, LT and CRO:2000; All other countries 1999.
1.2 Private investment

- Indicator: Research and development expenditure financed by business sector (BERD as a % of GERD)

Figure 1.3. BERD as % of GERD in Candidate countries - comparing Croatia, 1999

Figure 1.4. BERD as % of GERD in EU, Japan and US, 2000 or latest available year (1)
3. SCIENTIFIC AND TECHNOLOGICAL PRODUCTIVITY

- Indicator: Number of scientific publications per capita
- Indicator: Number of patents per capita

**Figure 6. Number of Publications (2) per million population - comparing Croatia, 1999**

- 755 EU-15
- Slovenia: 577
- Croatia: 370
- Hungary: 365
- Czech Rep.: 352
- Estonia: 330
- Slovak Rep.: 293
- Poland: 221
- Bulgaria: 185
- Cyprus: 170
- Latvia: 143
- Lithuania: 127
- Romania: 70
- Turkey: 69

Source data: Eurostat; (1) CBS of Croatia
Notes: (2) Publications from 11 fields

**Figures 7. Number of patents per 10000 population, average 1996 - 1998**

- Japan: 7,7
- OECD: 5,7
- USA: 4,7
- EU: 2,6
- Hungary: 0,7
- Czech Rep.: 0,6
- Poland: 0,6
- Slovak Rep.: 0,4
- Croatia: 0,1

Source data: OECD MSTI, (1) Croatian Patent office
R&D in Serbia
R&D in Serbia

• Republic of Serbia used to have (as a part of former Yugoslavia) well developed R&D system
• Pronounced strengths in
  – basic research (physical sciences)
  – applied research (biotechnology, mechanical engineering)
• After a period of isolation and decay during the 1990’s the system is slowly recovering.
• Major problem in Serbia and in the region is the lack of research infrastructure (laboratory equipment and information infrastructure)
• Problems identified in the Action Plan of EU Ministerial Conference (Thessaloniki, June 2003)
National research policy

• There is no formally adopted national research policy. Government has made a commitment to increase the funding of R&D according to Lisbon targets.

• The level of financing in 2004 was 0.40% of GDP following the increasing trend (2000 – 0.10%, 2001 – 0.16%, 2002 – 0.26%, 2003 – 0.32%) The investment from non government sources remains low (< 2 M€ in 2004).
Structure of R&D system

- The R&D activities in the Republic of Serbia are performed in:
  - 5 universities (Belgrade, Novi Sad, Nis, Kragujevac and Pristina)
  - network of research institutes
  - R&D units in industry.
- An important scientific organization is the Serbian Academy of Sciences and Arts.
- The number of funded researchers in 2004 was approximately 8600 (6500 in universities and 2100 in research institutes).
Principal problems

Research infrastructure

• Lack of modern laboratory equipment
  Suggested action:
  Opening of the CARDS funds to finance R&D equipment

• Inadequate IT infrastructure (“digital divide”)
  Suggested action:
  Setting up of the south-east European fiber-optic backbone network for the regional research, academic and education communities
Principal problems

Human potential

• Visa issue - major obstacle to mobility of researchers.

Suggested action:
Easing the visa requirements for researchers from the WB region.
Principal problems IV

Joint RTD activities

• Low participation in FP6 thematic priorities

Possible solution:
Increase the FP6 participation of the WB countries by

– issuing *corrective calls* in thematic priorities

– diverting the unused funds from thematic priorities to another INCO call.
MONTE NEGRO & MACEDONIA

- Budgetary means for research financing are insufficient and they amount to app.:

  **0.1 % of GDP**

80% of that amount is spent on salaries, which leaves 20% for the following purposes:
- Investments
- Human resource development
- Equipping of laboratories
- International cooperation
- Information system building
BOSNIA and HERCEGOVINA

• **Major Economic Indicators for B&H** (Talking about the Economic Indicators of B&H it has to be stated that all the indicators are estimated.)

• Bosnia and Herzegovina has at the present about 3,8 million inhabitants.
• GDP nominal: 5,1 billion US $ (2002)
• GDP per capita: 1,260 US $ (2002)
• Per Capita Growth: 3,9 % (2002)
• The large problem in B&H is unemployment which amounts 40% at the moment.
Federation of BiH

Number of the Canton

1 - Una Sana (Bosniak)
2 - Posavina (Croat)
3 - Tuzla Podrinje (Bosniak)
4 - Zenica Doboj (Bosniak)
5 - Bosna Podrinje (Bosniak)
6 - Central Bosna (Mixed)
7 - Herzegovina Neretva (Mixed)
8 - West Herzegovina (Croat)
9 - Sarajevo (Bosniak)
10 - Herceg Bosna (Croat)
Bosnia and Hercegovina
3 levels of governance

A. STATE (Minister of Civil Affairs)
B. 2 ENTITIES:
   • Republic of Srpska (Minister for Science)
   • Federation Bosnia and Hercegovina (Minister for Science)
C. 10 Cantons (only in Federation BiH)
   10 Ministers for Science
   All together 13 Ministers for Science
FUNDS FOR RESEARCH

- Federation 1,9 mio KM (equals 0,95 mio €)
- Canton Sarajevo 1,5 mio KM (0,75 mio €)
The expenses of research and development in Bosnia and Herzegovina represent:

0.05% of GDP

BOSNIAN TSUNAMI
PROBLEMS

• Much of the research and development infrastructure and equipment has been destroyed during the war. Only little did manage to survive the devastation but is now outdated.

• The financing system for research and development has not been established yet.

• In the past 10 years more than 60% of the skilled scientists, researchers and university personnel have left the country.
The Universities are indeed colleges - education without science and research which caused the following:

• The quality of the university diploma is questionable
• The graduated students are of low quality and could not be expected to lead the country towards economic recovery
• The most talented students are not interested in a university and research career in B&H and instead their interest is in leaving the country
CONSEQUENCES

• 2. A very high percentage of research and development units have ceased to exist or have been transformed and re-orientated towards routine services. The consequences of this are:
  • Brain-drain - No new researchers
  • The lack of research efforts
  • The low possibilities for international co-operation
  • (Bosnia and Herzegovina is most isolated of all the countries in transition)
BE OPTIMISTIC

SOME RESEARCHERS HAVE SURVIVED
EU INITIATIVE
Integrating and Strengthening the European Research Area in Southeast Europe

Southeast European ERA-NET
Mrs. Slavi Krusic,
Ministry of Higher Education, Science and Technology
SLOVENIA
SEE-ERA.Net makes an essential contribution to the European Research Area

The objectives of the SEE-ERA.NET:

- integration of Southeast Europe into the European Research Area;
- adding value to existing bilateral S&T agreements;
- improving interregional research cooperation;
- contributing to the 'EU-Balkan countries Action Plan in Science & Technology'.

www.see-era.net
15 institutions from 12 countries are members in the SEE-ERA.NET partnership

- Ministries and financing agencies from:
  - Austria
  - Bosnia and Herzegovina
  - Bulgaria
  - Croatia
  - France
  - Germany
  - Greece
  - Hungary
  - Macedonia
  - Montenegro
  - Slovenia
  - Romania
SEE-ERA.NETs starting point: existing bilateral agreements
SEE-ERA.NET project details

- Funded by the European Commission
  - Total costs: 3,219 Mio. Euro
  - EC contribution: 2,627 Mio. Euro
    *(More then total budget for research in BiH per year)*

- Coordinated by the Centre for Social Innovation, Austria
- 15 partners from 12 countries

- Project Start: September 2004
- Project End: August 2009
UNESCO-ROSTE ACTIVITIES
(in cooperation with:.....)

• Venice, March 2001:
  RECONSTRUCTION OF SCIENTIFIC COOPERATION IN SOUTH EAST EUROPE
• Paris, October 2001:
  MINISTERIAL ROUND TABLE ON REBUILDING SCIENTIFIC COOPERATION IN SOUTH EAST EUROPE
• 2002 – Scientific Profile – Activities in CEEC
• 2002-2004 – Various Actions in the Region (including restoration of Mostar bridge)
• 2005 – Expert Mission (Papon, Pejovnik) in BiH etc.etc.
INSTEAD OF CONCLUSIONS

QUESTION:

DO WE (SCIENCE COMMUNITY) HAVE TOOLS TO REACT IN CASE OF EMERGENCY?

ARE WE AS EFFICIENT AS CULTURE?