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Research and Innovation performance in Cyprus

Country Profile

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Cyprus

New opportunities for a small economy towards key areas of innovative advantage

Summary: Performance in research and innovation

The indicators in the table below present a synthesis of research and innovation (R&I) performance in Cyprus. They relate knowledge investment and input to performance and economic output throughout the innovation cycle. They show thematic strengths in key technologies and also the high-tech and medium-tech contribution to the trade balance. The indicator on excellence in science and technology takes into consideration the quality of scientific production as well as technological development. The Innovation Output Indicator covers technological innovation, skills in knowledge-intensive activities, the competitiveness of knowledge-intensive goods and services, and the innovativeness of fast-growing enterprises, focusing on innovation output. The indicator on the knowledge-intensity of the economy focuses on the economy's sectoral composition and specialisation and shows the evolution of the weight of knowledge-intensive sectors and products.

Key indicators of research and innovation performance	
R&D intensity 2012: **0.46 %** (EU: 2.07 %; US: 2.79 %) 2007-2012: **+0.9 %** (EU: 2.4 %; US: 1.2 %)	*Excellence in S&T*[1] 2012: **28.1** (EU: 47.8; US: 58.1) 2007-2012: **+1.4 %** (EU: +2.9 %; US: -0.2)
Innovation Output Indicator 2012: **82.8** (EU: 101.6)	*Knowledge-intensity of the economy*[2] 2012: **40.7** (EU: 51.2; US: 59.9) 2007-2012: **+0.3 %** (EU: +1.0 %; US: +0.5 %)
Areas of marked S&T specialisations: New production technologies, energy, construction, and ICT	*HT + MT contribution to the trade balance* 2012: **2.4 %** (EU: 4.23 %; US: 1.02 %) 2007-2012: **+31.9 %** (EU: +4.8 %; US: -32.3 %)

Since 2007, Cyprus has achieved a minor increase in its R&D intensity and has improved its performance on the excellence in science and technology indicator, with both the absolute figures and growth rates still remaining below the EU average. Cyprus also managed to slightly increase its performance on the knowledge-intensity indicator compared to 2007, but this value has decreased compared to 2011 and is far from the EU average. In terms of innovation output, the country is a medium-level performer ranked just below the EU average, which can be partly explained by the poor performance in technological innovation which is measured through patent applications. In terms of the economy's competitiveness, there has been a significant increase in the contribution of high- and medium-high-tech products to the trade balance with a spectacular growth rate of 31.88 % since 2007, which is much higher than the EU average.

Despite the increase in the economy's competitiveness through innovation in recent years, there are still some challenges for R&I policy-makers in Cyprus. One of the main bottlenecks in the R&I system is the small number of human resources available for research activities. This is due to the weak demand from business and industry. There is a sharp contrast between the large number of tertiary education graduates and the very small number of human resources for research. This is partially explained by a still unfavourable environment for research activities which is leading to a substantial brain drain of S&T graduates to other countries, mainly the United Kingdom and the United States. In addition, business involvement in R&I is very limited mainly due to the lack of big companies and the absence of high-tech industrial activity. The business sector is focused on services and is dominated by very small enterprises that have yet to develop an innovation culture.

The above-mentioned R&I challenges facing Cyprus could further be exacerbated following the severe economic crisis which peaked in the country in March 2013, with strict austerity measures being imposed as part of the country's economic adjustment programme. At the same time, opportunities could be created by following

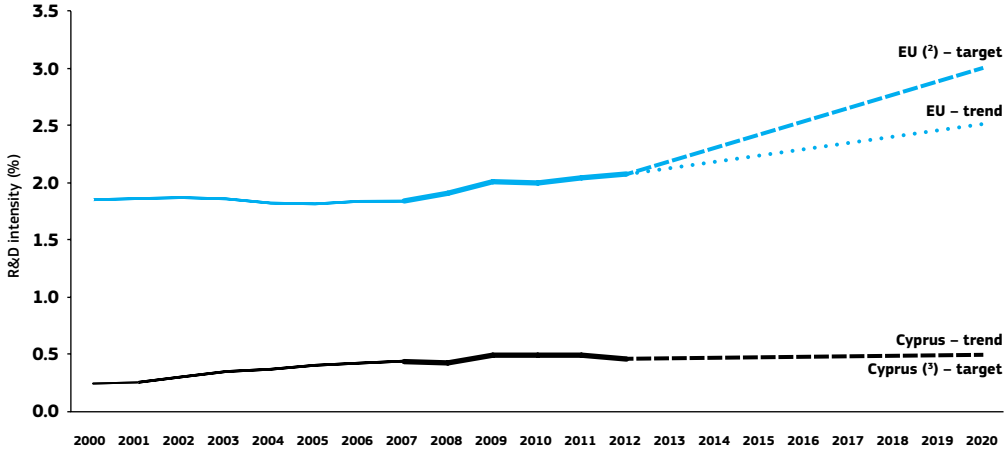
[1] Composite indicator that includes PCT per population, ERC grants per public R&D, top universities and research institutes per GERD and highly cited publications per total publications.

[2] Composite indicator that includes R&D, skills, sectoral specialization, international specialization and internationalization sub-indicators.

the principle of smart fiscal consolidation and focusing efforts on areas where the country could have a leading edge for innovations, like the ICT sector in which Cyprus is excelling. In addition, there is potential for exploring opportunities in environmental and energy technologies, given the discovery of natural gas reserves in the periphery of the country. A greater focus on R&I in Cyprus could be further promoted by the growing importance given to this area by the government.

Investing in knowledge

Cyprus – R&D intensity projections: 2000–2020 (1)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, Member State
Notes: (1) The R&D intensity projections based on trends are derived from the average annual growth in R&D intensity for 2007–2012.
(2) EU: The projection is based on the R&D intensity target of 3.0 % for 2020.
(3) CY: The projection is based on a tentative R&D intensity target of 0.5 % for 2020.

Given the latest economic developments in the country and the probable restructuring of the national R&I system, Cyprus will maintain its modest R&D intensity target of 0.5 % for 2020 as set in the context of its 2013 National Reform Programme. This restructuring is expected to take place in 2014, upon completion of the economic adjustment programme signed with the Troïka, and on the basis of the country's recent economic situation.

Despite the almost doubling of R&D intensity since 2000, a persistent stagnation can be observed in Cyprus since 2009, with R&D intensity stabilising at about 0.50 % of GDP, meeting the exact target set by the government. Furthermore, R&D intensity fell to 0.46 % in 2012, which can be attributed to the start of the financial crisis in the country which saw severe fiscal cuts in public budgets.

Low business involvement in R&I activities continues in Cyprus. In 2012, only 0.06 % of a total of 0.46 % of GERD was attributed to Business R&D expenditure (BERD), which is a very low figure compared to the rest of the EU countries. Furthermore, BERD has seen a declining trend since 2007.

Furthermore, the severe austerity measures which were applied after March 2013 and the lack of liquidity due to inadequacies in the banking system undermined the capacity of private funding for R&I activities.

EU Structural Funds are an important source of funding for R&I activities in Cyprus. Of the EUR 612 million of Structural Funds allocated to the country over the 2007-2013 programming period, around EUR 37 million (6.0 % of the total) relate to RTDI[1]. A total of EUR 108.5 million were initially allocated for R&I in the 2007-13 period, under Axis 3 of the ERDF (Knowledge Based Society and Innovation), but after a revision of the Operational Programme (OP) in 2012, EUR 21 million were

[3] RTDI includes the following sectors: (01) RTD activities in research centres, (02) RTD infrastructures and centres of competence, (03) Technology transfer and improvement of cooperation of networks, (04) Assistance to RTD, particularly in SMEs (and RTD services in research centres), (06) Assistance to SMEs for the promotion of environmentally friendly products and processes, (07) Investment in firms directly linked to research and innovation, (09) Other methods to stimulate research and innovation and entrepreneurship in SMEs, and (74) Developing human potential in the field of research and innovation.

transferred to other axes due to low absorption rates, leaving a total of EUR 87.5 million for R&I. Despite the fact that the whole sum of EUR 87.5 million has been committed and paid to implementing entities (mainly through the National Framework Programme of the Research Promotion Foundation), only EUR 42.3 million has been accounted for as real expenditure spent. This is probably the result of the country's general economic situation whereby, due to severe liquidity problems and shrinking business activities, it is much more difficult for businesses and other entities to implement those projects already started.

The main source of external funding for R&I in Cyprus has been the EU's Seventh Framework Programme for Research and Technological Development (FP7). Until March 2014, 435 participants from Cyprus benefited from FP7, benefitting from a total of EUR 87.8 million, with around one-third of that funding going to Cypriot SMEs. This shows that Cyprus has a good absorption rate from the Framework Programme relative to its size – it ranks 21st in the EU-28. However, success rates in FP7 both in terms of applications and of EU financial contributions remain quite low, which indicates possible weaknesses in networking and collaboration with other European partners.

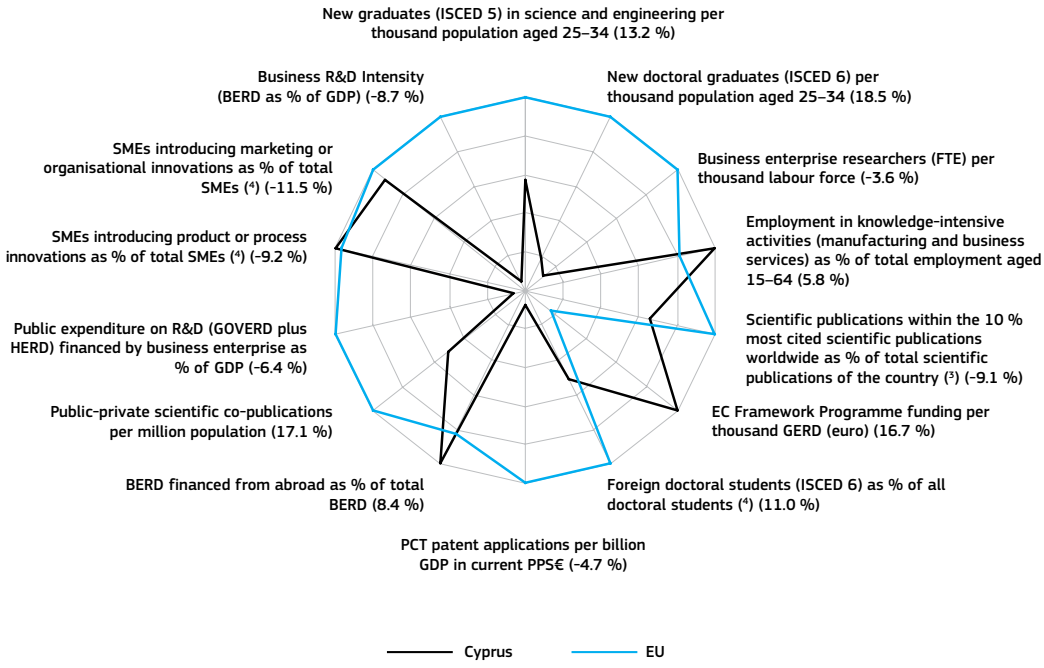
Cyprus' most active and successful participation in FP7 is in the ICT field as well as in the European Research Council and Marie-Curie actions. The most active Cypriot entities in FP7 are a few higher education institutions that absorb most of the funding. Cyprus has most FP7 collaborative links with the United Kingdom, Germany, Spain, Italy and Greece.

An effective research and innovation system building on the European Research Area

The graph below illustrates the strengths and weaknesses of Cyprus' R&I system. Reading clockwise, it provides information on human resources, scientific production, technology valorisation and innovation. Average annual growth rates from 2007 to the latest available year are given in brackets.

Cyprus, 2012 (1)

In brackets: average annual growth for Cyprus, 2007–2012 (2)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, OECD, Science-Metrix/Scopus (Elsevier), Innovation Union Scoreboard.
Notes: (1) The values refer to 2012 or to the latest available year.
(2) Growth rates which do not refer to 2007–2012 refer to growth between the earliest available year and the latest available year for which comparable data are available over the period 2007–2012.
(3) Fractional counting method.
(4) EU does not include EL.

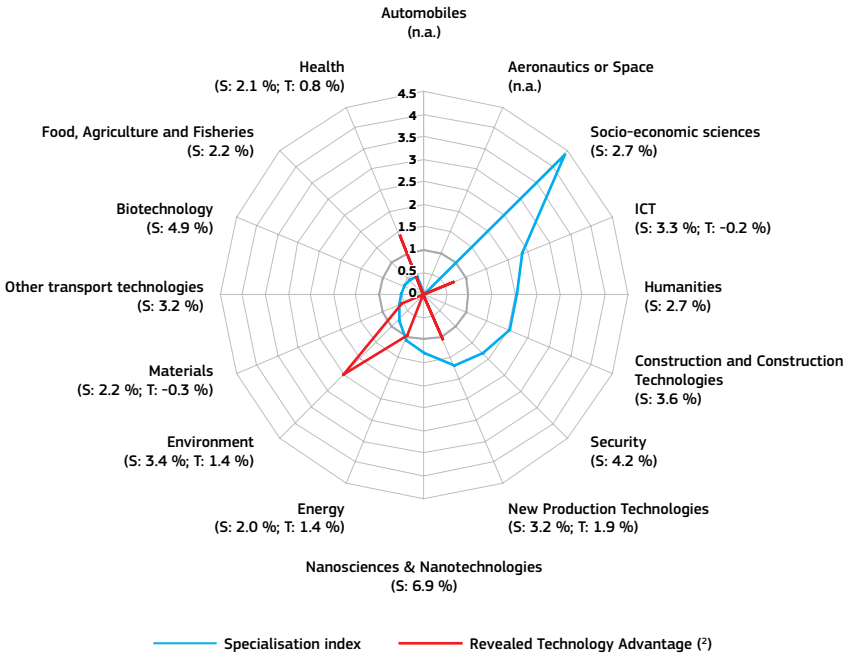
The graph above shows that R&D financing in Cyprus relies significantly more than the EU average on external funding (EU Framework Programme, private R&D funding from abroad) and in particular indicates a significant upward trend in Framework Programme funding since 2007. The graph also shows that two other indicators, employment in knowledge-intensive activities (as a percentage of total employment of age groups between 15 and 64 years) and SMEs introducing innovations (as a percentage of total SMEs) have values higher than the EU average. On the other hand, the main weaknesses in the country's R&I system occur in human resources with low levels of both business enterprise researchers and new doctoral graduates aged 25-34 years. Furthermore, Cyprus is also lagging behind regarding innovation and business investment, with the biggest gaps between Cyprus and the EU average occurring for BERD as % of GDP, public expenditure on R&D financed by business enterprise as % of GDP, and PCT patent applications per GDP. These findings underline the conclusion that significant efforts are needed domestically to promote the scientific profession and to provide appropriate incentives for business investment in R&I activities.

Research policy has a strong international dimension and is well aligned with the ERA pillars. ERA policy is seen as an opportunity to integrate the small national R&I system into the broader European market and in this context internationalisation of the research system is a high priority. The national scientific landscape does not provide space for large research infrastructures. However, due to the strong performance of its ICT and computing base, Cyprus puts particular emphasis on e-infrastructures.

Cyprus' scientific and technological strengths

The graph below illustrates the areas, based on the Framework Programme thematic priorities, where the country shows scientific and technological specialisations. Both the specialisation index (SI, based on the number of publications) and the revealed technological advantage (RTA, based on the number of patents) measure the country's scientific (SI) and technological (RTA) capacity compared to that at the world level. For each specialisation field it provides information on the growth rate in the number of publications and patents.

Cyprus – S&T National Specialisation ([1]) in thematic priorities, 2000–2010
in brackets: growth rate in number of publications ([3]) (S) and in number of patents ([4]) (T)



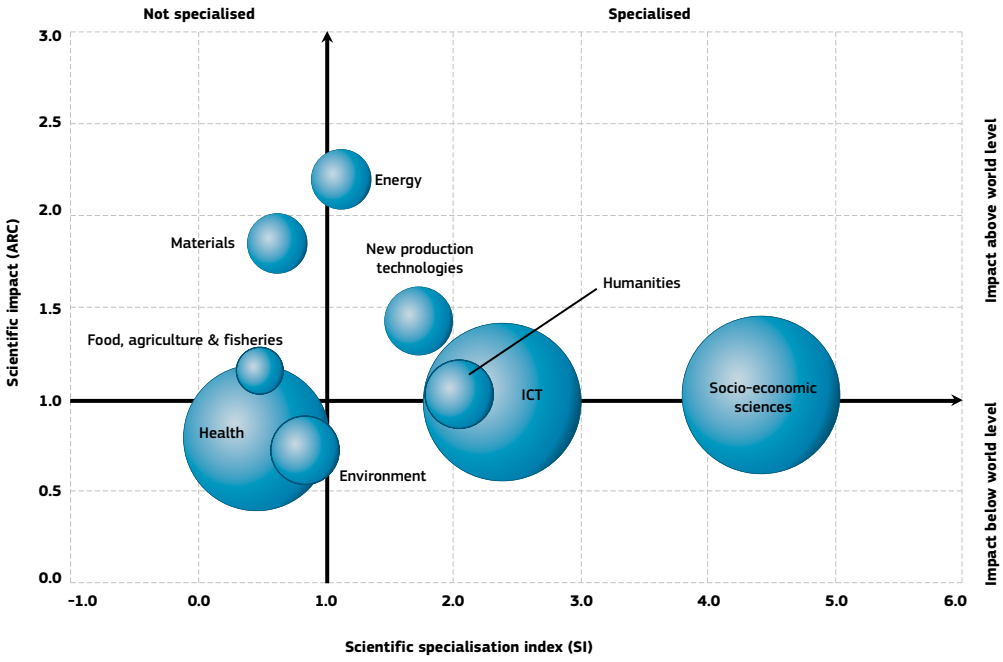
Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada; Bocconi University, Italy
Notes: ([1]) Values over 1 show specialisation; values under 1 show a lack of specialisation.
([2]) The Revealed Technology Advantage (RTA) is calculated based on the data corresponding to the WIPO-PCT number of patent applications by country of inventors. For the thematic priorities with fewer than 5 patent applications over 2000–2010, the RTA is not taken into account. Patent applications in 'Aeronautics or Space' refer only to 'Aeronautics' data.
([3]) The growth rate index of the publications (S) refers to the periods 2000–2004 and 2005–2009.
([4]) The growth rate in number of patents (T) refers to the periods 2000–2002 and 2003–2006.

Comparison of the scientific and technological specialisation in selected thematic priorities gives an interesting picture for Cyprus. In particular, technology production shows a strong specialisation in the environment and health sectors and, to a lesser extent, new production technologies and energy. However, when looking for co-specialisations both in the scientific and technological aspects, a match can only be seen with new production technologies and energy, with potential in the ICT sector.

In socio-economic sciences, where Cyprus has a very strong scientific specialisation, no technological advantage is revealed and, interestingly enough, in the environment sector where Cyprus appears to have the stronger technological specialisation, the scientific specialisation is weaker. The key areas identified in this graph seem to be in line with the key priority areas identified in Cyprus' national Smart Specialisation Strategy in which energy, environment and ICT have been identified as key priority areas for specialisation.

The graph below illustrates the positional analysis of Cyprus' publications showing the country's situation in terms of scientific specialisation and scientific impact over the period 2000-2010. The scientific production of the country is reflected by the size of bubbles, which corresponds to the share of scientific publication from a science field in the country's total publications.

Cyprus – Positional analysis of publications in Scopus (specialisation versus impact), 2000–2010



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada, based on Scopus
Note: Scientific specialisation includes 2000–2010 data; the impact is calculated for publications of 2000–2006, citation window 2007–2009.

It can be seen that in key areas of scientific specialisation, like socio-economic sciences and ICT, the impact is similar to the world average which suggests there is some room for improvement. Furthermore, it should be highlighted that despite the relatively low levels of scientific specialisation in energy and materials, these are areas with strong potential impact, implying that Cyprus will probably benefit from concentrating efforts towards the energy technologies and materials sectors.

As the excellence in research correlates to more cooperation with researchers from other European countries and beyond, in order to increase its research excellence Cyprus would benefit from actively supporting and providing incentives for its researchers to connect to Horizon 2020 networks.

Policies and reforms for research and innovation

The R&I system in Cyprus is relatively new. It evolved mainly in the early 1990s with the establishment of the University of Cyprus in 1992 and of the Research Promotion Foundation in 1996, which aims to promote the development of scientific research, technology and innovation. In the last decade, Cyprus has achieved a significant increase in its R&D intensity, which has led to improved excellence in science and technology. However, R&D investment relies predominantly on public expenditure, with 72 % of total R&D expenditure (GERD) being financed by the government in 2012 – one of the highest percentages in the EU. BERD remains very low at about 14 % of total R&D expenditure in 2012 and has declined by a further 8.5 % since 2007.

The Cypriot economy has been in financial distress since 2011, initiated by the global economic crisis and exacerbated by the losses suffered from a restructuring of Greek state bonds, in which the local banking system had invested heavily. The debt crisis in Cyprus peaked in March 2013, when the EU-ECB-IMF Troika and the Cyprus government agreed to a Memorandum of Economic and Financial Policies, including a financial rescue package, structural reforms and a mandatory 'trimming' of bank deposits above EUR 100 000 to save the over-indebted banks and ease credit pressures on the government.

The latest economic developments in the country will undoubtedly also affect the R&I sector, in particular future government expenditure on R&D.

On the positive side, however, the new government (as of March 2013) has announced that significant effort will be put into R&I in an attempt to exit from the financial crisis. As a result, a National Committee on Research, Innovation and Technological Development (NCRITD) was set up by the Council of Ministers in September 2013, comprising distinguished experienced scientists coming from the Cypriot academic, research and business sectors, to review the national R&I system and to make relevant recommendations on its governance to the President of the Republic of Cyprus. The work of the NCRITD was completed in March 2014 and its outcomes submitted to the President. Its report proposes the creation of a new system structured on four levels (strategic, political, operational/implementation, and research stakeholders), which integrates research, innovation and entrepreneurship. The study proposes, among others, the appointment of a commissioner for research, innovation and entrepreneurship, the creation of a new DG covering these sectors under the Ministry of Finance, the establishment of an advisory committee, and the redesign of the role of the Research Promotion Foundation (RPF) to accommodate technology transfer activities. The study is currently being reviewed by the presidency.

Furthermore, the Smart Specialisation Strategy for R&I, an *ex-ante* conditionality for the use of European Structural and Investment Funds (ESIF) for R&I in Cyprus is expected to be finalised in spring 2014. The sectors identified through this process are: tourism, energy, construction, shipping, health, ICT and the environment.

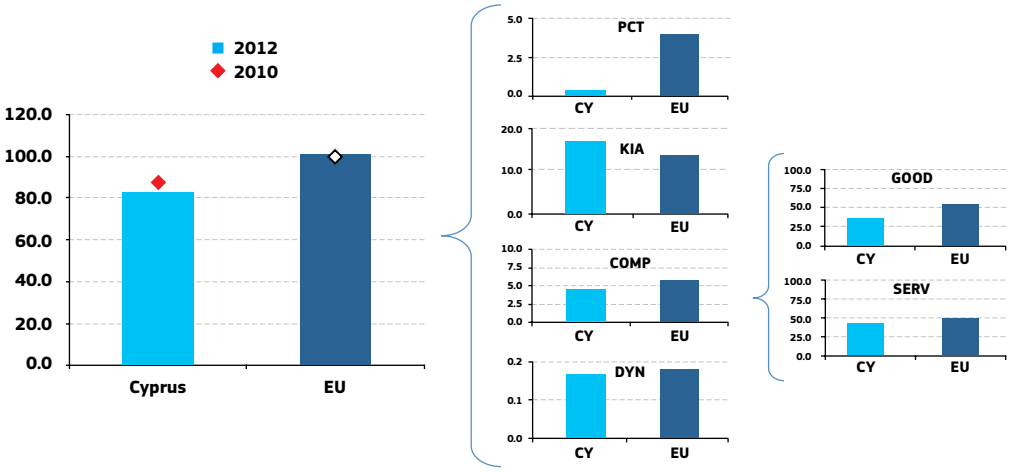
The outcome of the two above-mentioned reports is expected to prove useful for the drawing up of the National 2014-20 R&I Strategy which should be completed by the end of 2014. This strategy will be implemented mainly through programmes of the Research Promotion Foundation, which is the main funding agency for R&I in Cyprus.

Finally, due to the prevailing economic crisis in the country and the resulting liquidity constraints, the main source of public funding for the implementation of the new R&I strategy is expected to come from the ESIF for the 2014-20 period. The bulk of the funding that will be allocated for R&I from the ESIF Operational Programme for Cyprus will be spent through the DESMI 2014-20, which is the national Framework Programme for R&I designed and implemented by the RPF. In parallel, the Technology Service at the Ministry of Energy, Commerce, Industry and Tourism will implement schemes for promoting specifically business innovation.

Innovation Output Indicator

The Innovation Output Indicator, launched by the European Commission in 2013, was developed at the request of the European Council to benchmark national innovation policies and to monitor the EU's performance against its main trading partners. It measures the extent to which ideas stemming from innovative sectors are capable of reaching the market, providing better jobs and making Europe more competitive. The indicator focuses on four policy axes: growth via technology – (patents); jobs (knowledge-intensive employment); long-term global competitiveness (trade in mid/high-tech commodities); and future business opportunities (jobs in innovative fast-growing firms). The graph below enables a comprehensive comparison of Cyprus' position regarding the indicator's different components:

Cyprus – Innovation Output Indicator



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, OECD, Innovation Union Scoreboard 2014, DG JRC
Notes: All data refer to 2012 except PCT data, which refer to 2010.
PCT = Number of PCT patent applications per billion GDP, PPS.
KIA = Employment in knowledge-intensive activities in business industries as % of total employment.
DYN = Innovativeness of high-growth enterprises (employment-weighted average).
COMP = Combination of sub-components GOOD and SERV, using equal weights.
GOOD = High-tech and medium-high-tech products exports as % total exports. EU value refers to EU-28 average (extra-EU = 59.7 %).
SERV = Knowledge-intensive services exports as % of total service exports. EU value refers to EU-28 average (extra-EU = 56 %).

Cyprus is a medium-low performer in the European innovation output indicator. This is a result of average-to-low performance in all components, except for employment in knowledge-intensive activities. Furthermore, its performance has been declining since 2010.

Low performance in patents is linked to the country's economic structure with a very small capital goods sector and a lack of large manufacturing companies, which typically show high patenting activities when headquartered in the respective country and if linked to a well-performing research system.

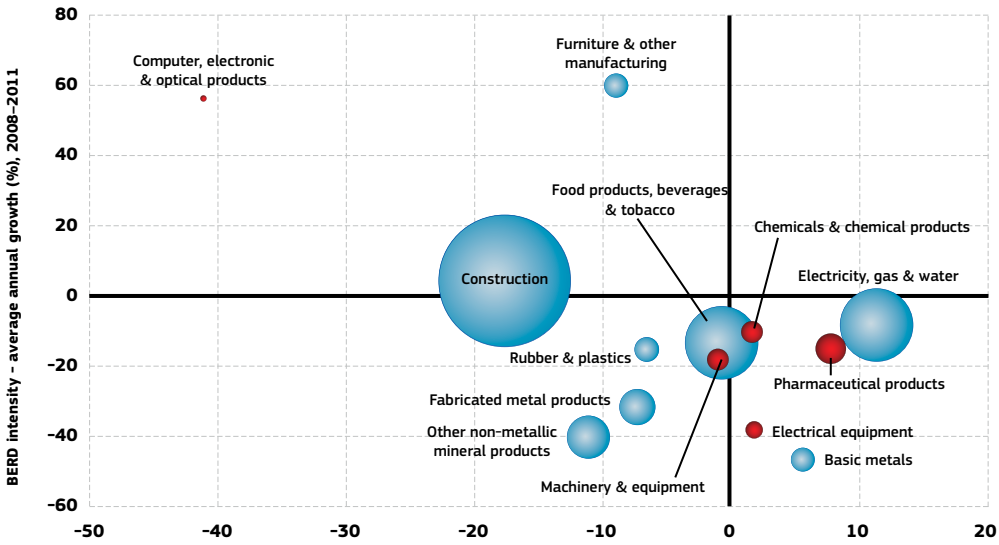
As regards trade, with its limited technology-oriented manufacturing base Cyprus has a low share of medium-high-tech and high-tech exports.

Cyprus performs below EU average as regards employment in fast-growing innovative firms as a % of total employment in fast-growing firms. This is the result of a high share of sectors with low innovation scores, including accommodation, construction and food services, among the fast-growing enterprises not compensated for by fast-growing firms in more innovative sectors.

Upgrading the manufacturing sector through research and technologies

The graph below illustrates the upgrading of knowledge in different manufacturing industries for the period 2008-2011. The position on the horizontal axis illustrates the changing weight of each industry sector in value added over the period. The general trend to the left-hand side reflects a decrease in manufacturing in the overall economy. The sectors above the x-axis are those where research intensity has increased over time. The size of the bubble represents the sector share (in value added) in manufacturing (for all sectors presented on the graph). The red sectors are high-tech or medium-high-tech sectors.

Cyprus – Share of value added versus BERD intensity: average annual growth, 2008–2011



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat
Note: (1) High-tech and medium-high-tech sectors (NACE Rev. 2 – two-digit level) are shown in red.

The Cypriot economy is dominated by small, family-run enterprises with limited export orientation. The country's economy is dominated by the service sector, mainly tourism, transport and finance, with manufacturing representing only around 7 %. Such characteristics do not favour R&D. SMEs which provide mainly low-value-added support services are unlikely to invest in R&I. Most firms tend to concentrate on low-value-added products and services rather than taking risks on new products or export markets.

The graph above shows that manufacturing industry in Cyprus is largely dominated by low-tech and medium-low-tech sectors (which are less research intensive) and mainly by the construction sector, followed by the electricity, gas and water sectors and the food products, beverages and tobacco sector. Structural changes towards more research-intensive economies are in general driven by high-tech and medium-high-tech manufacturing sectors. The country has four such sectors: pharmaceutical products, machinery and equipment, chemicals and chemical products, and electrical equipment.

Key indicators for Cyprus

CYPRUS	2000	2005	2006	2007	2008	2009	2010	2011	2012	Average annual growth 2007–2012 (1) (%)	EU average (2)	Rank within EU
ENABLERS												
Investment in knowledge												
New doctoral graduates (ISCED 6) per thousand population aged 25–34	0.13	0.05	0.27	0.14	0.24	0.24	0.23	0.31	0.33	**18.5**	***1.81***	**27**
Performance in mathematics of 15-year-old students: mean score (PISA study)	:	:	:	:	:	:	:	:	:	:	:	:
Business enterprise expenditure on R&D (BERD) as % of GDP	0.05	0.09	0.10	0.10	0.10	0.10	0.09	0.07	*0.06*	***-8.7***	**1.31**	**28**
Public expenditure on R&D (GOVERD + HERD) as % of GDP	0.18	0.29	0.30	0.31	0.28	0.33	0.34	0.35	*0.34*	***1.9***	***0.74***	**25**
Venture capital as % of GDP	:	:	:	:	:	:	:	:	:	:	:	:
S&T excellence and cooperation												
Composite indicator on research excellence	:	:	:	26.3	:	:	:	:	28.1	**1.4**	**47.8**	**16**
Scientific publications within the 10% most cited scientific publications worldwide as % of total scientific publications of the country	:	6.8	7.7	8.7	8.7	7.2	:	:	:	**-9.1**	**11.0**	**17**
International scientific co-publications per million population	:	434	505	602	721	876	1005	1029	1066	**12.1**	**343**	**9**
Public–private scientific co-publications per million population	:	:	:	14	13	16	27	27	:	**17.1**	**53**	**18**
FIRM ACTIVITIES AND IMPACT												
Innovation contributing to international competitiveness												
PCT patent applications per billion GDP in current PPS (EUR)	0.8	1.0	0.5	0.3	0.5	0.6	0.3	:	:	**-4.7**	**3.9**	**27**
License and patent revenues from abroad as % of GDP	0.00	0.09	0.09	0.10	0.05	0.05	0.04	0.01	0.01	**-43.5**	**0.59**	**27**
Community trademark (CTM) applications per million population	84	136	187	280	238	295	324	510	474	**11.1**	**152**	**3**
Community design (CD) applications per million population	:	9	12	10	3	9	15	20	17	**11.1**	**29**	**18**
Sales of new-to-market and new-to-firm innovations as % of turnover	:	:	12.3	:	16.1	:	14.7	:	:	**-4.4**	**14.4**	**10**
Knowledge-intensive services exports as % total service exports	:	33.2	35.2	41.2	47.1	47.5	48.5	42.9	:	**1.0**	**45.3**	**8**
Contribution of high-tech and medium-tech products to the trade balance as % of total exports plus imports of products	-4.71	3.79	1.78	0.60	-0.13	1.07	0.66	1.49	2.39	-	**4.23 (3)**	**12**
Growth of total factor productivity (total economy): 2007 = 100	99	98	99	100	100	96	96	95	95	**-5 (4)**	**97**	**17**
Factors for structural change and addressing societal challenges												
Composite indicator on structural change	:	:	:	40.1	:	:	:	:	40.7	**0.3**	**51.2**	**18**
Employment in knowledge-intensive activities (manufacturing and business services) as % of total employment aged 15–64	:	:	:	:	14.8	14.3 (5)	14.4	15.0	16.9	**5.8**	**13.9**	**6**
SMEs introducing product or process innovations as % of SMEs	:	:	37.9	:	42.2	:	34.8	:	:	**-9.2**	**33.8**	**14**
Environment-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	0.13	0.17	0.10	0.18	0.10	0.05	:	:	:	**-45.9**	**0.44**	**20**
Health-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	0.09	0.26	0.06	0.11	0.00	0.23	:	:	:	**41.0**	**0.53**	**16**
EUROPE 2020 OBJECTIVES FOR GROWTH, JOBS AND SOCIETAL CHALLENGES												
Employment rate of the population aged 20–64 (%)	72.3	74.4	75.8	76.8	76.5	75.3 (5)	75.0	73.4	70.2	**-2.3**	**68.4**	**11**
R&D intensity (GERD as % of GDP)	0.25	0.41	0.43	0.44	0.43	0.49	0.50	0.49	*0.46*	***0.9***	***2.07***	**28**
Greenhouse gas emissions: 1990 = 100	138	150	154	157	160	156	151	147	:	**-9 (6)**	**83**	**27 (7)**
Share of renewable energy in gross final energy consumption (%)	:	2.6	2.8	3.5	4.5	5.0	5.4	5.4	:	**11.5**	**13.0**	**23**
Share of population aged 30–34 who have successfully completed tertiary education (%)	31.1	40.8	46.1	46.2	47.1	45.0	45.3	46.2	49.9	**1.6**	**35.7**	**2**
Share of population aged 18–24 with at most lower secondary education and not in further education or training (%)	18.5	18.2 (8)	14.9	12.5	13.7	11.7	12.7	11.3	11.4	**-1.8**	**12.7**	**18 (7)**
Share of population at risk of poverty or social exclusion (%)	:	25.3	25.4	25.2	23.3 (9)	23.5	24.6	24.6	27.1	**3.8**	**24.8**	**18 (7)**

Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, DG JRC – Ispra, DG ECFIN, OECD, Science Metrix / Scopus (Elsevier), Innovation Union Scoreboard
Notes: (1) Average annual growth refers to growth between the earliest available year and the latest available year for which compatible data are available over the period 2007–2012.
(2) EU average for the latest available year.
(3) EU is the weighted average of the values for the Member States.
(4) The value is the difference between 2012 and 2007.
(5) Break in series between 2009 and the previous years. Average annual growth refers to 2009–2012.
(6) The value is the difference between 2011 and 2007. A negative value means lower emissions.
(7) The values for this indicator were ranked from lowest to highest.
(8) Break in series between 2005 and the previous years.
(9) Break in series between 2008 and the previous years. Average annual growth refers to 2008–2012.
(10) Values in italics are estimated or provisional.

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