



➤ Restructuring of Research and Development
Institutes in Europe and Central Asia

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The World Bank

23 November 2009
Sofia, Bulgaria



The financial turmoil requires effective investment in R&D

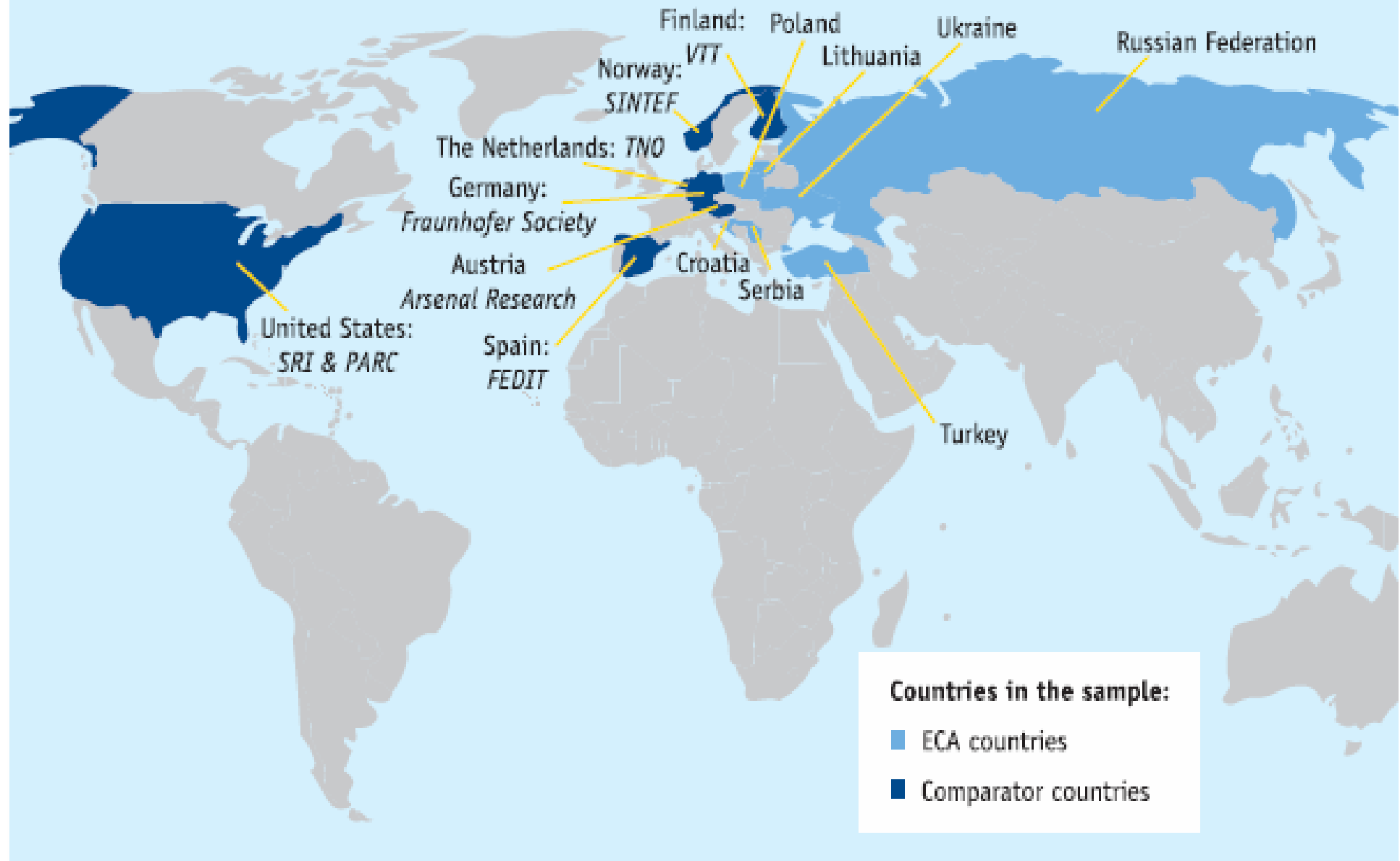
R&D Inputs

R&D Outputs

**Industrial
Performance**

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Countries included in the sample



Comparator RDIs

RDI Name	Country	Ownership	Number of Staff
VTT Technical Research Center	Finland	Public	2,740
Sintef	Norway	Public	1,901
SRI	United States	Private	1,500
Fraunhofer Society	Germany	Public	239 per institutes on average
Arsenal Research	Austria	Private	178
FEDIT Technology Centers	Spain	Public-private	95 per Technology Center on average
TNO	Netherlands	Public	4,003
PARC	United States	Private	230

Source: World Bank survey of RDIs; RDI annual reports.



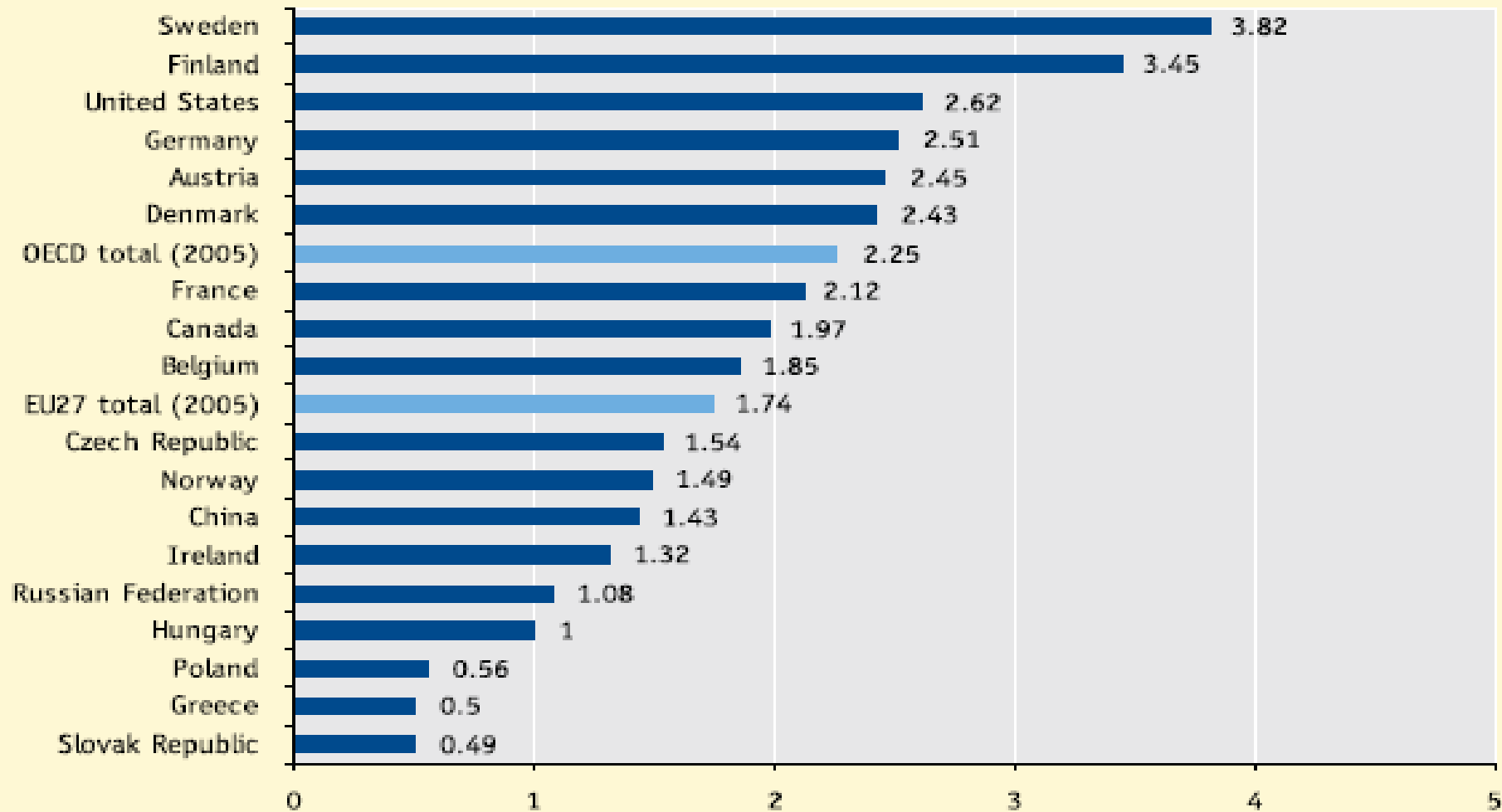
The Lithuanian Academy of Sciences



The Croatian Academy of Sciences

R&D Institutes in Europe and Central Asia - past

Gross domestic R&D expenditure as % of GDP (2006 or latest)

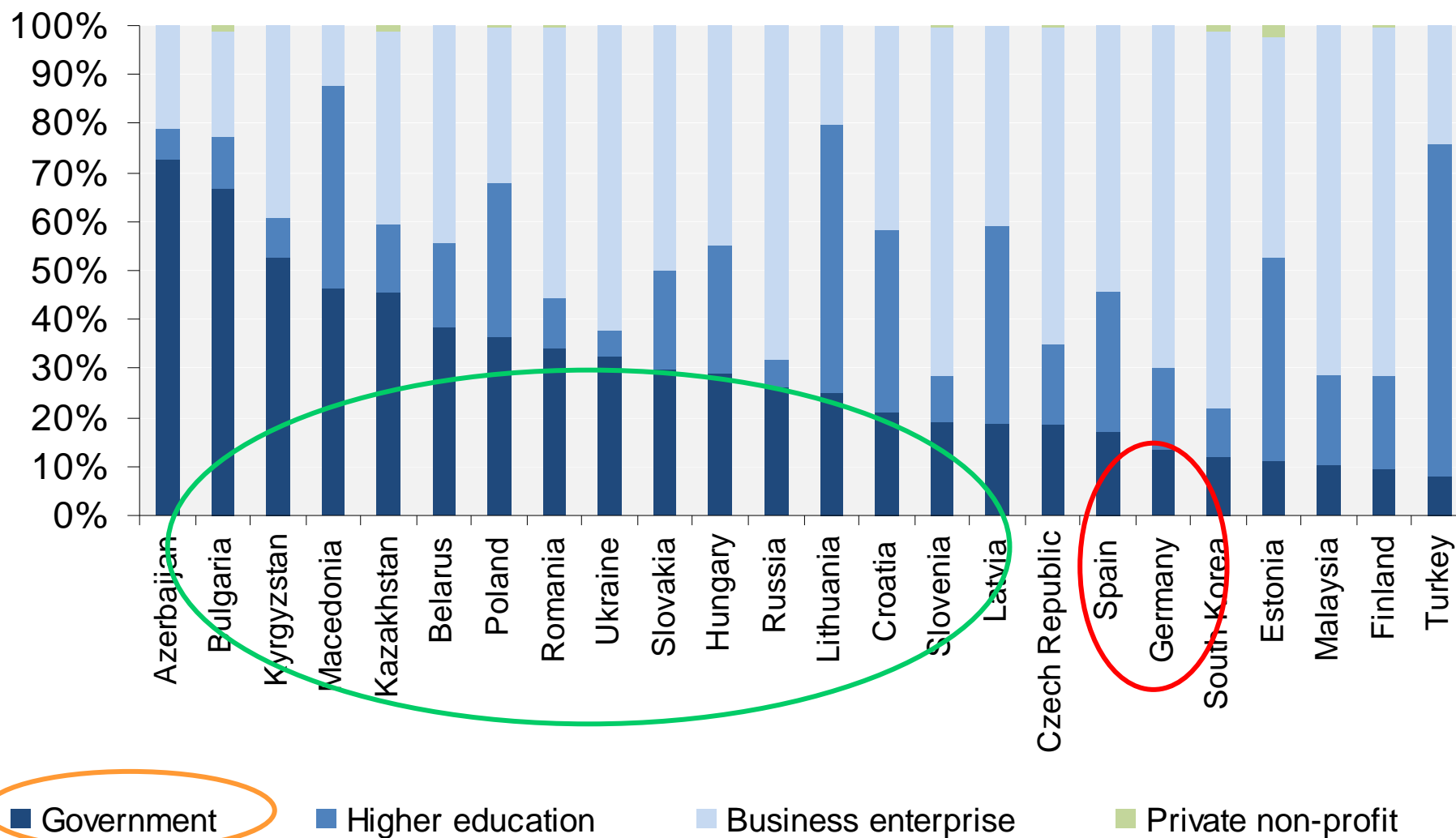


Source: OECD Science, Technology and Industry: Scoreboard 2007

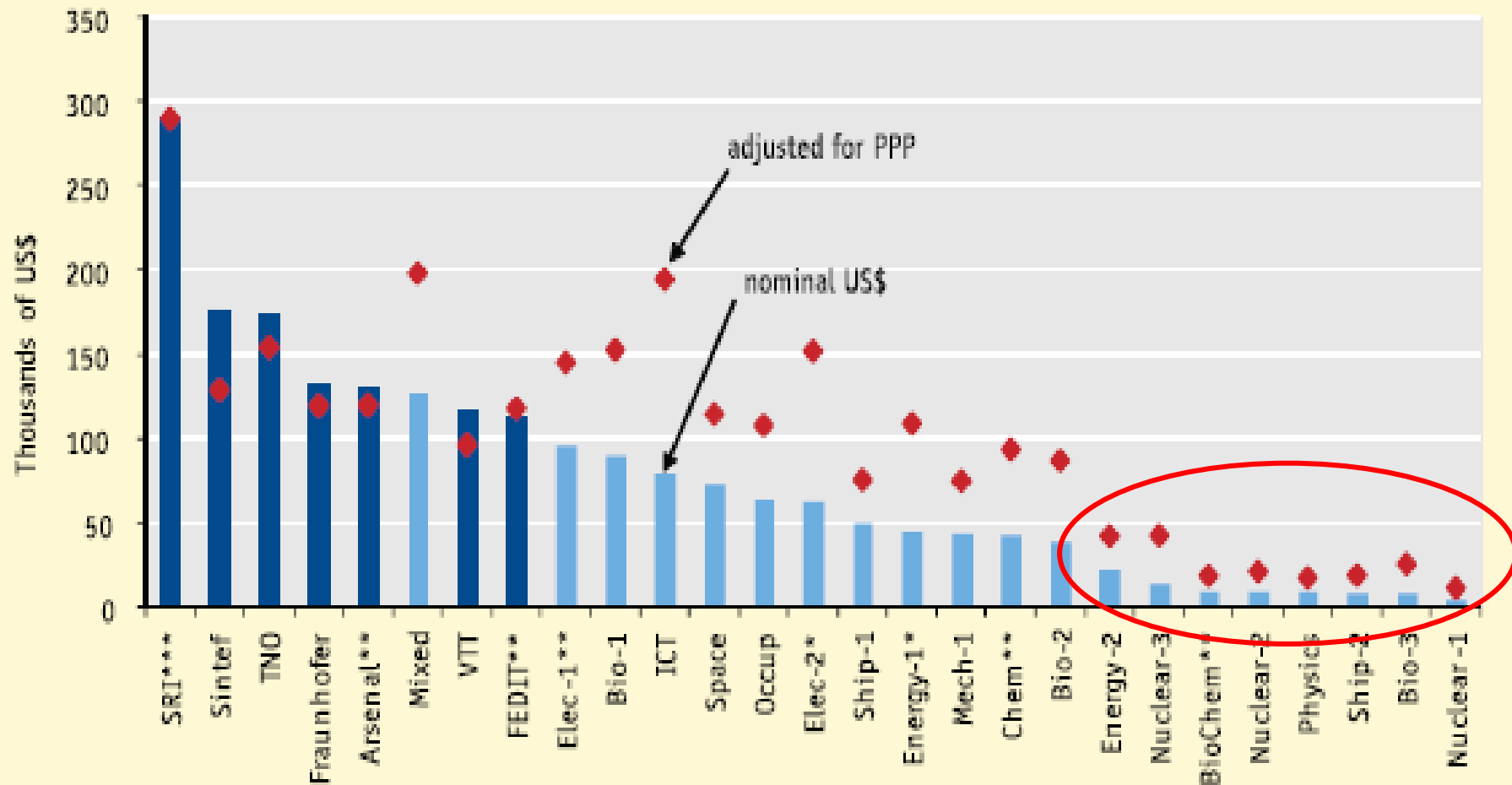
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In ECA much of the R&D is performed by the Government Sector

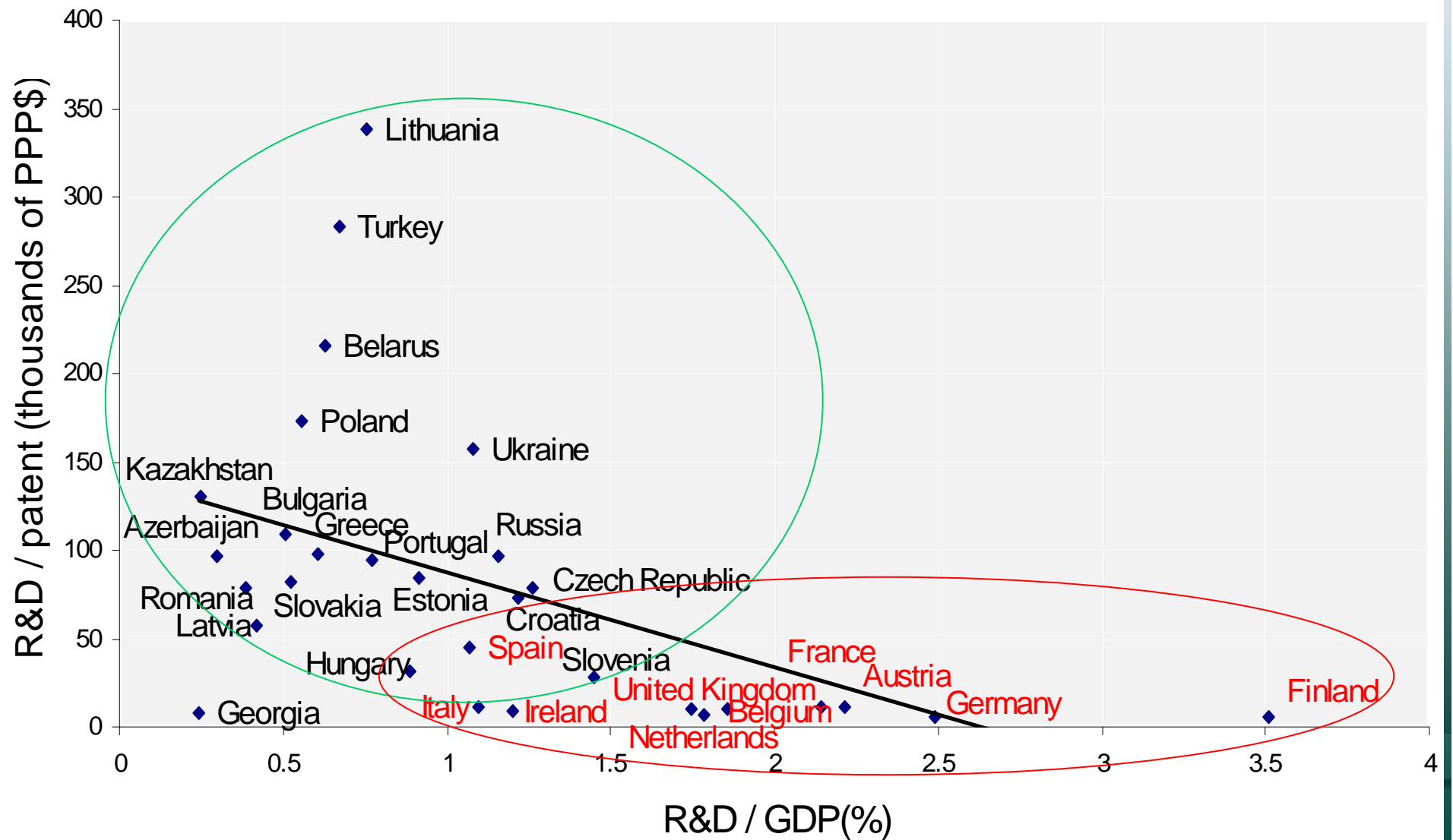
Sector of performance of R&D (UNESCO, 2004-2005)



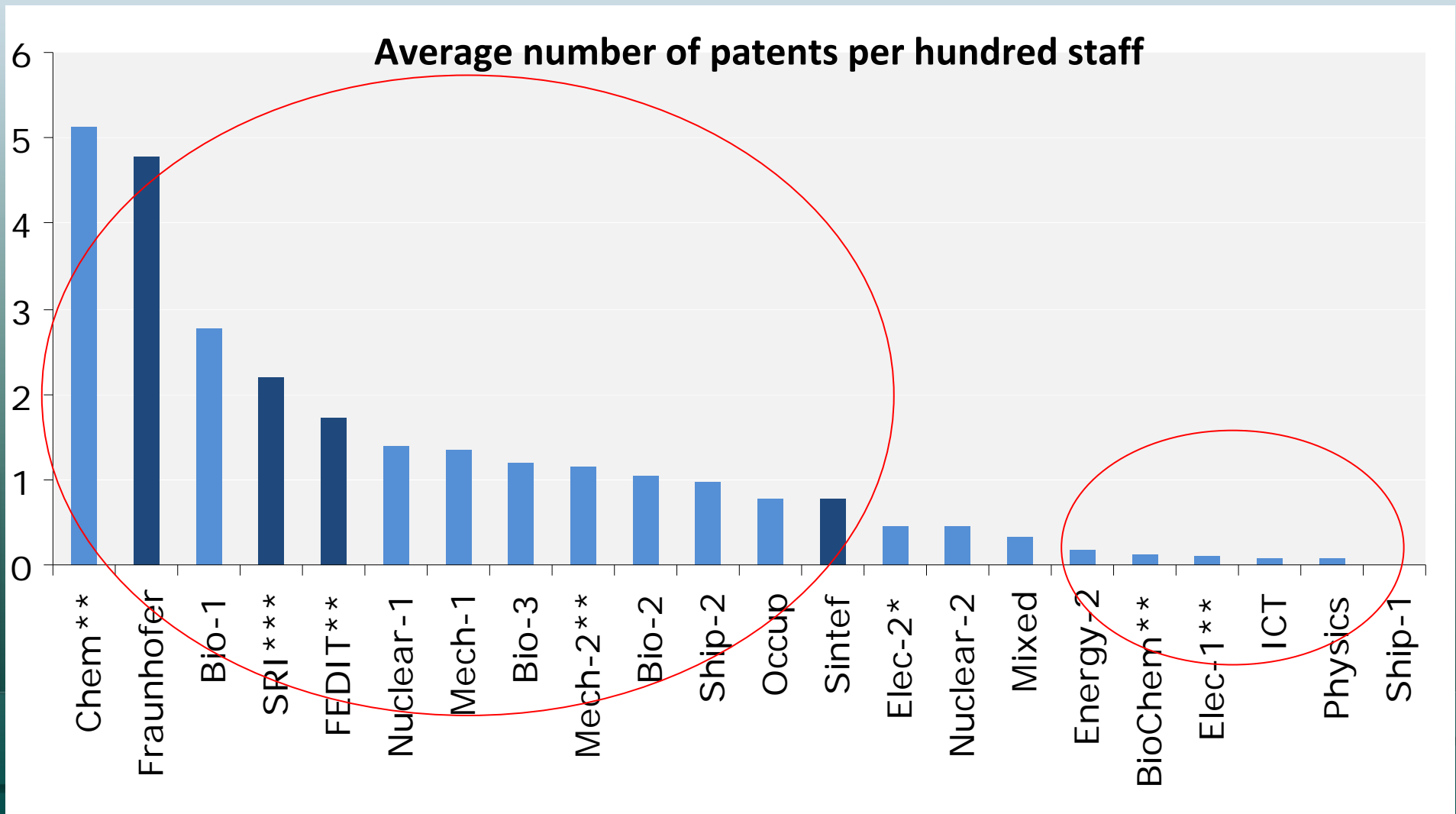
RDI funding per staff



Efficiency of R&D spending in ECA is lower

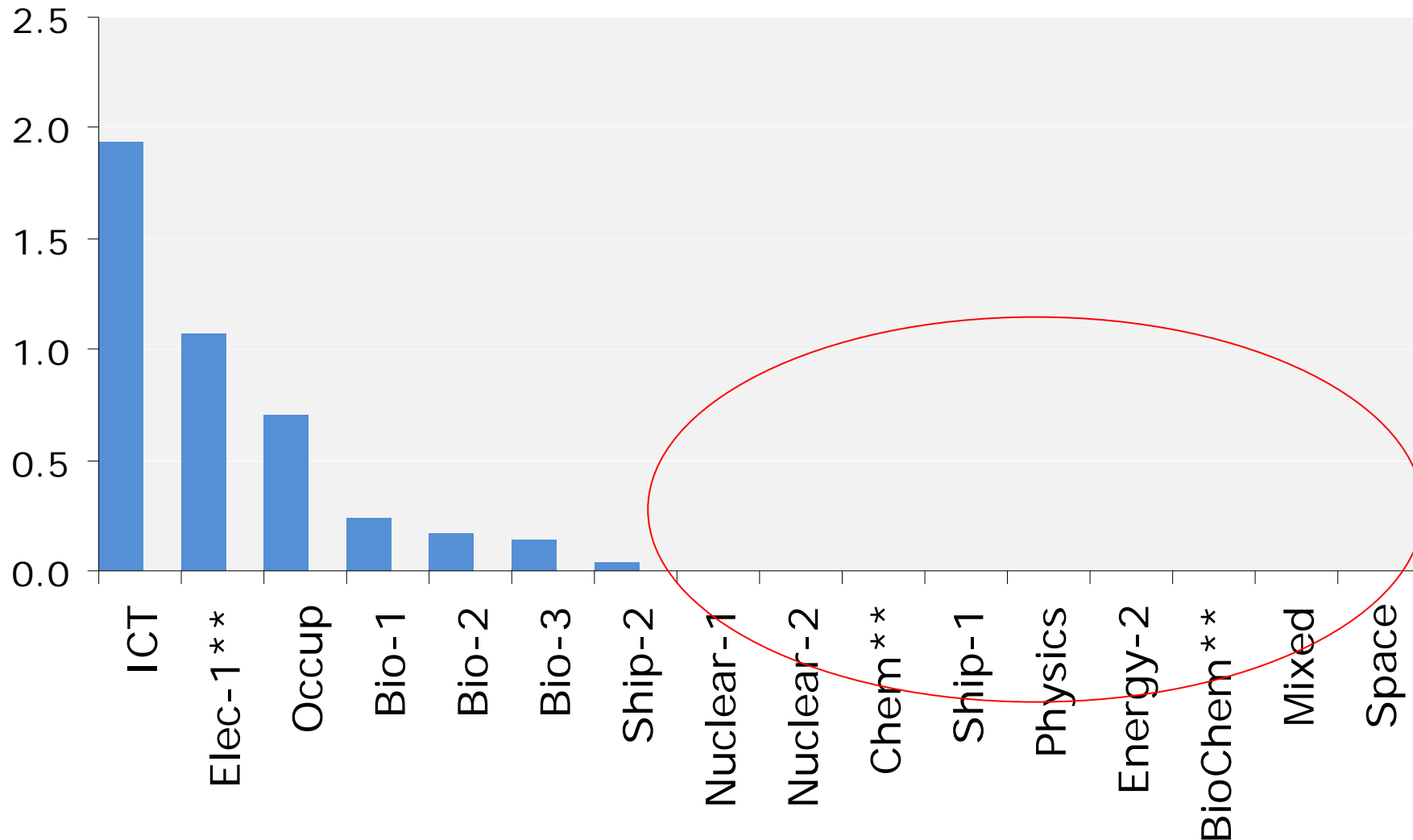


Although some ECA RDIs are engaged in patenting

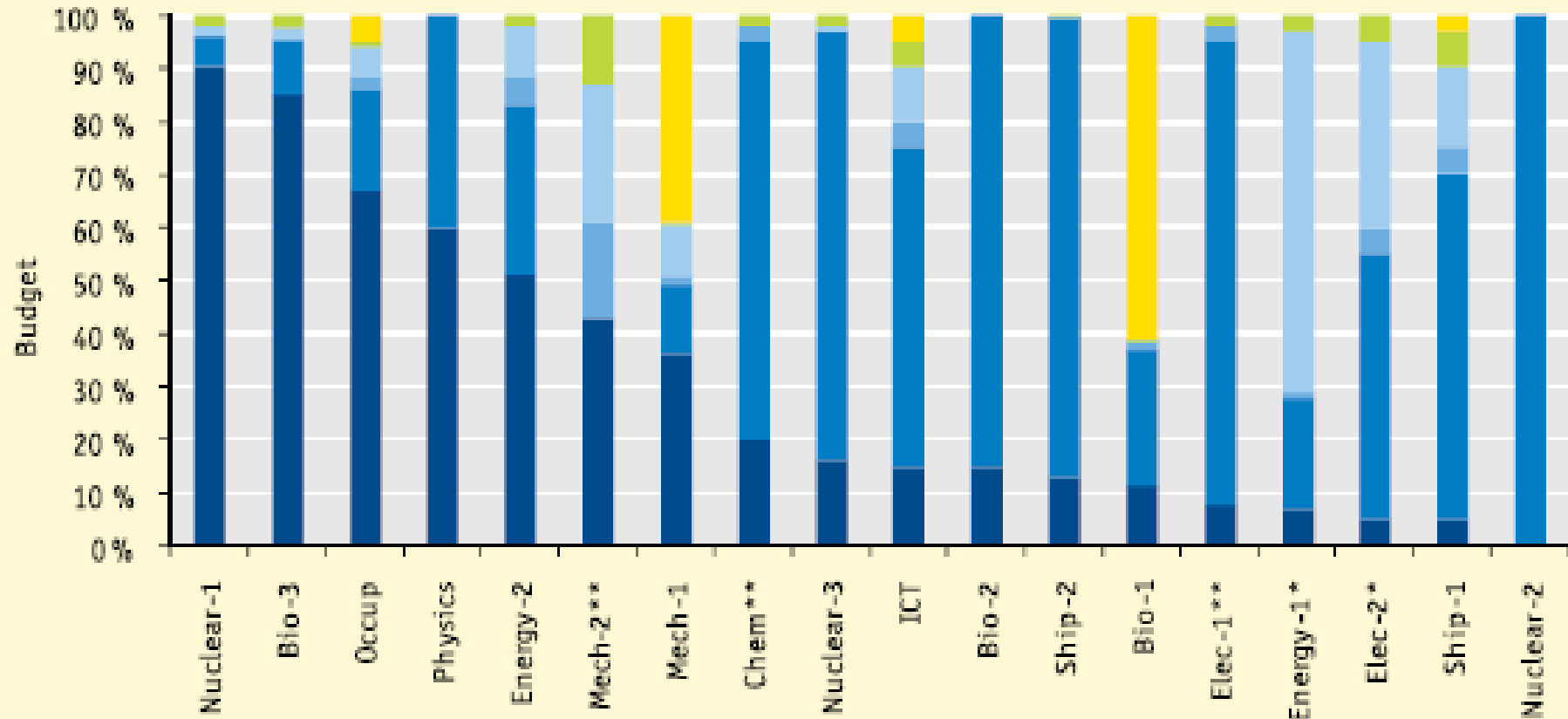


...few are able to license their IP

Average number of licences per hundred staff

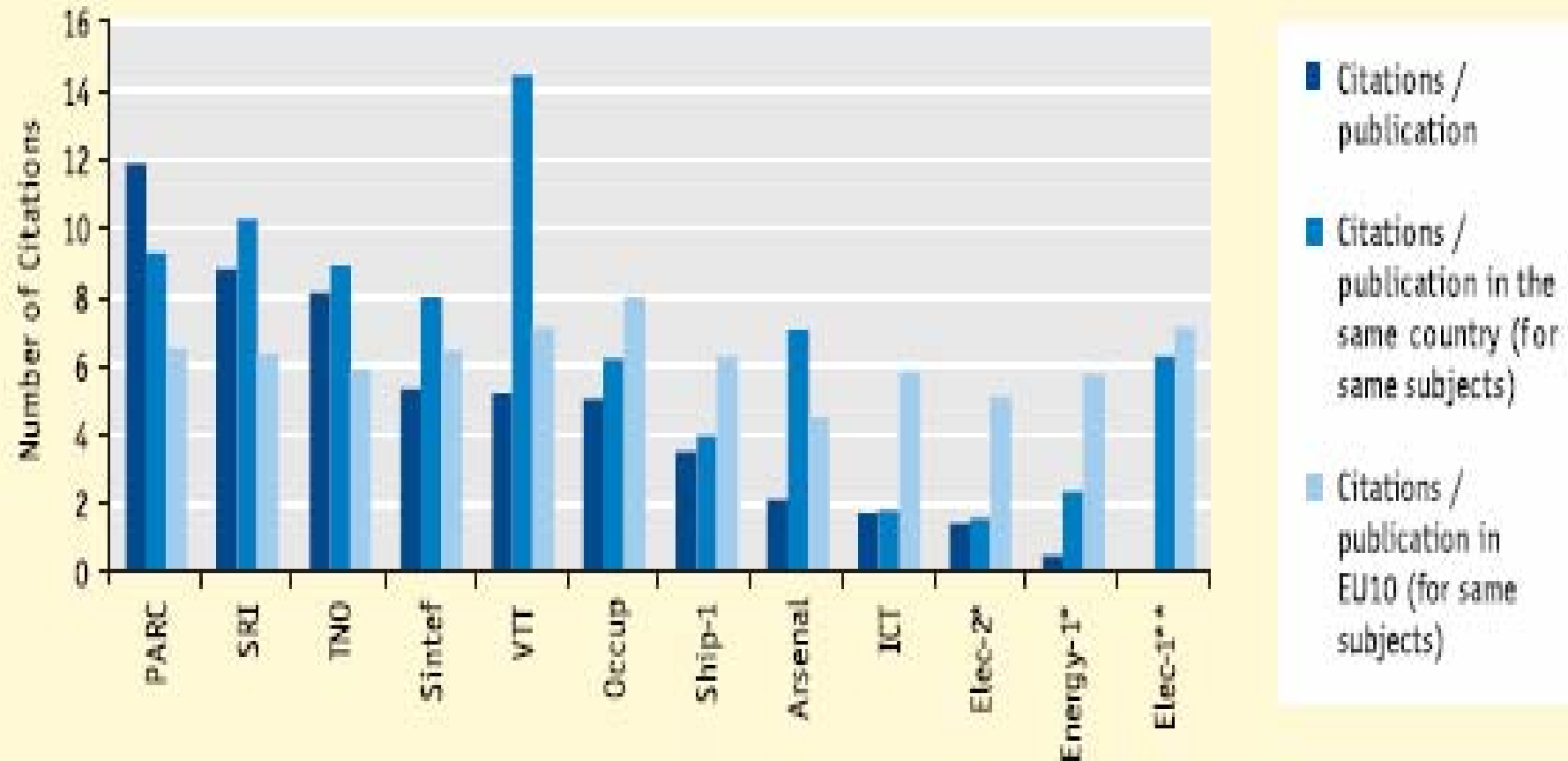


Budget allocation per activity



- Unspecified (%)
- Training of RDI staff
- Consulting and technical assistance (%)
- Marketing and business development, to find new clients (%)
- Applied R&D to solve a specific problem at the request of a customer (%)
- Strategic self-initiated R&D with no immediate commercial application (%)

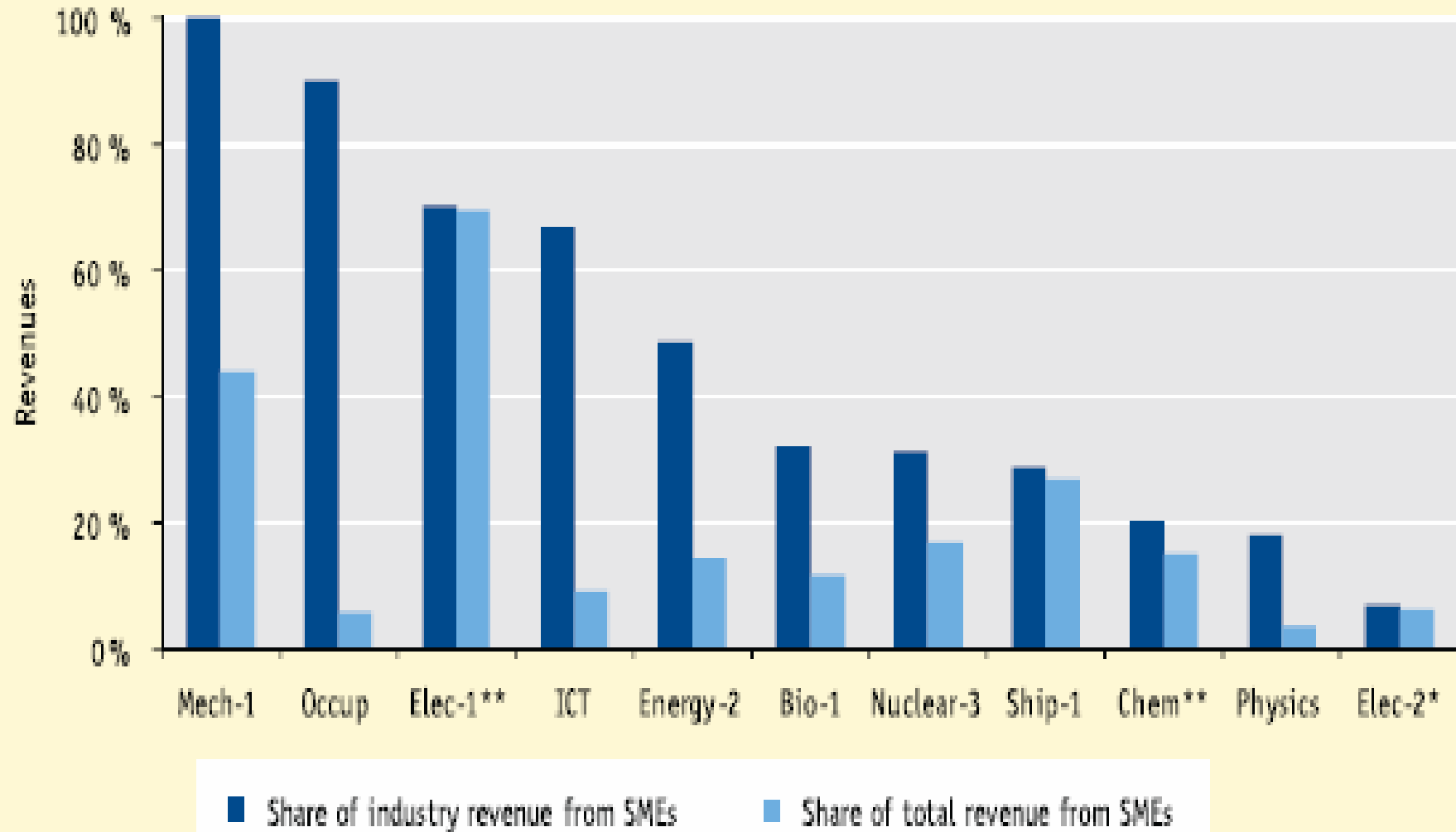
Citations of international RDI publications



Note: based on 2003-2007 averages.

Source: Author's calculations made with Science Citation Index data.

Share of revenues from SMEs



Some challenges in ECA RDIs

- External factors:
 - Mechanisms to finance industry-oriented R&D are underdeveloped
 - Poor investment climates reduce the demand for innovation in the private sector
 - Legal barriers for collaboration (e.g. unclear IPR legislation or inability to establish spin-off firms)
 - Increasing shortage of researchers
 - Government funding is often biased towards institutional rather than competitive funding
- Internal factors:
 - Many RDIs do not have the institutional autonomy to operate efficiently
 - Private sector is not involved in the strategic decision-making process of the RDIs
 - Few mechanisms exist to facilitate knowledge commercialization
 - Human resource management is lacking and outputs of RDIs are weak.

Reform strategy

Government should decide: what is the role of RDIs for the economy?

Distinction between RDIs providing mainly public goods vis-à-vis RDIs already providing private goods and services or with the potential to do so.

Distinction between "market pull" and "technology push"

Reform strategy

