



THE ROMANIAN RD&I SYSTEM IN THE *LJUBLJANA PROCESS* PERSPECTIVE

**Ministry of Education, Research, and Innovation
National Authority for Scientific Research - Romania**



OUTLINE

I. THE RD&I SYSTEM IN ROMANIA

- 1. Characterization**
- 2. Main results**
- 3. Challenges**

II. INTERNATIONAL R&D COOPERATION

- 1. Under FP7**
- 2. Under bilateral framework
with France**



I.1. RDI system in Ro - characterization: structure & processes

RD&I policy	Government						
	Ministry of Education, Research and Innovation (MERI) - National Authority for Scientific Research (ANCS)					Other ministries	
Consultation	Advisory bodies National Council for Higher Education Research (CNCSIS) Advisory Board for R&D and Innovation (CC-CDI), Council of Innovation, Romanian Committee for Research Infrastructures (CRIC)					Romanian Academy	Branch Academies
Instruments	National RDI Programmes				European Programmes		Other
	National RDI Plan	Core Programmes	Sectoral Programmes	Other	FP 7	SOP-IEC	ELI, ... CERN, ...
Implementation	Executive agencies: Executive Unit for Financing Higher Education Research (UEFISCSU) National Centre for Programme Management (CNMP) Agency for Management of Research, Innovation and Technology Transfer (AMCSIT) ANCS/ Intermediate Body for R&D Structural Funds						
Operation	Public	Universities (public, accredited)	Romanian Academy Institutes	Branch Academies Institutes		National R&D Institutes	ReNITT
	Private	Private Universities	Research Institutes	Associations, Foundations	Enterprises		



I.1. RD&I system in Ro - characterization: 2007-2013 perspective

□ Strategy documents

- *The National Strategy for R&D and Innovation for 2007-2013*
- *Priorities for public investment in RDI:*
 - ICTs
 - advanced technologies and innovative products, including new materials and bio- and eco-technologies, in industry, **agriculture and food safety, health, energy, environment** and transportation

□ Planning and implementation instruments

- *The National Plan for R&D and Innovation 2007-2013:*
 - 6 programmes (national budget)**
- *The Sectoral Operational Programme for Economic Competitiveness (POS-CCE)/ Axis 2 – Increasing Economic Competitiveness through Research and Innovation*
(structural funds + national budget)



I.1. RD&I system in Ro - characterization: RD&I National Plan 2007-2013

Principles: Multi-annual allocation, pre-financing, investment model

Programme 1. *Human Resources*

Increasing the number of researchers and improving their professional performances

Programme 2. *Capacities*

Development of RDI infrastructures and their better connection and use at national and international level

Programme 3. *Ideas*

Generation of high level S&T results, contributing to a higher international visibility and recognition for Romanian research

Programme 4. *Partnerships in priority RD&I fields*

Promotion of ST partnerships leading to innovative technologies, products and services for solving complex problems in key application areas

Programme 5. *Innovation*

Promotion of industry-led research, technological development and innovation, based on the absorption of research results, for improving economic competitiveness and the quality of life

Programme 6. *Institutional performance*

Promoting the continuity and stability of RD institutions, through the development of their own strategies, in accordance with the National RD&I Strategy



I.1. RD&I system in Ro - characterization: National Plan 2007-2013

- The distribution of projects by S&T priority fields and prog's / **Relevant domains**

S&T PRIORITY FIELDS according to the National Strategy	Human Res.	Capacities	Ideas	Partnerships	Innovation	TOTAL
New materials, innovative processes and products	378	57	187	228	159	999
Basic sciences	212	37	161	33	0	443
Energy	46	25	62	136	25	294
Biotechnology, biology and genetics	47	18	45	105	5	220
Socio-economic and humanistic research	367	27	337	119	2	852
Health	188	38	183	158	11	578
ITC	215	40	125	138	30	538
Agriculture, food safety and security	98	32	116	149	5	400
Environment	96	34	67	167	28	392
Space and security	16	23	4	121	20	184
TOTAL	1663	331	1287	1354	285	4920 / 2092 (42.5%)



I.1. RD&I system in Ro - characterization: National Plan 2007-2013

- **Program Capacities** in 2008: total value of 242.2 Mlei (~ 60.5 MEur)
- The distribution of **investment projects for RD infrastructures** by ST priority fields / **Relevant domains**

S&T PRIORITY FIELDS according to the National RD&I Strategy	Module 1 (RD Infrastructures)
ICT	25
Health	24
Environment	19
Agriculture, food safety and security	18
Space and security (+ aeronautics)	12
Socio-economic and humanistic research	6
Materials, innovative processes and products	38
Basic Sciences	22
Energy	10
Biotechnologies, biology and genetics	5
Total	179 / 104 (58%)



I.1. RD&I system in Ro - characterization: instruments synergic with the National Plan 2007-2013

- **Research of Excellence programme** (CEEX, 2005-2008), to structuring and building the Romanian Research Area in order to become fully compatible with the European and international standards of performance.
- **Core RD programmes** of the national RD institutions, in order to sustaining long-term strategic objectives, specific to the sectors in which these institutions are performing.
- **Sectoral Operational Programme for “Increasing the Economic Competitiveness”** Priority Axis 2 – „Increasing the economic competitiveness through research and innovation” (SOP-IEC), to increasing the Romanian enterprises productivity and reducing the productivity gaps with respect to EU 27 by the following channels:
 - increasing the **research capacity** by the development of research infrastructures and by attracting young people and highly qualified specialists;
 - strengthening the **knowledge supply** from universities and RD institutes;
 - stimulate **technology transfers** based on the cooperation between RD institutions and enterprises;
 - stimulate **innovation demand** from enterprises.
- **Three programmes focused on basic research of the Romanian Academy**



I.1.RD&I system in Ro - characterization: system capacity (I)

	Indicator	Unit	Reference 2006	2008
1	Employees from RD activity	#	42 220	43 502
2	Researchers	#	30 122	30 864
3	PhDs	#	12 309	14 228
4	Public investments in RDI infrastructure (share of public RD expenditure)	MLei (%)	115 700 (10.1)	728 600 (35.0)

Source: INS 2009

Increasing trends ... BUT comparing to UE-27 (2007)

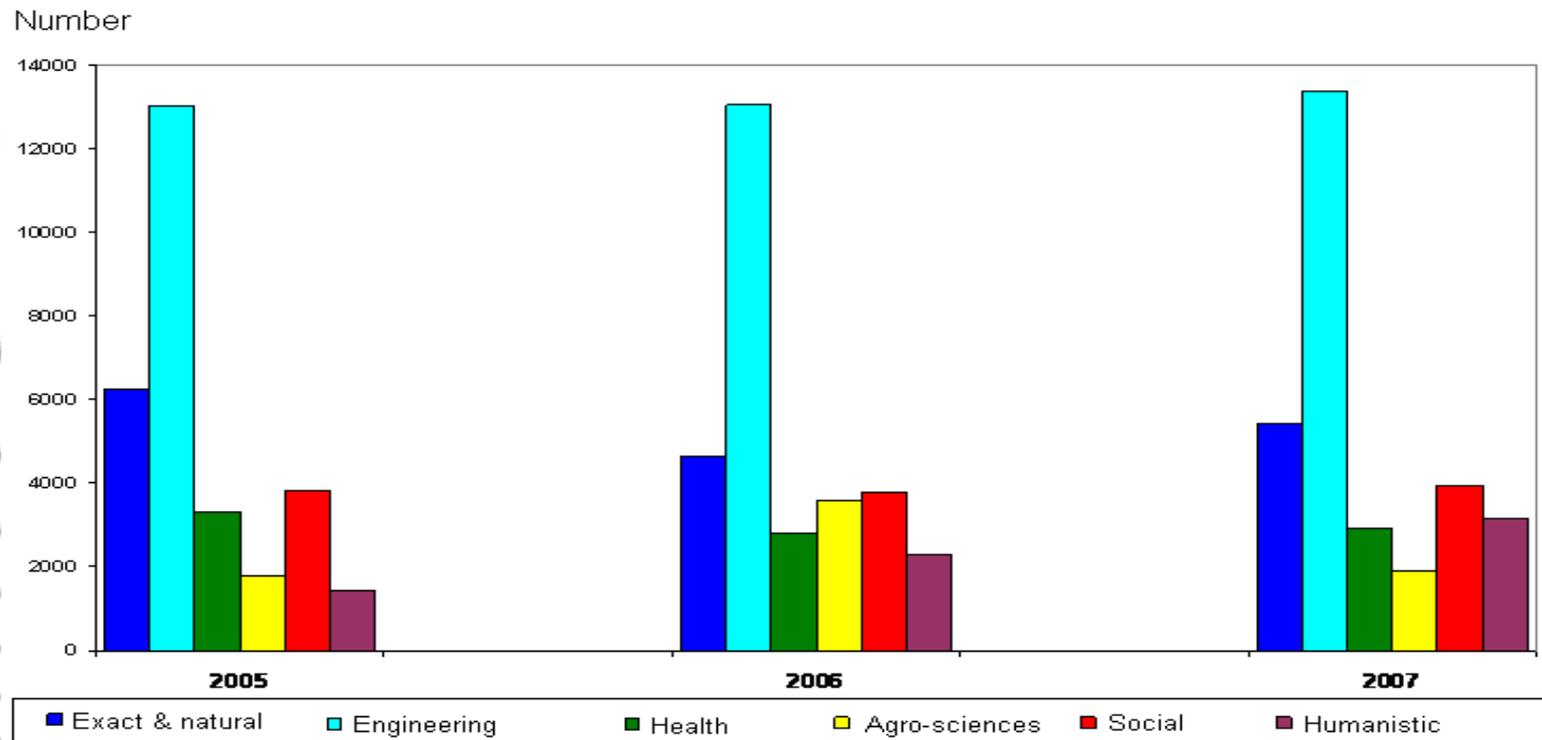
- The share of **researchers** in total employment
35,2‰ in Romania << 92‰ UE 27
- The share of **RD personnel** in total employment
47,9 ‰ in Romania << 155‰ UE 27.



I.1.RD&I system in Ro - characterization: system capacity (II)

More than half of the number of researchers are belonging to exact, natural, and engineering sciences

Researchers in RD Activities by Scientific Domain





I.2 RD&I system in Ro - results: output dynamic

	Indicator	Unit	Reference 2006	2008
1	ISI indexed Romanian journals	#	11	54
2	National patents applications / granted	#	965 / 527	867 / 484
3	International patents applications / granted (EU, USA, Japan)	#	38 / 11	NA*) However is low
4	Scientific articles published in ISI indexed journals	# /year	5 030	8 938
5	Citations	# /year	18 038	26 966

Source: ANCS, ISI Web of Knowledge - Thomson Reuters, Eurostat

Except the **patent statistic**, the trends are **positive**

Specific policy measures:

- **Rewarding** the authors of **ISI publications** and **patents**.
- **Improving the RD&I managerial skills** by **supporting** specific actions e.g. training, international mobilities etc.



I.2 RD&I system in Ro - results: positive impact on economy

	Indicator	Unit	Reference (year)	Last value (year)
1	Business expenditure for RD (BERD) as share of GDP	%	0.14 (2006)	0.18 (2008)
2	Share of enterprises with innovation activities (Community Innovation Survey - INS)	%	19.3 (2004)	21.2 (2006)
3	Share of employees in High-Tech manufacturing industry	% of total occup.	0.4 (2004)	5.66 (2007)
4	Share of employees in knowledge-intensive services	% of total occup.	1.5 (2004)	14.40 (2007)
5	High-Tech exports	% of total exports	3.8 (2004)	3.8 (2006)
6	SME's accessing public RDI funds via the national programmes ^{*)}	#	600 (2006)	810 (2008)
7	ST parks ^{*)}	#	7 (2006)	4 (2008)

Sources: INS, ^{*)}ANCS, Eurostat



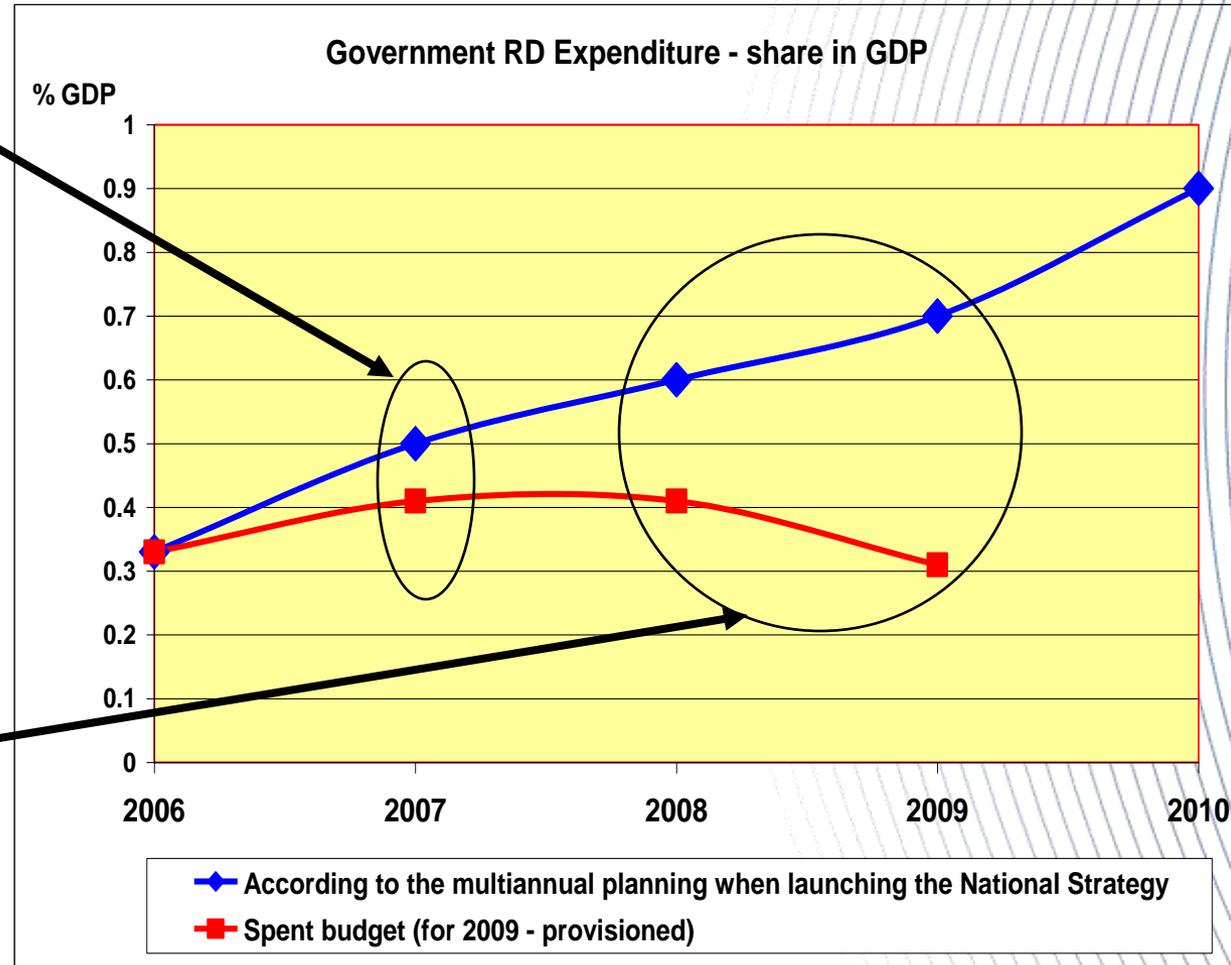
I.2 RD&I system in Ro - results: significant achievements

- Among the **highest growth rates** in Europe of some of the indicators related to innovation (e.g. share of employees in knowledge-intensive services, organizational innovation, share of innovative enterprises)
- “... Bulgaria and Romania have been improving their performance the fastest.”
(*EIS 2008-Comparative analysis of innovation performance, 2009*)
- Increase of **BERD** (but caution, because GDP diminished in 2008)
 - Significant **investments in RD infrastructure** (in the first two years '08-'09, the programme *Capacities* accounted for the largest share of expenditure with respect to its total, multi-annual budget)
 - New or new levels of **international collaborations** (pan-European research infrastructures, candidacy to CERN, supporting the FP7 Ro partners etc.)
 - Significant improvements of the **quality of human resources** (frontier research in the Ro *Ideas* programme, supporting the mobility of researchers via the *Human Resources* programme and bilateral cooperation etc.)



I.3 RD&I system in Ro - challenges

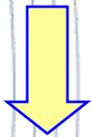
- Improve the **absorption capacity** of the RD&I system, including the structural funds
- **Sub-optimal functionality of some public RD institutions** - e.g. project and programme monitoring, lack of integrated info system dedicated to RD activities, resources, and outputs.
- **Sub-optimal functionality of ReNITT**
- **Global crisis led to public under-financing**
- Provisioned effects upon unemployment, so that **the competition for Hum.Res. in ST** will increase



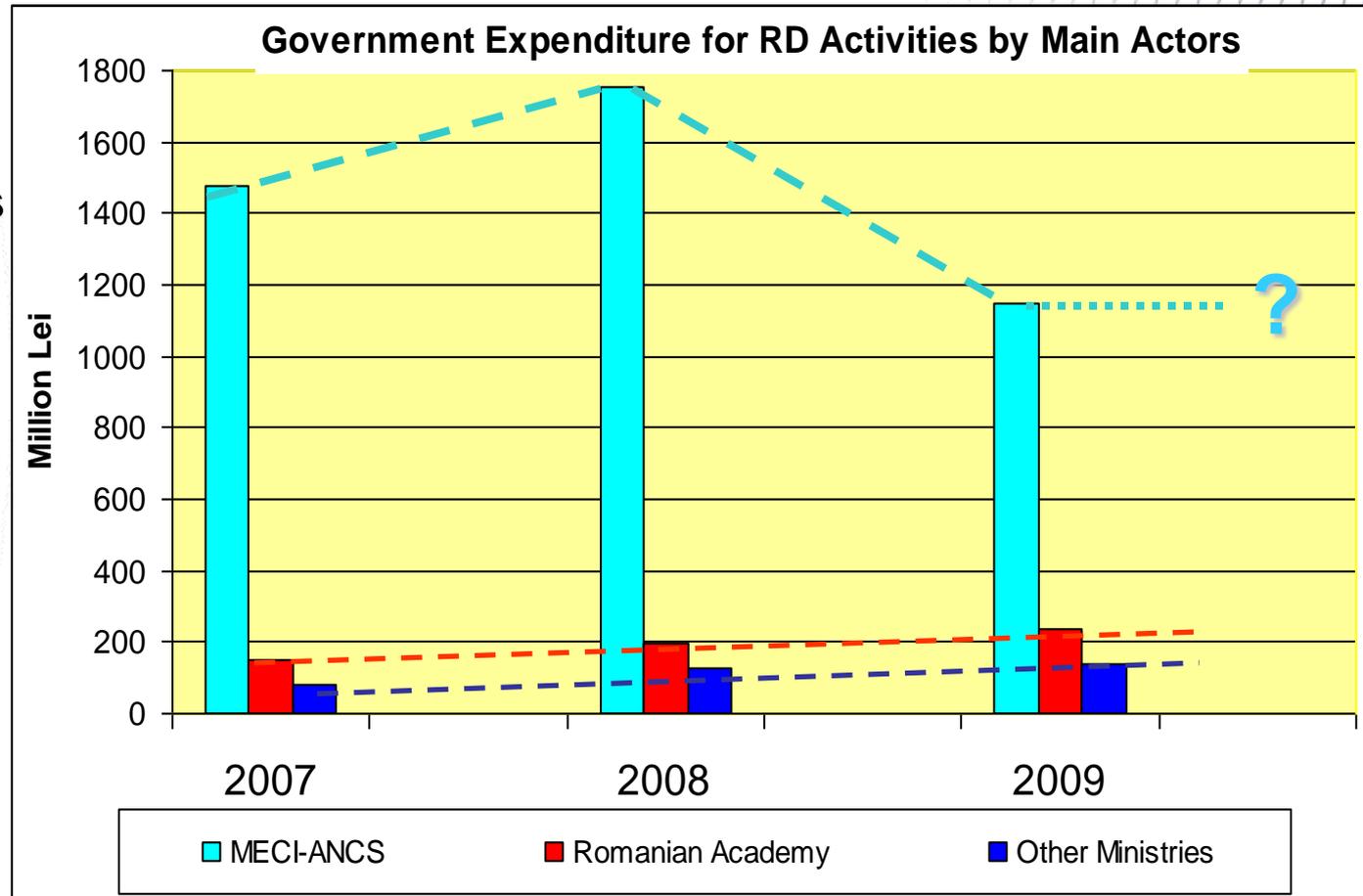


I.3. RD&I system in Ro - challenges: public funding

Political decision on diminishing the share of ANCS in public financing has to be balanced by:



- Improving the **efficiency** of RD expenditure
- **Competing** for other financing sources: private, EU
- Improving the **public acceptance** for research and innovation





II. 1. International R&D Cooperation: under FP7

Comparative results

	Inhabitants (mil.)	EU contribution for national participants (K euro)	EU contribution at 1 mil. inhabitants (K euro)	National participants in project proposals	National participants in project proposals per mil. inhabitants	National participants in projects retained for funding	National participants in projects retained for funding per mil. inhabitants	Success rate for participants (%)	EU average contribution in funded project (K euro)
RO	21,6	41.009	1.947	2.207	102	313	15	14,18	131
BG	7,7	26.161	3.398	1.452	189	252	33	15,98	104
CY	0,8	12.302	15.378	641	801	105	131	16,38	117
FI	5,3	200.955	37.916	2.651	500	615	116	23,20	327
GR	11,2	222.656	19.879	5.757	514	888	79	15,42	251
LT	3,4	11.870	3.491	575	169	95	28	16,52	119
PL	38,1	97.508	2.559	3.177	83	570	15	17,94	171
PT	10,6	85.864	8.100	2.447	231	445	42	18,19	193
SI	2,0	39.359	19.680	1.439	718	226	113	15,71	174
HU	10,1	59.028	5.869	2.209	219	414	41	18,74	143
EU	500	7.302.781	14.606	113.985	228	24598	49	21,59	297
TR	73,5	35.021	476	1.682	23	210	3	12,84	162
RO/EU (%)	4,32	0,56	13,33	1,94	44,74	1,27	30,61	65,68	44,11
		4,32% x EU		4,32% x EU		4,32% x EU			
Alin. to EU level		315.480	14.606	4.924	228	1.062	49	21,59	297

Data source: - interpretation of EC data by RPRO

- Statistics rely on the results of 90 calls of FP7 and available information up to January 10, 2009.



II.1. International R&D Cooperation: under FP7

Romania's participation – Conclusion



Level of Romania's participation in FP7 compared to EU average is low if we take into account two factors:

I. weight of RO population to EU (4,32%)

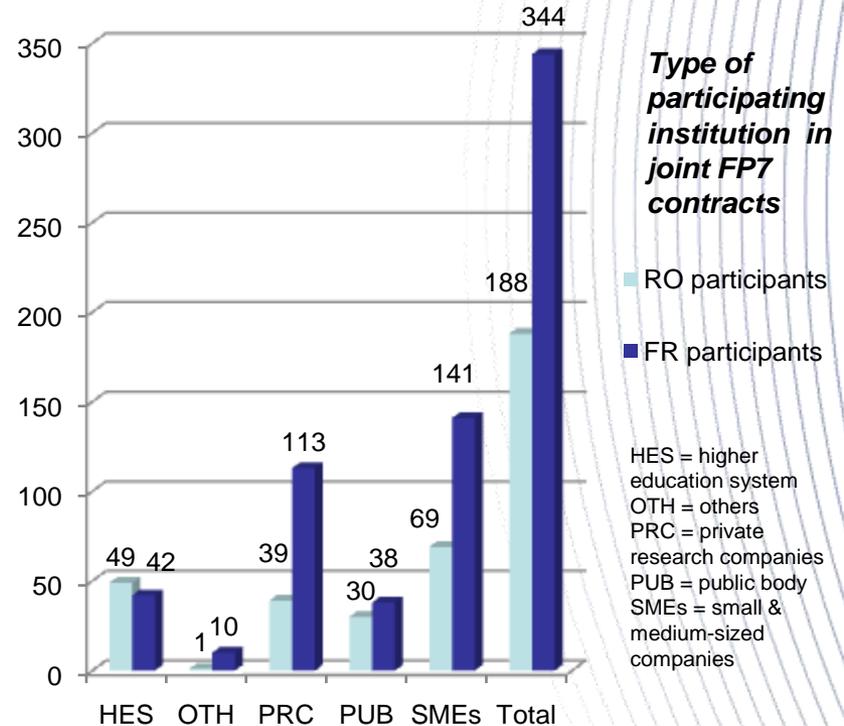
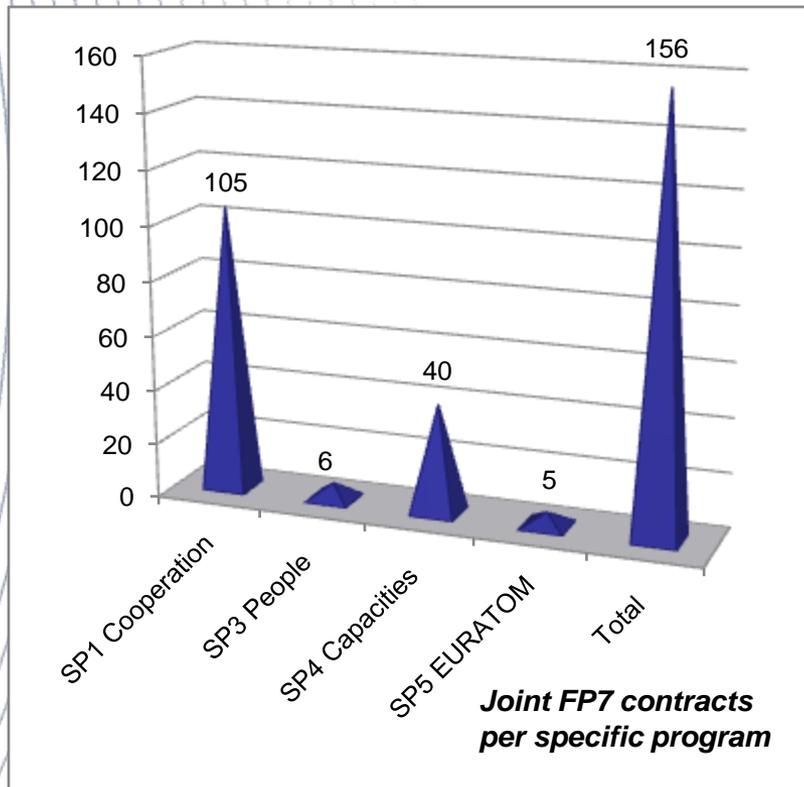
II. RO GDP (close to 1% of EU GDP in 2007; increase from 48,4 bil. € in 2002 to 115 bil. € in 2007)

- ratio **RO GDP/ EU GDP of 0,98%**
- **EU budget of 7,3 bil. EUR** for the 90 calls
- **expected EU contribution** for RO: 71,567 mil. EUR
- **actual EU contribution** for RO in selected projects: 41 mil. EUR
- **recovery rate of 57,3%**



II.1. International R&D Cooperation: under FP7

Romania and France joint participation in FP7 contracts per specific program and type of institution





II.2. International R&D Cooperation

Legal framework for R&D cooperation with France

Agreement on Scientific and Technical Cooperation

Government of the People's Republic of Romania and

31.07.1964

Government of the French Republic

Agreement of Cultural Cooperation between

Government of the People's Republic of Romania and

11.01.1965

Government of the French Republic

Paragraph 11

Bilateral Program of Integrated Actions = Program "Brâncuși-Hubert Curien"

MEdCI - National Authority for Scientific Research - Romania

Ministry of Foreign and European Affairs - France



II.2. International R&D Cooperation

Bilateral Program "Brâncuși-Hubert Curien"

Aim: to facilitate and develop high quality scientific and technological cooperation between the R&D entities for deepening and strengthening the European Research Area

Jointly
funding
of the
Program of
Integrated
Actions

→ The financial support is provided according to the legislation of each country (principle of reciprocity applies)

→ The funding covers:

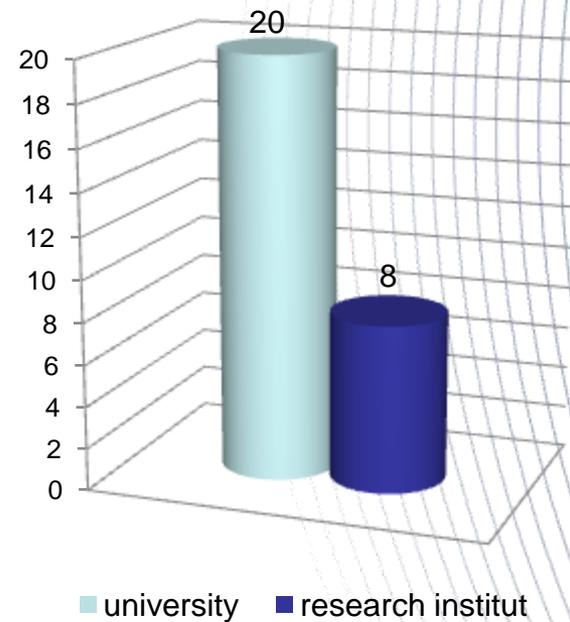
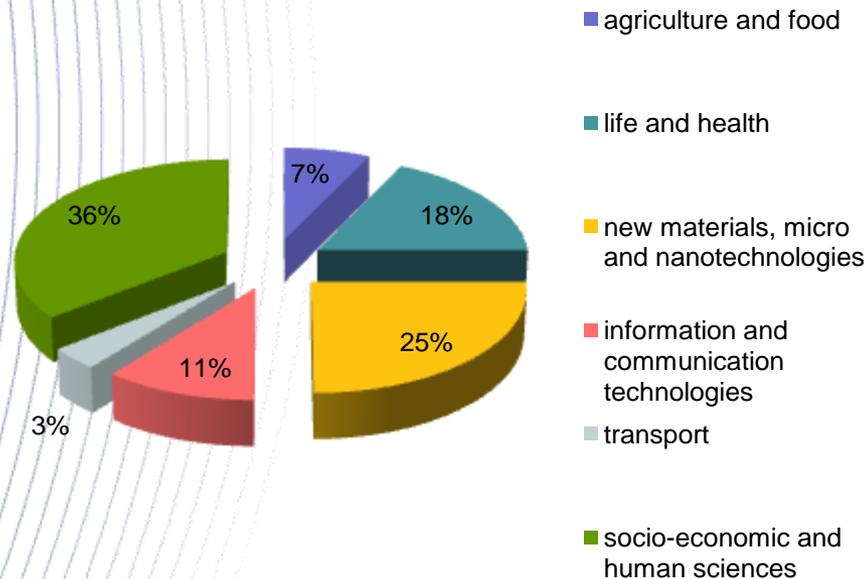
- ❖ Travel expenses incurred by own experts
- ❖ Cost of visits incurred by foreign experts



II.2. International R&D Cooperation

Bilateral Program "Brâncuși-Hubert Curien"

2009 – 2010 → 28 bilateral R&D projects





Thank you !