EUROPEAN COMMISSION

Brussels, 8.6.2011
SEC(2011) 739 final

30/41

COMMISSION STAFF WORKING PAPER

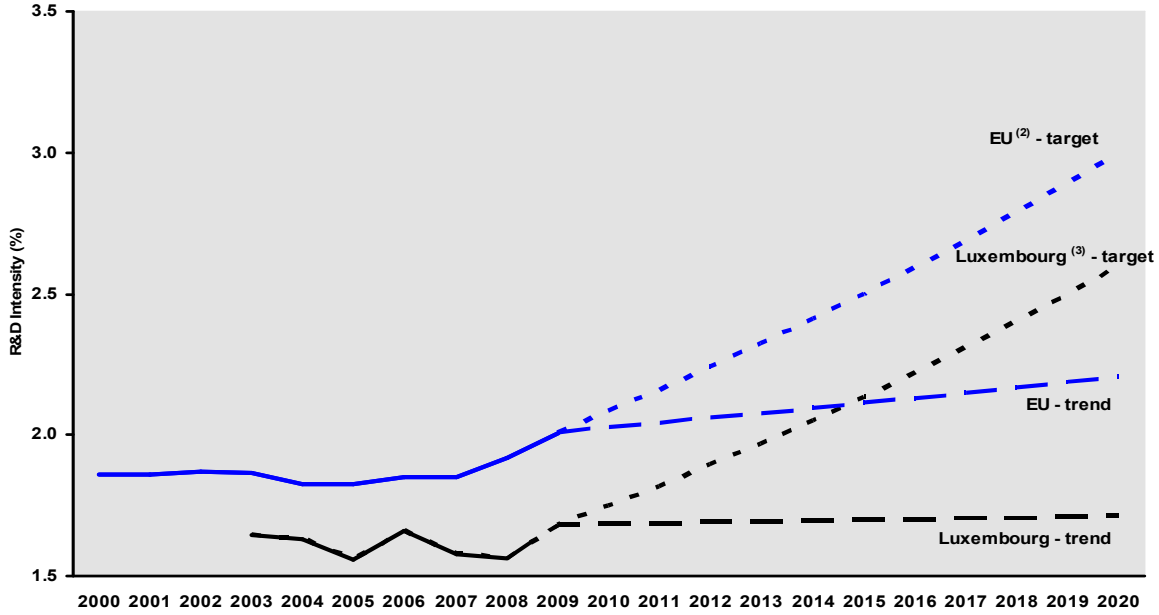
Innovation Union Competitiveness report 2011

COUNTRY PROFILE
LU - Luxembourg

Progress towards meeting the Europe 2020 R&D intensity target

R&D intensity in Luxembourg has fluctuated over the last decade. More precisely, it decreased from 1.65% in 2000 to 1.56% in 2005, increased to 1.66% in 2006 and slightly decreased to 1.56% in 2008, before increasing to 1.68% in 2009. These fluctuations are mirrored by fluctuations in the R&D intensity of the private sector over the same period. Public sector (government plus higher education) has increased steadily, even if it has remained relatively low, from 0.12% in 2000 to 0.44% in 2009. This shows that R&D financed by the business sector is the component most affected by the business cycle. The economic crisis did not trigger any cuts in public sector expenditure on R&D. The country was able to increase his nominal R&D budget. This indicates that Luxembourg regards R&D as a priority and as a means of ensuring a better and more rapid economic recovery and economic growth in the longer term. In this context, Luxembourg has set an ambitious, albeit realistic R&D intensity target of 2.6% of GDP for 2020. The private sector would contribute to 1.8-1.9% of GDP, i.e. approximately 70%, and the public sector to 0.70-0.80%, i.e. around 30%.

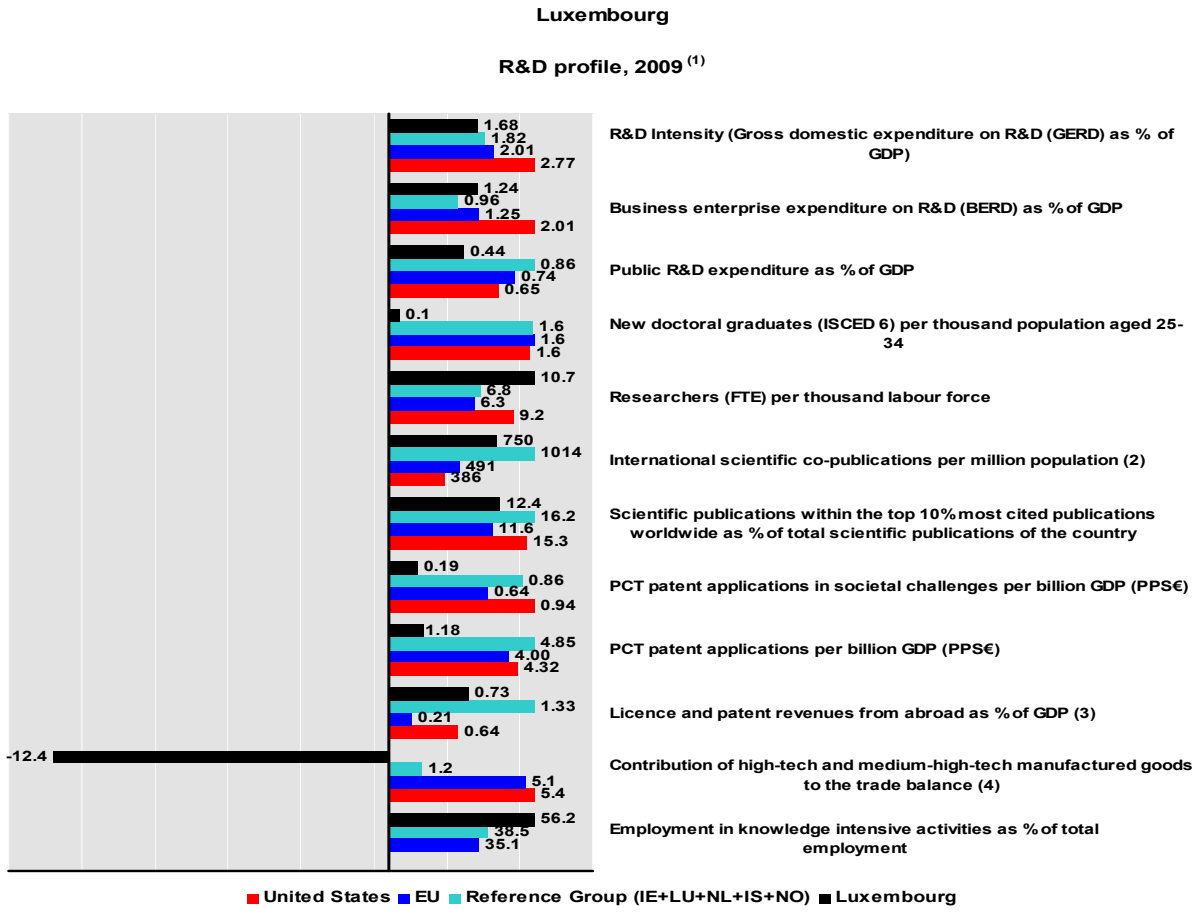
Luxembourg - R&D Intensity projections, 2000-2020 (1)



Source: DG Research and Innovation — Innovation Union Competitiveness report 2011
Data: DG Research and Innovation, Eurostat
Notes: (1) The R&D Intensity projections based on trends are derived from the average annual growth in R&D Intensity 2000-2009.
(2) EU: This projection is based on the R&D Intensity target of 3.0% for 2020.
(3) LU: This projection is based on a tentative R&D Intensity target of 2.6% for 2020.

Research and Innovation Performance

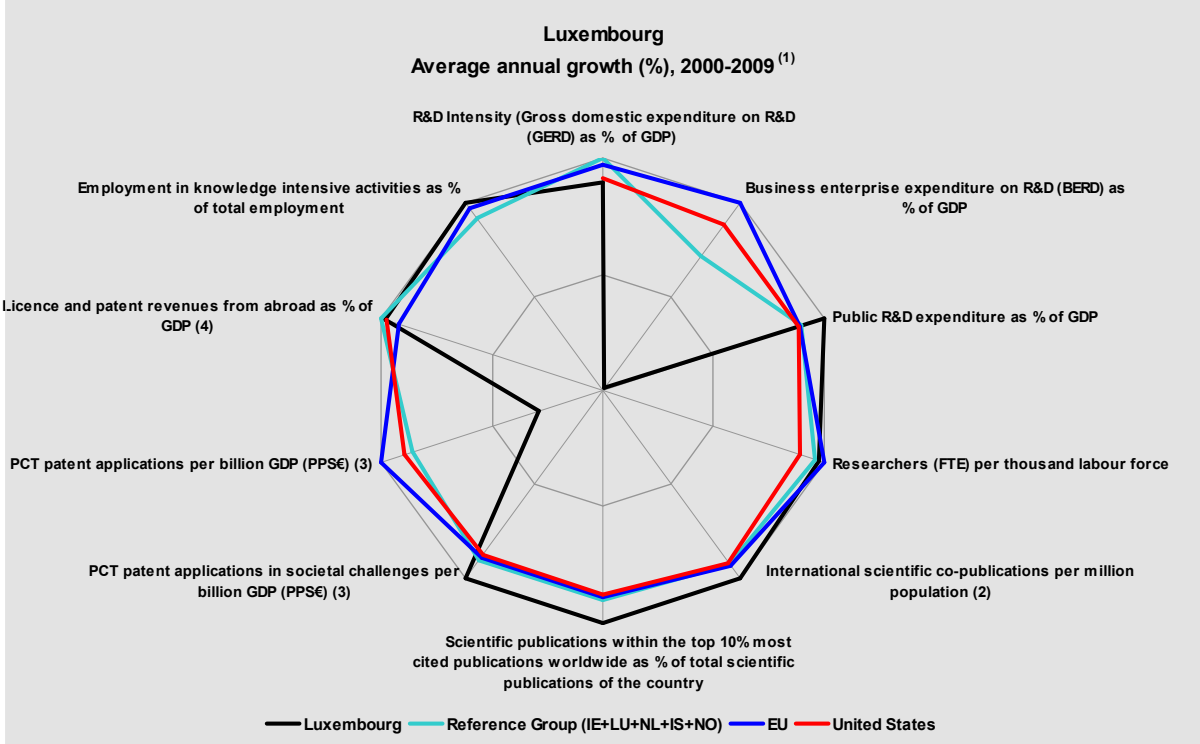
The country's research and innovation performance shows strengths and weaknesses. In terms of strengths, Luxembourg scores higher than the EU average in the share of high-impact scientific publications, licence and patent revenues from abroad as percentage of GDP and employment in knowledge intensive activities. Moreover, although Luxembourg's higher education system produces less doctoral graduates relatively to its population aged 25-34 than the average in EU, the country is above EU average in the number of researchers in the labour force. All these indicators evidence the importance of knowledge intensive activities in the national economy. But there are also some weaknesses in the research and innovation system. As previously mentioned, R&D intensity is below the EU average and the reference group countries average. The reason for proportionally lower investment lies mainly in the relatively low public R&D investment, which remains at 0.44% in 2009, well below the EU average. As a result, the technological inventiveness of the country and the contribution of high-tech and medium-high-tech manufactured goods to the trade balance is lower than in the EU average. To a large extent, this is linked to Luxembourg's economy structure, largely based on the financial sector and other business services, which account for almost half of the economy total value added.



Source: DG Research and Innovation Innovation Union Competitiveness report 2011
Data: Eurostat, OECD, Science Metrix / Scopus (Elsevier)
Notes: (1) The values refer to 2009 or to the latest available year.
(2) (i) The EU value refers to the median rather than to the average (ii) IS and NO are not included in the Reference Group.
(3) EU refers to extra-EU.
(4) (i) EU does not include BG, CY, LV, LT, MT, RO; (ii) EU refers to extra-EU; (iii) IS and NO are not included in the Reference Group.
(5) Elements of estimation were involved in the compilation of the data.

In the last decade, Luxembourg has made good progress in several fronts, including its public R&D investment, high quality scientific performance measured by high-impact publications and the transition towards an even more knowledge intensive economy. Nevertheless, in the same period, private R&D investment and the technological inventiveness of the economy, measured by PCT patents applications, declined.

The business sector still finances the lion's share of R&D, but Luxembourg lags behind the EU average in terms of private R&D intensity. Moreover, in the context of the financial and economic downturn, private investments in R&D can be further affected.



Source: DG Research and Innovation — Innovation Union Competitiveness report 2011

Data: Eurostat, OECD, Science Metrix / Scopus (Elsevier)

Notes: (1) Growth rates which do not refer to 2000-2009 refer to growth between the earliest available year and the latest available year over the period 2000-2010.

(2) (i) The EU value refers to the median rather than to the average; (ii) IS and NO are not included in the Reference Group.

(3) Average annual growth refers to real growth.

(4) EU refers to extra-EU.

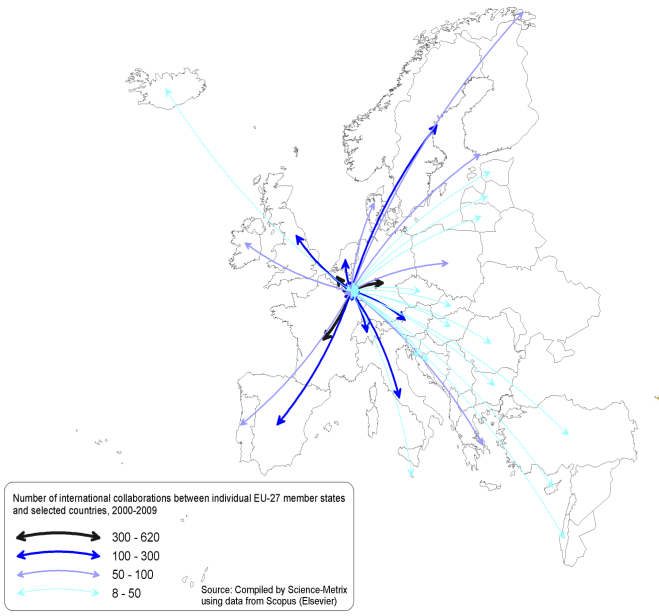
(5) Elements of estimation were involved in the compilation of the data.

Participation in the European Research Area: Scientific and Technological collaborations

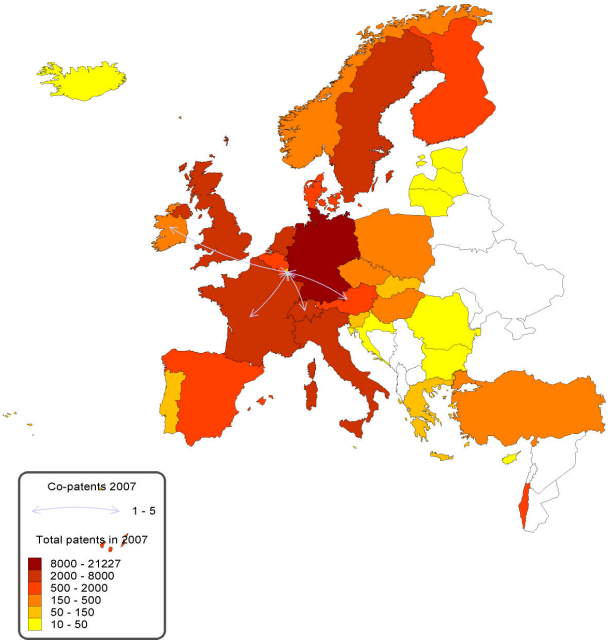
Luxembourg is a small economy that also reflects on its scientific collaborations. In this respect, although Luxembourg counts on a larger number of international scientific co-publications than the EU average, it scores below other small and open economies. The main partners in science are, as it is expected, the neighbouring countries, i.e. France, Germany and Belgium, followed by the United Kingdom, Sweden, Italy, Spain, Switzerland and Austria.

In terms of co-inventions of patents, Luxembourg scores very low, despite recent intellectual property tax incentives (in particularly, since January 2008 it offers an 80% tax cut on intellectual property profits). This is the reflection of the size of the country, the low number of overall patents and the economic structure, based on knowledge intensive services. The main technological partners are France and Switzerland, followed by Ireland and Austria.

Co-publications between Luxembourg and European countries in 2000-2009



Co-invented patent applications between Luxembourg and European countries 2007



Source: DG Research and Innovation
Data: Scopus/ Science Metrix and Eurostat

FP7 Key facts and figures

Applications:
As of 2011/03/16, a total of

- 444 eligible proposals were submitted in response to 248 FP7 calls for proposals
- involving 515 applicants from Luxembourg (0,19% of EU-27*) and
- requesting EUR 144,43m of EC contribution (0,16% of EU-27*)

Among the EU-27* Luxembourg (LU) ranks:
- 27th in terms of number of applicants and
- 26th in terms of requested EC contribution

Success rates:

- The LU applicant success rate of 18,6% is lower than the EU-27* applicant success rate of 21,6%.
- The LU EC financial contribution success rate of 11,3% is lower than the EU-27* rate of 20,7%.

Specifically, following evaluation and selection, a total of

- 88 proposals were retained for funding (19,8%)
- involving 96 (18,6%) successful applicants from Luxembourg and
- requesting EUR 16,36m (11,3%) of EC financial contribution

Among the EU-27*, Luxembourg (LU) ranks:
- 21st in terms of applicants success rate and
- 22nd in terms of EC financial contribution success rate

Signed grant agreements
As of 2011/03/16, Luxembourg (LU) participates in

- 87 signed grant agreements
- involving 1.386 participants of which 94 (6,78%) are from Luxembourg
- benefiting from a total of EUR 368,59m of EC financial contribution of which EUR 19,21m (5,21%) is dedicated to participants from Luxembourg.

Among the EU-27* in all FP7 signed grant agreements, Luxembourg (LU) ranks:
- 28th in number of participations and
- 26th in budget share

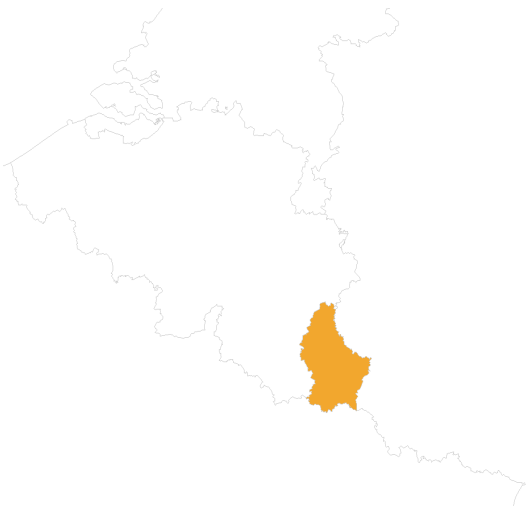
SME performance and participation

- The LU SME applicant success rate of 16,29% is lower than the EU-27* SME applicant success rate of 19,33%.
- The LU SME EC financial contribution success rate of 12,21% is lower than the corresponding EU-27* rate of 18,26%.

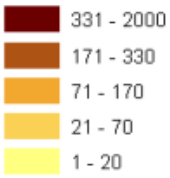
Specifically,

- 178 LU SME applicants requesting EUR 44,43m

**Nr. of Researchers		
as % of population	N/A	0,40%
Rank in EU-27* Innovation scoreboard (2008)	- 7th - Above EU-27 average - Innovation Follower	
Nr. of FP7 applicants		
(% EU-27*)	515	
(0,19%)	266.507	
Req. EC contribution by FP7 applicants in EUR million		
(% EU-27*)	144,43	
(0,16%)	88.295	
Nr. of successful FP7 applicants		
(% EU-27*)	96	
(0,16%)	59.199	
Req. EC contribution by successful FP7 applicants in EUR million		
(% EU-27*)	16,36	
(0,09%)	18.262,02	
Success rate FP7 applicants	18,6%	21,6%
Success rate FP7 EC contribution	11,3%	20,7%
Nr. of FP7 grant holders		
(% EU-27*)	94	
(0,18%)	51.279	
EC contribution to FP7 grant holders in EUR million		
(% EU-27*)	19,21	
(0,12%)	16.578,15	
Nr. of FP7 coordinators		
(% of grant holders)	12	
(12,77%)	9.383	
(18,30%)		
Nr. of FP7 SME grant holders		
(% grant holders)	13	
(13,83%)	8.845	
(17,25%)		
EC contribution to FP7 SME grant holders in EUR million		
(% of grant holders)	3,21	
(16,69%)	2.207,73	
(13,32%)		



- 29 (16,29%) successful SMEs requesting EUR 5,42m (12,21%)



In signed grant agreements, as of 2011/03/16,

- 13 LU SME grant holders, i.e., 13,83% of total LU participation
- EUR 3,21m, i.e., 16,69% of total LU budget share

Top 3 collaborative links with:

- DE - Germany (136)
- FR - France (116)
- IT - Italy (90)

LU - Luxembourg - most active FP7 research priority areas by number of applicants applying for the research projects						
FP7 priority area	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success Rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success Rate (requested EC contribution)
Information and Communication Technologies	167	55,69	22	13,17 %	5,30	9,53 %
Security	51	12,21	9	17,65 %	2,50	20,48 %
Transport (including Aeronautics)	50	11,81	12	24,00 %	2,20	18,62 %
Health	37	12,61	4	10,81 %	0,78	6,17 %
Marie-Curie Actions	35	n/a	11	31,43 %	n/a	n/a
Environment (including Climate Change)	34	5,26	6	17,65 %	0,44	8,44 %

LU - Luxembourg - most active FP7 research priority areas by EC contribution granted to the research projects				
FP7 Priority Area	Number of grant holders	% of all LU grant holders	EC contribution (EUR million)	% of total EC contribution to LU
Information and Communication Technologies	24	25,53%	5,84	30,42 %
Marie-Curie Actions	10	10,64%	4,92	25,62 %
Energy	5	5,32%	2,05	10,65 %
Security	6	6,38%	1,64	8,51 %
Health	6	6,38%	1,12	5,82 %
Transport (including Aeronautics)	7	7,45%	1,02	5,33 %

LU - Luxembourg - participation in the FP7 research projects by organisation activity type									
Activity Type	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success rate (requested contribution)	Nr. of grant holders	EC contribution to grant holders	% ot total EC contribution to grant holders
PRC	222	66,68	38	17,12%	9,61	14,42%	50	10,14	52,76%
HES	97	25,39	12	12,37%	2,31	9,10%	9	2,20	11,45%
REC	88	30,61	10	11,36%	1,01	3,31%	10	1,59	8,27%
OTH	56	9,48	17	30,36%	2,15	22,63%	12	1,57	8,19%
PUB	46	5,65	19	41,30%	1,28	22,67%	13	3,71	19,33%
SME	178	44,43	29	16,29%	5,42	12,21%	13	3,21	16,69%

PRC - Private for profit (excl. education), HES - Higher or secondary education, REC - Research organisations, OTH - Others, PUB - Public body (excl. research and education),

LU - Luxembourg - the most active NUTS3 regions, by EC contribution granted to the FP7 research projects

LU - Luxembourg region	Number of grant holders	% of all LU - Luxembourg grant holders	EC contribution (M euro)	% of total EC contribution to LU
Luxembourg (Grand-Duch��) (LU000)	93	98,94%	18,93	98,51%

LU - Luxembourg - most active organisations in terms of EC contribution granted to the FP7 research projects				
Legal Name	Number of Participations	% of all LU grant holders	EC contribution (M euro)	% of total EC contribution to LU grant holders
FONDS NATIONAL DE LA RECHERCHE	10	10,64%	3,53	18,38%
UNIVERSITE DU LUXEMBOURG (UL)	9	9,57%	2,20	11,45%
INTRASOFT INTERNATIONAL SA	6	6,38%	1,72	8,96%
SES ASTRA TECHCOM SA (SES)	4	4,26%	1,44	7,49%
Soil-Concept SA (Soil-Concept)	1	1,06%	1,15	5,96%

NOTES:
Report generated on: 2011/03/28,10:45 AM
FP7 proposal and application figures are valid as of the 2011/03/16
FP7 grant agreements and participation figures are valida as of the 2011/03/16
*EU-27 includes the 27 country-members and JRC as a separate entity
**E-STAT Reference year: 2007
**European Innovation Scoreboard is available at the website of DG Enterprise and Industry

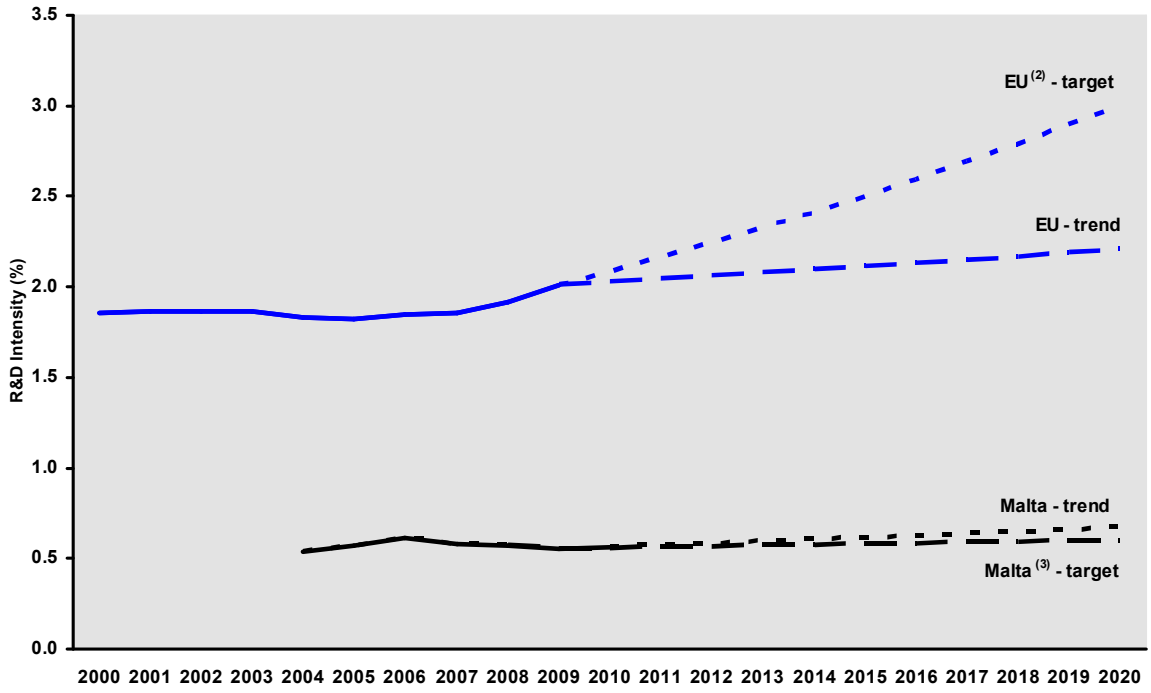
COUNTRY PROFILE
MT - Malta

Progress towards meeting the Europe 2020 R&D intensity target

In the last decade, R&D intensity in Malta reached a peak of 0.61% in 2006 and a decline to 0.55% in 2009. Despite this overall progress in R&D intensity, Malta still scores very low and far from the EU average. An economic structure organised around the service sector, dominated by micro enterprises with less than 10 employees, somehow determines the capacity of the country to increase its overall R&D intensity.

As a result, Malta has set a R&D target of 0.67% to be achieved by 2020. Given the size of the country and the capacity of the research system, Malta will need to specialise its R&D investments in particular niche fields where the system can achieve sufficient critical mass to support the local economy. Presently, Malta has identified health and biotechnology, energy and environmental technologies, ICT and value added manufacturing and services as potential areas to focus on.

Malta - R&D Intensity projections, 2000-2020 (1)

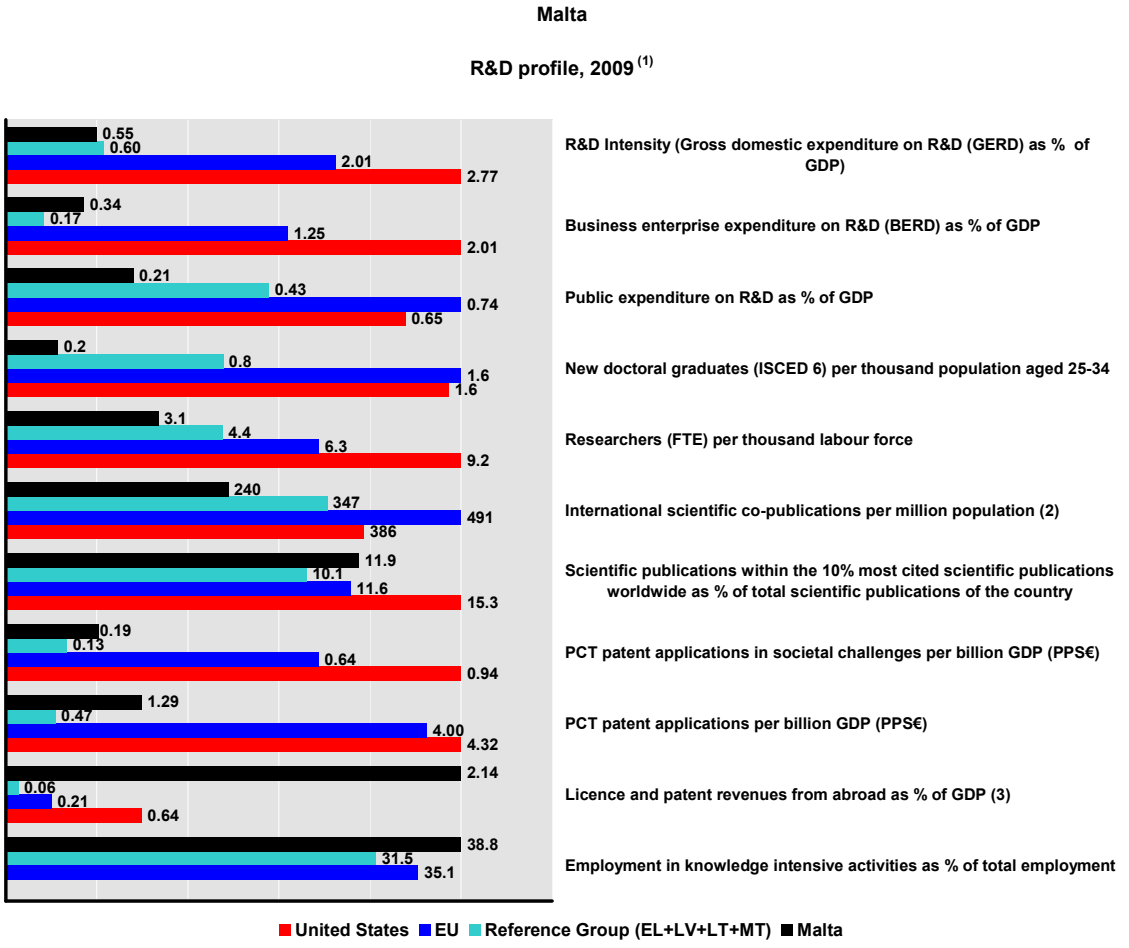


Source: DG Research and Innovation — Innovation Union Competitiveness report 2011
Data: DG Research and Innovation, Eurostat
Notes: (1) The R&D Intensity projections based on trends are derived from the average annual growth in R&D Intensity for 2000-2009 in the the case of the EU and for 2004-2009 in the case of Malta.
(2) EU: This projection is based on the R&D Intensity target of 3.0% for 2020.
(3) MT: This projection is based on a tentative R&D Intensity target of 0.67% for 2020.

Research and Innovation Performance

To some extent, the Maltese research and innovation system is characterised by its need to increase its research capacity and reach out more to the business sector. Until quite recently, R&D intensity in Malta was very low, with low rates of public research that have resulted in a shortage of research skills in key areas such as science or engineering.

Research and Innovation activities have traditionally concentrated around a cluster of large firms that have significantly increased their R&D investments in the last years, but there are still numerous indigenous small and micro-enterprises that undertake minimal or no research activities.



Source: DG Research and Innovation
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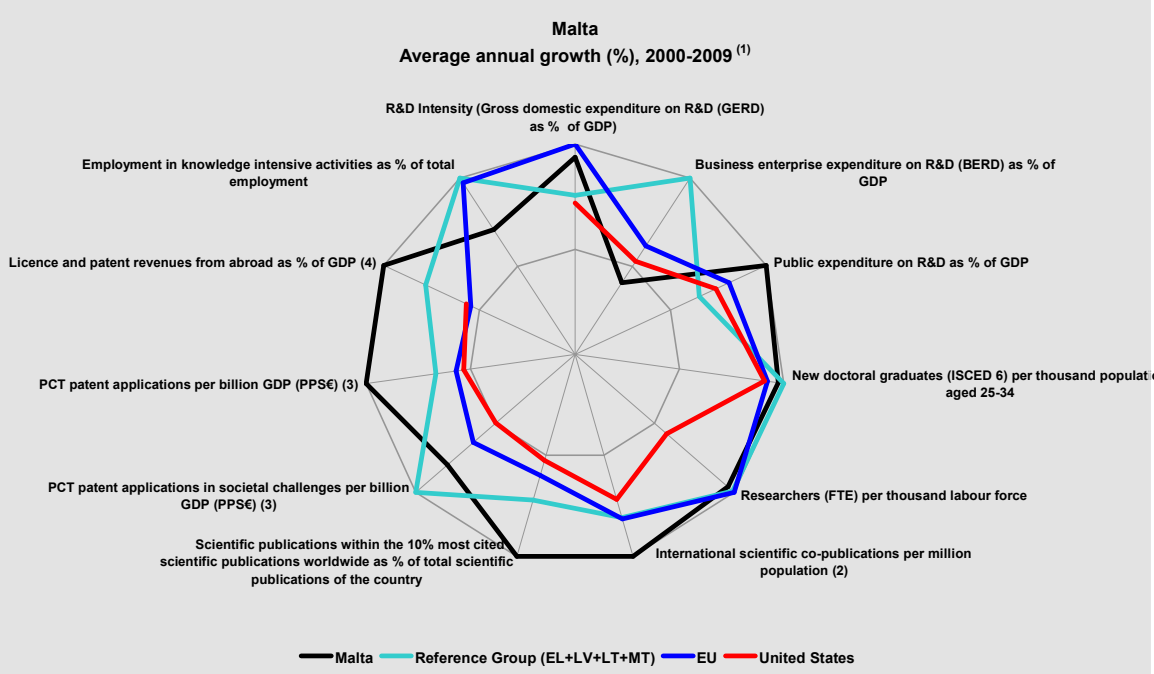
Innovation Union Competitiveness Report 2011

In dynamic terms, as mentioned earlier, Malta has been progressing in terms of R&D investments and this also reflects in its scientific and technological outputs. However, in absolute terms, they still remain relatively modest. The recognised need to specialise in particular promising fields where Malta can build on its strengths and create a competitive position can provide optimal results for the future scientific, technological and economic development of the country.



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Notes: (1) Growth rates which do not refer to 2000-2009 refer to growth between the earliest available year and the latest available year over the period 2000-2010.
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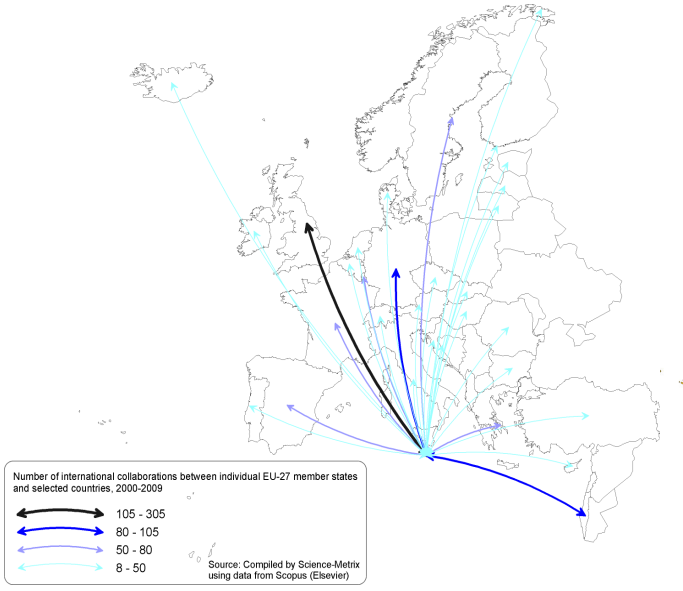
(3) Average annual growth refers to real growth.
(4) EU refers to extra-EU.
(5) Elements of estimation were involved in the compilation of the data.

Participation in the European Research Area: Scientific and Technological collaborations

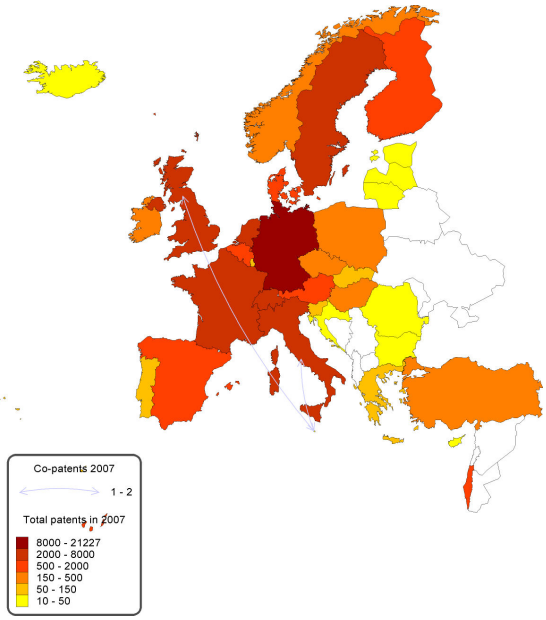
Malta is participating in international scientific networks in the European Research Area. Although the total number of co-publications is relatively small, this is proportionate to the total number of scientific publications. As it would be expected, Malta depicts stronger scientific links with the main European scientific countries, and especially with the United Kingdom, the main scientific partner, due to historical, linguistic and cultural ties.

In terms of co-patenting, the relatively weak technological production of Malta is also reflected in the technological collaborations with ERA countries. Malta counts on only of two co-patents with the United Kingdom.

Co-publications between Malta and European countries in 2000-2009



Co-invented patent applications between Malta and European countries, 2007



Source: DG Research and Innovation
Data: Scopus/ Science Metrix and Eurostat

FP7 Key facts and figures

Applications:
As of 2011/03/16, a total of

- 500 eligible proposals were submitted in response to 248 FP7 calls for proposals
- involving 575 applicants from Malta (0,22% of EU-27*) and
- requesting EUR 92,93m of EC contribution (0,11% of EU-27*)

Among the EU-27* Malta (MT) ranks:
- 26th in terms of number of applicants and
- 27th in terms of requested EC contribution

Success rates:

- The MT applicant success rate of 19,1% is lower than the EU-27* applicant success rate of 21,6%.
- The MT EC financial contribution success rate of 11,1% is lower than the EU-27* rate of 20,7%.

Specifically, following evaluation and selection, a total of

- 98 proposals were retained for funding (19,6%)
- involving 110 (19,1%) successful applicants from Malta and
- requesting EUR 10,35m (11,1%) of EC financial contribution

Among the EU-27*, Malta (MT) ranks:
- 20th in terms of applicants success rate and
- 25th in terms of EC financial contribution success rate

Signed grant agreements
As of 2011/03/16, Malta (MT) participates in

- 85 signed grant agreements
- involving 1.575 participants of which 95 (6,03%) are from Malta
- benefiting from a total of EUR 351,02m of EC financial contribution of which EUR 8,34m (2,38%) is dedicated to participants from Malta.

Among the EU-27* in all FP7 signed grant agreements, Malta (MT) ranks:
- 27th in number of participations and
- 28th in budget share

SME performance and participation

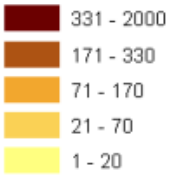
- The MT SME applicant success rate of 14,43% is lower than the EU-27* SME applicant success rate of 19,33%.
- The MT SME EC financial contribution success rate of 11,95% is lower than the corresponding EU-27* rate of 18,26%.

Specifically,

- 291 MT SME applicants requesting EUR 48,96m

**Nr. of Researchers		
as % of population	N/A	0,40%
Rank in EU-27*		
Innovation scoreboard		
(2008)	- 20th	
- Below EU-27 average		
- Moderate Innovator		
Nr. of FP7 applicants		
(% EU-27*)	575	
(0,22%)	266.507	
Req. EC contribution		
by FP7 applicants		
in EUR million		
(% EU-27*)	92,93	
(0,11%)	88.295	
Nr. of successful FP7 applicants		
(% EU-27*)	110	
(0,19%)	59.199	
Req. EC contribution		
by successful FP7 applicants		
in EUR million		
(% EU-27*)	10,35	
(0,06%)	18.262,02	
Success rate FP7 applicants	19,1%	21,6%
Success rate		
FP7 EC contribution	11,1%	20,7%
Nr. of FP7 grant holders		
(% EU-27*)	95	
(0,19%)	51.279	
EC contribution		
to FP7 grant holders		
in EUR million		
(% EU-27*)	8,34	
(0,05%)	16.578,15	
Nr. of FP7 coordinators		
(% of grant holders)	8	
(8,42%)	9.383	
(18,30%)		
Nr. of FP7 SME grant holders		
(% grant holders)	23	
(24,21%)	8.845	
(17,25%)		
EC contribution to FP7 SME		
grant holders in EUR million		
(% of grant holders)	3,80	
(45,56%)	2.207,73	
(13,32%)		

- 42 (14,43%) successful SMEs requesting EUR 5,85m (11,95%)



In signed grant agreements, as of 2011/03/16,

- 23 MT SME grant holders, i.e., 24,21% of total MT participation
- EUR 3,80m, i.e., 45,56% of total MT budget share

Top 3 collaborative links with:

- UK - United Kingdom (108)
- IT - Italy (104)
- ES - Spain (104)

MT - Malta - most active FP7 research priority areas by number of applicants applying for the research projects						
FP7 priority area	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success Rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success Rate (requested EC contribution)
Research for the benefit of SMEs	116	14,10	25	21,55 %	2,98	21,11 %
Information and Communication Technologies	69	16,47	6	8,70 %	1,16	7,03 %
Environment (including Climate Change)	50	9,49	6	12,00 %	0,26	2,76 %
Socio-economic sciences and Humanities	48	5,37	9	18,75 %	0,61	11,43 %
Science in Society	46	5,29	11	23,91 %	1,01	19,10 %
Food, Agriculture and Fisheries, and Biotechnology	38	7,21	4	10,53 %	0,24	3,33 %

MT - Malta - most active FP7 research priority areas by EC contribution granted to the research projects				
FP7 Priority Area	Number of grant holders	% of all MT grant holders	EC contribution (EUR million)	% of total EC contribution to MT
Research for the benefit of SMEs	17	17,89%	1,98	23,67 %
Information and Communication Technologies	8	8,42%	1,00	11,94 %
Transport (including Aeronautics)	5	5,26%	0,75	8,94 %
Socio-economic sciences and Humanities	8	8,42%	0,59	7,12 %
Marie-Curie Actions	10	10,53%	0,50	5,99 %
Space	4	4,21%	0,44	5,30 %

MT - Malta - participation in the FP7 research projects by organisation activity type									
Activity Type	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success rate (requested contribution)	Nr. of grant holders	EC contribution to grant holders	% ot total EC contribution to grant holders
PRC	203	32,18	29	14,29%	4,39	13,63%	28	3,81	45,70%
HES	142	29,27	19	13,38%	1,88	6,41%	16	1,35	16,22%
PUB	97	11,56	34	35,05%	2,24	19,41%	44	2,39	28,68%
OTH	83	12,53	10	12,05%	0,78	6,23%	3	0,19	2,29%
REC	48	5,10	18	37,50%	1,06	20,88%	4	0,59	7,11%
SME	**291**	**48,96**	**42**	**14,43%**	**5,85**	**11,95%**	**23**	**3,80**	**45,56%**

PRC - Private for profit (excl. education), HES - Higher or secondary education, PUB - Public body (excl. research and education), OTH - Others, REC - Research organisations,

MT - Malta - the most active NUTS3 regions, by EC contribution granted to the FP7 research projects				
MT - Malta region	Number of grant holders	% of all MT - Malta grant holders	EC contribution (M euro)	% of total EC contribution to MT
Malta (MT001)	82	86,32%	6,56	78,65%

MT - Malta - most active organisations in terms of EC contribution granted to the FP7 research projects				
Legal Name	Number of Participations	% of all MT grant holders	EC contribution (M euro)	% of total EC contribution to MT grant holders
MALTA COUNCIL FOR SCIENCE AND TECHNOLOGY (MCST)	30	31,58%	1,46	17,55%
UNIVERSITA TA MALTA (UOM)	16	16,84%	1,35	16,22%
INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED (IRMCo)	4	4,21%	0,75	8,99%
ELECTRONIC SYSTEMS DESIGN LTD (ESDL)	2	2,11%	0,46	5,54%
CHADWICK MUSHROOM FARM LTD	3	3,16%	0,40	4,82%

NOTES:
Report generated on: 2011/03/28,10:46 AM
FP7 proposal and application figures are valid as of the 2011/03/16
FP7 grant agreements and participation figures are valida as of the 2011/03/16
*EU-27 includes the 27 country-members and JRC as a separate entity
**E-STAT Reference year: 2007
**European Innovation Scoreboard is available at the website of DG Enterprise and Industry