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RIO Country Report 2017: Greece

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RIO Country Report 2017

The R&I Observatory country report 2017 provides a brief analysis of the R&I system covering the economic context, main actors, funding trends & human resources, policies to address R&I challenges, and R&I in national and regional smart specialisation strategies. Data is from Eurostat, unless otherwise referenced and is correct as at January 2018. Data used from other international sources is also correct to that date. The report provides a state-of-play and analysis of the national level R&I system and its challenges, to support the European Semester.

Summary

In 2016 the Greek GDP per capita was stagnated at €16,200 and Greece recorded a Government Budget surplus equal to 0.50% of GDP although the Government debt increased from 176.8% of GDP in 2015 to 180.8%. Although the unemployment rate dropped in 2016 to 23.6% from 24.9% in 2015 it is still the highest in EU28. Greece achieved an impressive performance in attracting FDI in 2016, with total (gross) FDI inflows almost reaching €3.5 billion, increased by 82% since 2015, and €3,3 billion until November 2017¹. Yet, according to the World Bank's index "Doing Business 2017", Greece ranks 61st worldwide², and according to the same index in 2018 ranks 67th. Access to finance and venture capital are areas where Greek SMEs perform well below EU average.

The total R&D intensity (GERD) increased to 0.99% of GDP in 2016 (from 0.97% in 2015). BERD presented a larger increase, i.e. from 0.32% of GDP in 2015 to 0.42%. For the first time the business sector became the largest R&D performer, outperforming the HE sector, and it contributed almost as much as the Government to the funding of the Greek R&D.

Main R&I policy challenges

Challenge 1: Stimulate innovation in an improved framework environment

The framework conditions for innovation are not favourable. Venture capital expenditures bottomed to only 1% of the EU average in 2016 (EIS 2017), the country fell one position in doing business in 2017 (from 60 to 61) and another 6 positions in 2018 (67 among 190 countries). In the ease of getting credit is ranked 72nd. (World Bank GII). A new Fund-of-Funds programme was launched in December 2016 that is managed by the European Investment Fund (EIF) with a total budget of €260m. However, financial instruments are unlikely to be enough to encourage innovation and private R&D spending. Any measure to support private R&I investment will only have lasting effects if bank lending, equity supply, and company liquidity pick up again.

Challenge 2: Transform brain drain into talent mobility and repatriation

Based on the latest EUROSTAT data the flow of emigration has more than doubled in the period 2009-2015. More than two out of three of the post-2010 emigrants are university graduates while 25% of the total outflow concerns people who hold postgraduate degrees or are graduates of medical and polytechnic schools. The brain-drain issue is recognised as a key challenge that needs appropriate measures. The recently (2016) established National Foundation for Research and Innovation (NFRI-ELIDEK) aims to address this challenge.

Challenge 3: Strengthen specialisation and improve RIS3 implementation

RIS3 strategies have been developed both at the national and regional levels following international practice. However, the priority areas were defined very widely instead of focusing investments on few and well-defined areas reflecting specialisation. The wide consultation process that was applied along with the Entrepreneurial Discovery Process was very much appreciated and led to increased engagement of stakeholders. At the national level 8 calls have been launched. At the regional level eight out of the thirteen regions have published 1 or 2 calls until now. Delays due to the need to comply with the new State Aid rules and the obligation to develop an electronic management platform for each call for proposals have been reported by regions as the main bottleneck.

¹ <https://tradingeconomics.com/greece/foreign-direct-investment>

² Participation of 190 countries

Smart specialisation

The Smart Specialisation strategy RIS3 was developed both at national and at regional level in the period 2013-2015. The adoption of the smart specialization strategy was accompanied by the approval of the largest Operational Programme "Restart" (EPANEK) which includes a large part of the actions outlined in the strategy.

At the national level, RIS3 places emphasis on eight sectors: Agrofood; Life Sciences & Health – Pharma; Information and Communication Technologies; Energy; Environment and Sustainable Development; Transport and Logistics; Materials – Construction; Culture - Tourism - Cultural & Creative Industries. At the regional level, thirteen RIS3 were developed following consultation processes with local stakeholders.

All calls for proposals launched so far were designed to fully match the RIS3 priorities.

Foreword

The R&I Observatory country report 2017 provides a brief analysis of the R&I system covering the economic context, main actors, funding trends & human resources, policies to address R&I challenges, and R&I in national and regional smart specialisation strategies. Data is from Eurostat, unless otherwise referenced and is correct as at January 2018. Data used from other international sources is also correct to that date. The report provides a state-of-play and analysis of the national level R&I system and its challenges, to support the European Semester.

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1 Economic context for R&I

In 2016 the Greek GDP per capita was stagnated at €16,200, as a result of a divergent process. While private consumption grew steadily most of the year, government consumption and net exports dropped.³ Greece recorded a Government Budget primary surplus equal to 0.50 percent of the country's GDP in 2016. At the same time, the Government debt increased from 176.8% of GDP in 2015 to 180.8%. According to the DG ECFIN Economic Forecasts (Autumn 2017)⁴, "Greece's economy is growing again, and the recovery is expected to strengthen as investment rebounds and consumption growth rises. The forecast assumes a smooth completion of the third programme review and an orderly closure of the ESM stability support programme in 2018. Any delay in this process would be harmful for the recovery".

Similar messages are conveyed in the Background Report of the First & Second Reviews in July 2017⁵: The recovery of the Greek economy is expected to gather momentum in 2017 and growth is projected to reach 2½% in 2018. Greece is on track to meet its ESM primary surplus target of 1.75% of GDP in 2017.

Although the unemployment rate dropped in 2016 to 23.6% from 24.9% in 2015 it is still the highest in EU28. The European Commission's Winter 2017 "Employment and social developments" survey indicates that currently Greece is the only Member with unemployment rate exceeding 20%. More recent data for May 2017 show that the seasonally adjusted unemployment rate edged down to 21.7% compared with 23.6% in May 2016⁶.

During the first two-thirds of the ESM programme, Greece has undertaken significant reform efforts across all policy areas. Greece continued to introduce direct and indirect tax reforms in 2016 to meet the fiscal targets under the ESM stability support programme, and according to OECD it was among the countries that implemented or legislated the most comprehensive tax reforms (OECD, Tax policy reforms 2017).

Greece ranks on the 87th place (out of 138) of the Global Competitiveness Index rankings for 2017-2018 (last among the EU28).⁷ The Labour Productivity Index (per hour worked) continued falling in 2016 reaching its lowest level since 2011 (93.6 vs 94.2 in 2015 and 96.7 in 2011).

According to the IMF (IMF, 2017), Greece has made significant progress in unwinding its macroeconomic imbalances, despite the policy constraints imposed by its membership in the European currency Union. Notwithstanding the substantial progress achieved by Greece, it still faces fundamental challenges: (i) a vulnerable structure of the public finances; (ii) significant tax evasion and an ineffective tax administration; (iii) impaired bank and private sector balance sheets; and (iv) pervasive structural obstacles to investment and growth. Moreover, its public debt remains highly unsustainable. Addressing these remaining challenges and restoring debt sustainability are essential to creating a vibrant and dynamic private sector capable of generating sustainable and equitable growth and employment.⁸

1.1 Structure of the economy

In 2016⁹, the Greek service sector contributed over 79.7% to the national GDP and employed 74.5% of the workforce. The contribution from knowledge intensive services

³ <http://www.lse.ac.uk/europeanInstitute/research/hellenicObservatory/CMS%20pdf/Publications/Greece-Macro-Monitor-Greece-2017-Economic-Outlook-1-March-2017.pdf>

⁴ https://ec.europa.eu/info/sites/info/files/economy-finance/ecfin_forecast_autumn_091117_el_en.pdf

⁵ https://ec.europa.eu/info/sites/info/files/economy-finance/ip064_en.pdf

⁶ <https://tradingeconomics.com/articles/08102017101404.htm>

⁷ <https://widgets.weforum.org/global-competitiveness-report-2017/>

⁸ <http://www.imf.org/en/Publications/CR/Issues/2017/02/07/Greece-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-44630>

⁹ Last available data.

was about 37.2% (2016). The manufacturing sector contributed almost 9.9% of the national GDP (of which 1.9% come from High and Medium-High Tech sectors) and employed 7.9% of the workforce. Within manufacturing, food production generates by far the largest share of total GVA. With more than 27 million¹⁰ foreign arrivals in 2016 and almost 30 million in 2017^{11, 12}, the tourism industry, with its strong comparative advantage, represents the most reliable driver of growth for the Greek economy.

According to the SBA Factsheet 2017¹³, SMEs in Greece were hit hard by the crisis and have still not recovered. In 2016, value added and employment were still 34.0 % and 18.4 % below their respective 2008 values. However, the Greek economy has recently made important progress in rebounding from the recession, and SMEs are showing some signs of recovery. Most recently, SME employment increased overall by 2.4 % in 2015-2016, while SME value added decreased by 1.4 % in the same period. Employment in SMEs, which started to grow in 2015, is forecasted to continue to do so in 2017 and 2018, and increases of 2.5 % per annum are expected. Overall, 96 500 new SME jobs are predicted by 2018, almost half of them in micro firms. The stagnation in value added seen in recent years is expected to shift to growth after 2016, increasing by 9.9 % in 2016-2018. With an anticipated annual rise of 5.8 % in value added, small firms are likely to be the accelerator of this growth. (SBA, 2017)

Greece achieved an impressive performance in attracting FDI in 2017, despite the economic crisis the country is facing since 2010. More specifically, total (gross) FDI inflows almost reached 3.5 billion Euros until November 2017, increased by 82% since 2015 and 14% since 2014.¹⁴

1.2 Business environment

According to the World Bank's index "Doing Business 2017", Greece ranks 61st worldwide, losing one position compared to the previous year. In the 2018 index Greece is ranked 67th among 190 countries, that is 6 positions lower. Similarly, Greece went down three places in the World Bank indicator "Ease of getting credit" (World Bank, GII 2016) and it ranks 72nd worldwide (128 countries) and 20th among the EU28.

There have been efforts to reduce the cost of doing business, although results so far are quite limited. Licensing procedures and regulations to operate a business continue to be relatively burdensome. Greece still performs badly in areas which are important for investment (e.g. in retail, tourism, logistics, etc.) according to the World Bank Doing Business Index (2017).

Access to finance has received significant policy attention due to the economic crisis. However, despite the policy efforts and reforms introduced since 2008, Greek SMEs still face severe liquidity problems and find it difficult to finance their activities and investments. Most of the support measures implemented since 2008 were co-financed by EU sources, including EU structural funds and funds from the EIF, EBRD or EIB. The measures have included grants, financial instruments to promote venture and equity funding, public guarantee schemes for micro loans and tax incentives for investments. A one-stop shop for SMEs funding is still lacking. The design and implementation of measures that will improve the availability of these forms of financing are considered to be areas of further improvement (SBA, 2017).

To tackle some of these problems, a new investment platform, "the Equifund" started operating since 2017. Equifund's resources come from the Operational Program "Competitiveness, Entrepreneurship and Innovation" of the NSRF 2014-2020 (EUR 200 million) and the European Investment Fund (EIF), belonging to the European Investment

¹⁰ <https://news.qtp.gr/2017/01/19/sete-greece-2016-tourist-arrivals-break-record/>

¹¹ <http://greece.greekreporter.com/2017/11/06/tourism-minister-over-30-million-arrivals-in-greece-in-2017/>

¹² <https://tradingeconomics.com/greece/tourist-arrivals>

¹³ <https://ec.europa.eu/docsroom/documents/26562/attachments/13/translations/en/renditions/native>

¹⁴ <https://tradingeconomics.com/greece/foreign-direct-investment>

Bank (EUR 60 million, 10 of which come from the Junger Investment Plan). Additional funding is possible by international organisations as well as individual investors.¹⁵

Equifund's investments concern three areas of activity ("windows") and the goal is the high (up to 1 to 10) leverage of these investments. The areas are: a) research and innovation, b) general entrepreneurship in early stages, and c) general entrepreneurship in growth stages. These objectives are broadly in line with the strategic objectives of the NSRF 2014-2020, aiming at complementing and serving a wider development plan. This, of course, remains to be seen in practice, especially in the case of the specialization of the NSRF.¹⁶

In relation to SME innovators (product/process innovations, marketing/ organisational innovations, innovating in-house) the Greek performance has fallen from 121.3% of the EU in 2010 to 101.2% of the average EU 2010 performance in 2016 but remains above the EU average. R&D expenditure in the business sector increased from 17.6% of EU average in 2010 to 25.3% of the EU 2010 performance in 2016. (European Innovation Scoreboard 2017) BERD intensity rose from 0.32 in 2015 to 0.42 in 2016 but it is still one of the lowest in EU.

The trade deficit widened to EUR 1.51bn in July 2017 from EUR 1.43bn in the same month a year earlier.¹⁷

The undeclared work, political uncertainty, high energy costs, the inefficiency of the state and corruption are the five main obstacles to the development of business activity in Greece. The underground economy is considered the biggest problem by almost half of the enterprises surveyed by the European Bank for Reconstruction and Development¹⁸. Another significant obstacle is the high political uncertainty, which does not allow for healthy business activity. After energy costs and the inefficiency of state agencies, problems which mainly affect large companies, the list of obstacles also includes corruption, telecommunications and difficulty in obtaining financing. Similar conclusions were drawn in the Grant Thornton's International Business Report, which found that the biggest obstacle to the recovery of Greek enterprises is economic uncertainty (for 84 percent of respondents)¹⁹. Other major obstacles identified were the lack of funding and bureaucracy. Profit expectations remain low, with only 24% of companies expecting to post a profit this year (2017).²⁰

At the same time, as reported by OECD, Greek markets still remain amongst the most heavily regulated within OECD members²¹. The OECD²² has been closely working with Greece since 2012 to assess competition laws and regulations hindering competition.

Greece ranks 26th in the Digital Economy and Society Index (DESI) for 2017. Overall Greece did not make much progress compared to other EU Member States. Greeks are more actively using internet for video calls and online content. The low performance in digital skills risks acting as a brake to the further development of the digital economy and society.²³

In August 2017, the Prime Minister presented the two-year strategy for National Administrative Reform 2017-2019, aiming to address weaknesses, deficiencies and problems within the public administration system. The overall vision is to create an independent, efficient and operational public administration, responsive to the actual societal needs, and able to provide high level services towards citizens and businesses.

¹⁵ <https://www.espa.gr/el/pages/EquiFund.aspx>

¹⁶ <https://www.dianeosis.org/2016/12/equifund/>

¹⁷ <https://tradingeconomics.com/greece/balance-of-trade>

¹⁸ <http://www.ebrd.com/news/2016/unique-ebrd-survey-sheds-light-on-the-impact-of-change-on-peoples-lives.html>

¹⁹ <http://www.grant-thornton.gr/press-releases/2017/IBR-Q4-economic-update/>

²⁰ <http://www.ekathimerini.com/215648/article/ekathimerini/business/five-major-obstacles-to-investment>

²¹ According to the [OECD Product Market Regulation index](#)

²² <http://www.oecd.org/greece/greece-competition-assessment-project.htm>

²³ Greek DESI country profile 2017. Available at: <https://ec.europa.eu/digital-single-market/en/scoreboard/greece>

The strategy consists of 8 axes: 1) policy development and implementation, 2) Procedures and infrastructure, 3) Local governance, 4) Human resources, 5) Regulatory governance, 6) Transparency, accountability and open governance, 7) e-governance strategy and 8) Fight against corruption²⁴.

2 Main R&I actors

The government is the largest R&D funder (42% of the GERD in 2016) and the third largest R&D performer (after Business and Higher Education Institutes).

The National Council for Research and Innovation (NCRI) is the supreme State advisory body for national policy for research, technology and innovation. The responsibility of funding research is shared between the Ministry of Education, Research and Religious Affairs and the Ministry of Economy, Development and Tourism. Funds coming from the Regional Operational Programmes are typically under the responsibility of the Regional Authorities. The Ministry of Rural Development and Food supervises the National Agricultural Research Foundation (NAGREF), which undertakes research and technology in Greece in agricultural, forest, animal and fish production and other related areas.

The Higher Education sector is the second largest R&D performer accounting for 33% of the total R&D expenditure in 2016, with a significant decrease in absolute value (in euros) of 12% since 2015. Currently (September 2017). The Higher Education sector is composed of 20 public universities and 14 public Technological Education Institutes (TEI). In addition, there is a public Military School, a Police Academy, School of Tourism Education, Ecclesiastical Academy, Merchant Navy Academy and a Fire Fighting School. There are also 28 private universities of various types accredited by the Ministry of Education, Research and Religion operating in the country. There are 10 public research centres and 4 technological ones, of varying sizes, supervised by the GSRT.

The Business Sector is for the first time the largest R&D performer in Greece (42% of the total GERD respectively). Business R&D has increased tremendously since 2015, with a rate of 28.7%²⁵. Based on the EU2017 Industrial R&D Investment Scoreboard, five Greek companies (the same as the previous year) featured among the top 1,000 EU companies on R&D spending: PHARMATHEN (Pharmaceuticals & Biotechnology), INTRALOT (Technology Hardware & Equipment), the National Bank of Greece (Banks), GALAXIDI Marine Farm and Creta Farms (Food Producer). A large number of SMEs and start-ups are also declaring R&I activities mainly in service and incremental innovations. Very few multinationals are research actors in the country.

There are numerous Private Non-Profit (PNP) organisations in Greece but only a few of them are actively engaged in research or innovation activities. Their contribution to the total R&D expenditure accounts decreased by 22.6% since 2015 and remained steadily low (0.01%) in 2016.²⁶

²⁴ <http://www.amna.gr/en/article/182366/National-Strategy-for-Administrative-Reform-2017---2019-to-be-presented-on-Wednesda>

²⁵ http://metrics.ekt.gr/sites/metrics/files/RDstatistics_2016provisional_Greece_el.pdf

²⁶ http://metrics.ekt.gr/sites/metrics/files/RDstatistics_2016provisional_Greece_el.pdf

3 R&I policies, funding trends and human resources

Main R&I policy developments in 2017

<i>Document title, hyperlink and date of publication/announcement</i>	<i>Short description</i>
Law 4452/2017 establishing the National Council of Education and Human Resource Development (ESEKAAD). (Article 18)	It establishes the National Council of Education and Human Resource Development (ESEKAAD), which constitutes an advisory body to the Minister of Education, Research and Religious Affairs. The Council is founded with the view to provide advice and scientific guidance for issues of imperative importance related to educational policy design. The context is within that of promoting knowledge, viable development, best possible use of manpower's skills and competences, promotion of inclusive employment and the interconnection of education with the labour market and employment.
Law 4452/2017 Establishing University Schools and Departments (Article 27)	A Polytechnic School is established at the University of Ioannina and operates since academic year 2017-2018. A Department of Tourism Studies is established at the University of Piraeus. A Department of Economics and Tourism Management is established at the University of Aegean, based on Chios island.
National Strategy for Administrative Reform 2017-2019, August 2017	Through an administrative reorganisation and the promotion of e-government, the plan aims to address the problems of understaffing in the public sector and ensure the optimal allocation of staff, while making use of technology to upgrade the services provided.
Law 4442/2016 : New institutional framework for the exercise of economic activity and other provisions, December 2016	The New legal framework on economic activity and other provisions L.4442/2016 eliminates the advance licensing process and introduces an automated notification/approval process for starting an economic activity and the electronic submission of applications. For this reason, an 'integrated information system of activity' for implementation and inspections is planned, where all the required notices and statements will be stored
Law 4441/2016 : Simplification of business creation procedures, removal of regulatory barriers to competition and other provisions (6/12/2016)	Simplification of companies' establishment procedures, removal of regulatory hurdles to competition and other provisions L.4441/2016 establishes a new electronic one-stop shop service to set up a company via a fully electronic process and without a notarial deed.
Law 4430/2016 : Social and Solidarity Economy and development of its agencies and other provisions (31/10/2016)	Institutional framework for the social and solidarity economy (Law 4430/2016). The new legislative framework establishes social cooperative business and employee cooperatives.
Law No 4416/2016 ; Amendment of Law 4099/2012 (A 250)	The institutional framework for crowdfunding (L.4416/2016) was adopted (amendments to

(transposition of Directive 2014/91 / EU / L 257 into national law) and other provisions (Article 27)	L.3401/2005 and L.3606/2007 for issuing prospectuses and providing investment services, creating electronic platforms and managing IS for crowdfunding)
Law 4429/2016 (Gov. Gazette no 199, 21/10/2016) Establishment of the Hellenic Foundation for Research and Innovation, and other provisions	Establishment of a Hellenic Foundation for Research and Innovation
Law 4485/2017 (Gov. Gazette no 114/4-8-2017)	Organization and operation of higher education, arrangements for research and other provisions

R&I funding trends

In 2016 the total R&D expenditure (GERD) increased by 1.7%, from € 1.7 billion to € 1.73 billion (figure 1). Apart from the business sector that showed a 28.7% growth, both the public (GOV) and the Higher Education (HES) showed a decrease of 10.5% and 12% respectively compared to 2015. At the same time, the Greek GDP continued contracting, leading to the further improvement of the R&D intensity (0.99% GDP).

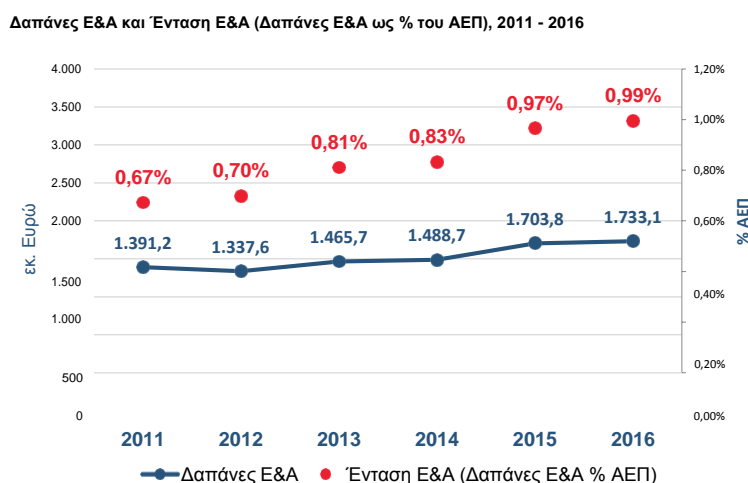


Figure 1 Evolution of the total GERD over time

According to the European Innovation Scoreboard 2017²⁷, Greece is a Moderate Innovator. Over time, performance has increased by 0.7% relative to that of the EU in 2010. However, Greece performs below the EU average on most dimensions. Relative strengths of the innovation system are in Innovators, Attractive research systems, and Human resources particularly tertiary education graduates. Relative weaknesses are in Innovation-friendly environment, Intellectual assets, and Finance and support.

3.1 Public allocation of R&D and R&D expenditure

R&D expenditures for 2016 amounted to €1,733.1 million, an increase of €29.3 million compared to 2015. The 'R&D Intensity' indicator, which represents R&D expenditure as a percentage of GDP, was 0.99% for 2016 compared to 0.97% for 2015.

²⁷ The 2017 edition of the Scoreboard presents a refined analytical framework. Rankings are therefore not directly comparable with previous editions, but time series using the new analytical framework allow performance to be tracked over time.

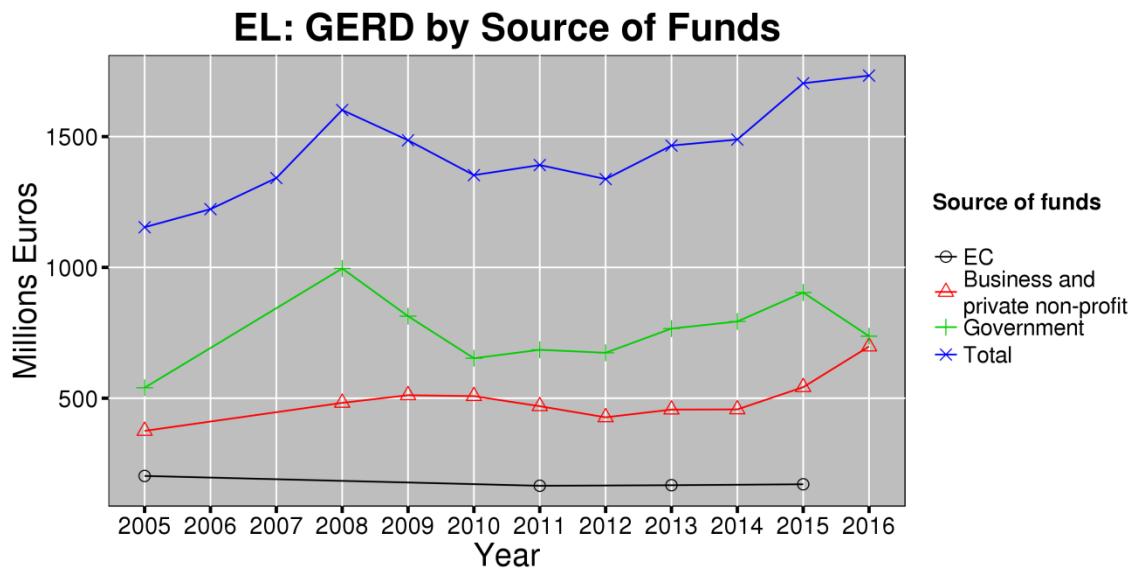


Figure 2 R&D expenditure by source of funds

Public funding remained the main source of funding for 2016 at €737.1 million which represented 42.5% of the total (Figure 2). Public funding supported R&D activities in all sectors of R&D and was the main source of funding for higher education and the public sector. There was an increase in funds allocated from the ordinary budget (up by €95.4 million compared with 2015) and the national share of the Public Investment Programme (up by €24.4 million compared to 2015). The contribution of the National Strategic Reference Framework (NSRF) 2014-2020, as far as R&D was concerned, during its first year of implementation was significantly lower by €287.6 million compared with 2015, the concluding year of the previous NSRF 2007-2013.

After an increase of about 18% in 2015, the budget for R&D (GBAORD) in 2016 showed only a very small growth of 2.5% in nominal terms. According to Eurostat's data, institutional funding accounted for 60.7% of total GBAORD funding in 2016 (against 50.3% in 2015). The largest part of institutional funding is channelled to universities and research centres in the form of block funds covering mainly salaries.

There are high expectations from the implementation of the National Smart Specialization Strategy (RIS3), which was adopted in July 2015. The increased funding provided in the Partnership Agreement 2014-2020 (PA) for Research, Technological Development and Innovation, which is estimated to reach €1.25b, and the stabilization of salaries and annual budgets for Public Research Centres (PRC) and HEIs will significantly contribute to the attainment of the R&D intensity target of 1.2% of GDP in 2020. (NRP, 2016).

Furthermore, the Hellenic Foundation for Research and Innovation (ELIDEK) is a new institution through which a profound reforming effort is being attempted in the field of research and innovation in the country. ELIDEK supports new researchers by providing scholarships for doctoral candidates and research projects for post-doctoral researchers, researchers and Faculty Members. Through ELIDEK, the research and academic community is, for the first time, actively involved in shaping the country's research and innovation policy without thematic or geographical exclusions, but with the sole criterion of scientific quality and excellence.

ELIDEK's initial funds amount to € 240 million and are provided by the Public Investment Program (€ 60 million) and the European Investment Bank (€ 180 million).²⁸

²⁸ <http://www.elidek.gr/en/homepage/>

3.2 Private R&D expenditure

According to the European Innovation Scoreboard 2017, R&D expenditure in the business sector increased from 17.6% of EU average in 2010 to 25.3% relative to EU 2010 in 2016. Nevertheless, it is still one of the lowest in EU.

For the first time in Greece, the business enterprise sector was the biggest R&D performer, with R&D expenditure reaching €722.9 million (0.41% GDP and 40% of the total GERD). It was followed by the Higher Education sector, with expenditures of €566.6 million (0.32% GDP).

Business R&D has increased tremendously since 2015, with a rate of 28.7%²⁹. The private sector has been the largest contributor to Greek BERD (87.7%). Direct support from the government decreased in 2016 and it accounts for only 1% of the total BERD for 2016.³⁰

According to the National Reform Programme 2016, Greek enterprises having realised that R&D investments is the key path towards the transition to growth, will eventually increase their R&D expenditures (BERD) to an expected 0.38% of GDP by 2020. Moreover, the National Regional Innovation Strategy 3 (RIS3) (GSRT, 2015) includes initiatives to stimulate research and innovation in the private sector while the regional RIS3 Action Plans also provide for private R&I support that is better targeted to regional industry's needs and capacities. However, the launch of the relative calls for proposals has been significantly slow as discussed in section 5.

²⁹ http://metrics.ekt.gr/sites/metrics/files/RDstatistics_2016provisional_Greece_el.pdf

³⁰ http://metrics.ekt.gr/sites/metrics/files/RDstatistics_2016provisional_Greece_el.pdf

3.3 Supply of R&I human resources

Tertiary education attainment level in the age group 25-34 years old has been steadily increasing in Greece from 28.9% in 2009 to 41% in 2016, exceeding the EU28 average of 38.2% (Eurostat, 2017). The share of scientists and engineers in the age group 25-64 has increased from 4.9% of the active population in 2015 to 5.3% in 2016³¹, but it still remains below the EU28 average of 7.4%.

According to the Greek General Secretariat for Gender Equality (GSGE), in the academic years 2010/11 -2014/15, on average 58.5% of the regular University students were women. During the five-year period (2010-2015) the total number of female students in tertiary education (Universities and Institutes of Technological/Applied Sciences) reached 758,345, while the total number of male students reached 626,405 with the respective percentages being 55% for female and 45% for male students.³²

Cedefop³³ reports that there is 40.16% education mismatch³⁴ by age group 25-34 for high-educational level compared to 26.20% on EU average; at the same time under-skilling³⁵ when hiring is 20.36% compared to 5.91% at EU level, and skills under-utilisation³⁶ is 47.26% compared to 40.47% on EU average.

4 Policies to address innovation challenges

4.1 Challenge 1: Stimulate innovation in an improved framework environment

The Greek innovation system is characterised by a high concentration of research and technology competences in universities; and the underperformance of the private sector in financing research and intellectual property. (Komninou, et. al 2014)

Based on the latest OECD STI Outlook (2016) Greece lacks world-leading corporate R&D investors and is characterised by low innovation input of Greek firms. According to the European Innovation Scoreboard 2017³⁷ Greece remains a moderate Innovator but the overall performance has increased by 0.7% relative to that of the EU in 2010. However,

³¹ JRC calculations based on Eurostat data

³² General Secretariat for Gender Equality, e-Bulletin No. 9, July 2017.

³³ <http://skillspanorama.cedefop.europa.eu/en/countries/greece>

³⁴ This indicator shows the share of young (aged 25-34), tertiary education (ISCED 5 or 6) graduates employed in posts not included in categories of managers (ISCO 1), professionals (ISCO 2), or technicians and associate professionals (ISCO 3). When individuals with tertiary education attainment occupy jobs demanding lower skills (e.g. sales, crafts, agriculture, elementary occupations), there is concern that there is a waste of public resources in higher education. An overqualified tertiary graduate receives lower wages on average and has lower job satisfaction than a tertiary graduate employed in a matched graduate job. This indicator is one of several measures of education-occupation mismatch.

³⁵ This indicator shows the percentage of adult employees who report that their skills were lower than what was required by their job at the time of hiring. Although newly hired employees will possess the necessary (formal) qualifications for recruitment, they will have lower skills than needed due to lack of firm-specific and on-the-job skills. Labour market inactivity and changing skill needs may have also made some of their knowledge acquired in education and training obsolete. High levels of under-skilling at the time of entry into a new job are more common among graduates who make their first transition to the labour market or individuals returning back to (high-skill) jobs after spells of unemployment or inactivity. Most individuals who are under-skilled at the beginning of their jobs adjust and upgrade their skills as a result of continuing vocational training and on-the-job learning.

³⁶ This indicator shows the percentage of adult employees who report that they have higher skills than required to perform their current job (over-skilled workers). It is a matter of concern for public policy and enterprises as over-skilled individuals are more likely to be dissatisfied and have lower productivity in their jobs. Individuals who occupy jobs that do not fully utilise their skills are also less likely to experience continued skill development. As the indicator is based on the subjective opinion of employees, some people may overestimate the extent to which their skills are higher than needed by their jobs. Moreover, not all over-skilled individuals' skills may be needed to carry out their daily tasks, while they may still need to continue developing their skills within their jobs over time.

³⁷ The 2017 edition of the Scoreboard presents a refined analytical framework. Rankings are therefore not directly comparable with previous editions, but time series using the new analytical framework allow performance to be tracked over time.

this is primarily due to improved performance in Innovators, Attractive research systems (mainly publications), and Human resources. The public research system as a whole is largely insulated from the private sector as evidenced in the low number of patents. (OECD, 2016) Although private co-funding of public R&D expenditures increased it still remains below 80% of EU average, while public-private co-publications have decreased from 53.3% to 39.3% of EU average. (EIS, 2017 Country Profile Greece)

The framework conditions for innovation are not favourable. Venture capital expenditures bottomed to only 1% of the EU average in 2016 (EIS 2017). The country fell one position in the doing business 2017 index and 6 more positions in the 2018 index. Similarly, Greece ranks 72nd worldwide (128 countries) and 20th among the EU28 in the World Bank indicator "Ease of getting credit" (World Bank, GII 2016)

Access to finance still remains the most problematic area for businesses, and implementing current measures must be a top priority. This means action on several fronts. Finally, Greece is still not systematically applying the SME test as part of regulatory impact assessments of legislation. At the same time, the increasing taxes and reduced business revenues due to the long-lasting financial crises coupled with the reluctance of banks to provide loans and the administrative bureaucracy in the management of publicly funded programmes make it difficult for the business sector to engage in RDI activities.

Policy response

The government recognises low private R&I activity as a significant challenge and has included it among the objectives of the 2016 National Reform Programme. The new law on research and innovation (4386/2016 articles 1-25) also aims to establish links between the HEIs, PRIs and industry.

The OECD STI outlook (2016) highlights three initiatives in stimulating innovation output: The Enterprise Europe Network-Hellas that provides initial supporting to innovative enterprises wishing to enter global value chains; The [Operational Program for Competitiveness, Entrepreneurship and Innovation](#) that includes new direct support programmes to promote business R&I investment; and the Institute for Growth (IfG) established in 2014 that provides debt and equity financing and guarantees for SMEs and infrastructure projects. In addition, following the good practice example in innovation clusters in the area of micro-electronics, Corallia, four more clusters were funded, namely the Chorus Cluster for Greece Energy, SI-Cluster (Space), GI-Cluster (Gaming) and Bionian Cluster (Health) (OECD, 2016).

Furthermore, a new Fund-of-Funds programme was launched in December 2016 that is managed by the European Investment Fund (EIF) with a total budget of €260m coming from the European Structural and Investment Funds (ESIF) resources from the national Operational Programme Competitiveness, Entrepreneurship and Innovation 2014-2020 and through the European Fund for Strategic Investments (EFSI). Under this new programme, EIF is looking to invest in private-sector led, market-driven Venture Capital and Private Equity fund managers across Europe, focusing onto Greek companies. The new ESIF Fund-of-Funds will support technology transfer funds in Greece and will also kick-start investments into accelerator funds.³⁸

Policy Assessment

Access to finance is top priority and the new initiatives set up seem to be in the right direction, aiming to encourage innovation and private R&D spending. Furthermore, the new initiatives seem to be fostering "innovation platforms" that help create suitable framework for innovation (legal, organisational, resources, facilities, digital, funding, etc.) through public-private-partnerships and financial engineering tools.

³⁸ http://www.eif.org/what_we_do/resources/esif-fund-of-fund-greece/index.htm?lang=-en

The creation of the Institute for Growth (IfG) needs to be seen in addition to the various policy measures that have been introduced since 2008 to facilitate SMEs' access to finance. For instance, the Hellenic Fund for Entrepreneurship and Development (ETEAN S.A.) and its three most important SME financing programmes have since 2013 supported almost 6500 SMEs with loans worth almost €580 million in total. However, the measures so far have proven insufficient to stem the deterioration of the financing conditions for SMEs (SBA Fact Sheet, Greece, 2016). Any measure to support private R&I investment will only have lasting effects if bank lending, equity supply, and company liquidity pick up again.

As stressed in the latest SBA factsheet for Greece (SBA 2017), more needs to be done on the policy front to help businesses and SMEs in particular to develop international activities. Public efforts to encourage entrepreneurship should continue and be stepped up. Policy actions should encourage SMEs to do more business online, both selling and purchasing. More public support is needed to help SMEs develop green and innovative products and adopt resource-efficient practices. The link between universities and the real economy should be further developed, while improvements are also needed in late payments, excessive regulatory burdens and administrative complexity.

4.2 Challenge 2: Transform brain drain into talent mobility and repatriation

The brain drain issue was also highlighted in the 2016 RIO Country Report for Greece. In 2017 more data and relevant studies have become available which show that the extent of the problem is quite alarming. Based on the latest EUROSTAT data the flow of emigration has more than doubled in the period 2009-2015³⁹. Labrianidis and Pratsinakis (2016) estimate that the total emigration outflows of Greeks between 2010-2015 ranges between 280,000 and 350,000 people while the Bank of Greece study (2016) indicates that 46% of those that left the country between 2008-2013, i.e. almost 223000 are young people (aged 25-39).

Referring to the educational background the findings are stunning. Based on survey data of Hellenic Observatory (HO) of the European Institute at the London School of Economics (LSE), Labrianidis and Pratsinakis (2016) estimate that more than two out of three of the post-2010 emigrants are university graduates while 25% of the total outflow concerns people who hold postgraduate degrees or are graduates of medical and polytechnic schools. The trend in the migration of the highly-skilled (as a share of the total outflows) has been increasing exponentially from less than 15% in the decade 1990-1999 to around 25% in the current decade 2010-2019 (Labrianidis and Pratsinakis, 2016, p.17).

The vast share of highly-skilled emigrants among those that left the country post-2007 was also confirmed in Triandafyllidou et. al. 2014 and Triandafyllidou and Gropas, 2014. This was the result of the combined effect of crisis, austerity and recession, which led to severe unemployment for the youngest cohort as well as parallel cuts in earnings that reached 26% over the period 2009-2013 in gross terms (Matsaganis 2013). These conditions turned emigration from a matter of choice that characterised highly-skilled emigrants in the past to a matter of necessity as job opportunities shrunk and public sector employment is not a possibility anymore (Triandafyllidou and Gropas 2014; Labrianidis 2014).

Policy response

The brain-drain issue is recognised as a key challenge that needs appropriate measures. Reversing brain drain is an aim of both priority 1 and 3 of the Greek Strategy for the

³⁹ EUROSTAT, http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics

European Research Area – Roadmap 2015-2020 (GSRT, 2016). However, concerns remain on the capacity to reincorporate the young scholars back into the Greek labour market (ERA Progress Report Greece, 2016).

The recently (2016) established National Foundation for Research and Innovation (NFRI-ELIDEK) aims to address this challenge. Two out of the first three measures assigned to ELIDEK have already been launched: a) 582 scholarships to selected PhD candidates were awarded in June 2017 for a total budget of €13.5m, b) a call for proposal supporting post-doctoral research was announced early in 2017 with a total budget of €34m that is estimated to benefit around 180 post-docs and c) a call for proposals to support the “Research Programmes of ELIDEK” with a budget of €53 m. Projects will be supported with a max budget of €250k each, and 40% of this budget should be devoted to the salaries of new scientists. (GSRT, internal data)

Another initiative aiming to promote networking and reinforce links with the Greek diaspora is the “Knowledge and Cooperation Bridges” Platform. This initiative, undertaken and implemented by the National Documentation Center was created on the basis of planning by the General Secretariat for Strategic and Private Investments of the Ministry of Economy and Development. The initiative is dealing with the issue of the Greek brain drain by networking Greeks around the world.

The aim of the initiative is to bring together the high quality human capital of the country with the Greek diaspora and to create cooperative ties among them. Through the networking of Greeks, the country's development prospects are strengthened, ensuring that the participating Greeks are part of a joint effort. As part of this effort, the scientific potential of the country abroad becomes directly active in the transformation of the Greek economy.⁴⁰

Policy assessment

The success of these measures remains to be seen as they have only been launched recently. However, the number of beneficiaries addressed by ELIDEK is only a drop in the ocean considering the large numbers of highly-educated outflows in the past years (as documented above). Nevertheless, it is a step in the right direction that needs to be supported by continuity and adequate resources to reflect the political attention given to the brain drain issue the last years.

When the brain drain issue is combined with the lack of demand for research and innovation in the economy, (cf. Challenge 1) and of well-targeted policies (cf. Challenge 3) then Greece faces challenges in three fronts: policy/orientation, framework conditions as well as actors to perform research and innovation.

4.3 Challenge 3: Strengthen specialisation and improve RIS3 implementation

The European Structural and Investment Funds (ESIF) are of crucial importance to the Greek national and regional R&I systems. Of the total of €26.5 billion ear-marked for the period 2014-2020, the Operational Programme (OP) for Competitiveness, Entrepreneurship and Innovation takes around €4.7 billion (the third largest thematic OP after the OP on Agricultural Development and that of Transport, Environment and Sustainable Development). The thirteen Regional Operational Programmes account for €5.8 billion. In all cases ESI Funds comprise 80% of the total budgets made available - the national resources cover the rest 20%. Although the share of ESIF in the national and regional RIS3 budgets may vary from one type of action to another as well as from one

⁴⁰ <https://www.knowledgebridges.gr>

region to another, the mere fact that ESIF cover 80% of the thematic and regional OPs is already a strong indicator of its importance for RIS3 in Greece.⁴¹

Based on Reid et al. (2012) the failure of past regional innovation policies in Greece was mainly due to a) a focus on creating technology intermediary organisations that did not live up to expectations instead of leveraging capabilities and funding from the private sector, b) weak sustainability of innovation policy support actions, and c) low leverage of private funding, limited collaboration among innovation actors, limited synergies, networks, clusters and associations. Regional programmes were spreading resources thinly over the wider business base rather than focusing on export-orientated 'companies of scale' and high-value added, high growth companies. Additionally, the management of all regional programmes relevant to research and innovation was done centrally resulting to a lack of regional capacity to build and implement RDI strategies. Thus, the relevant interventions were top-down, implemented without necessarily consulting the regions or the relevant regional intermediaries and not necessarily targeting the regional competitive strengths. The report concluded, among others, that the RIS3 process should be built from 'bottom-up' starting with the production of high-quality regional S3 strategies designed with the full participation of all regional stakeholders.

Policy response

Following the recommendations of European Commission experts and S3 platform recommendations, Regions assigned the development of RIS3 to external consultants who in close collaboration with the Regional Authorities consulted the regional stakeholders (academia, research and business communities). The national RIS3 implementation followed a wide consultation approach in the selection and identification of national priorities (more than 800 people policy, industry, research, and society). All regions applied the Entrepreneurial Discovery Process (EDP)⁴² in the action planning phase while six of them used some form of EDP even earlier during the development stage of the regional RIS3. In this way they gave the opportunity to the participants (representing all strands of the quadruple helix) to be exposed to key innovations in the value chain of the selected sectors at the regional level and at the same time to stimulate idea generation for business development. (Metaxas, 2017) This enabled close interaction with stakeholders for around one year and birth of several research cooperation ideas that then helped the preparation of RIS3 calls.⁴³

Policy assessment

The Regional and National RIS3 strategies were developed in the period 2013-2015. Komninos et. al (2014) note that both regional and national authorities were reluctant to adopt an actual specialisation approach as they consider it as restriction to their decision-making power and a source of potential tensions with stakeholders. Thus, priority areas were defined very widely instead of focusing investments on few and well-defined priority areas in order to maximise impact.

The EDP was applied by all regions as well as at the national level albeit in different time frames and formats. However, it was highly appreciated as a process bringing together different stakeholders and creating social capital around the vital issue of planning jointly the future strategy of the regions and nationally in relation to research and innovation. In most cases, the RIS3 governance and monitoring structures are not fully operational yet. Delays and changes in the creation of the Regional Councils for Research and Innovation and understaffing of the Regional Managing Authorities were the main hindering factors.

⁴¹ https://www.espa.gr/elibrary/PA_2014-2020_Fact_sheet_10052016.pdf

⁴² <http://s3platform.jrc.ec.europa.eu/entrepreneurial-discovery-edp>

⁴³ The Region of Eastern Macedonia and Thrace (REMTTh) received additional support in implementing the EDP by the JRC through a special European Parliament Preparatory Action. The experience of the Region of Eastern Macedonia and Thrace highlighted the importance of keeping the momentum and the raised interest of regional stakeholders by keeping them actively engaged in a sustained EDP process. (Boden, et. al 2015)

This led to the gradual loss of the momentum that has been created through the EDP in engaging regional and national stakeholders in the whole process. (Metaxas, 2017)

Eight out of the thirteen regions have published 1 or 2 calls until now, yet, without any projects legally contracted so far. Delays due to the need to comply with the new State Aid rules and the obligation to develop an electronic management platform for each call for proposals have been reported by regions as the main bottleneck. (ibid.) It is characteristic that two years after the approval of the regional and national RIS3 in 2015 no funds have been absorbed yet (in the form of contracted projects). This does not really contribute to solving the problem of low absorption of ESI Funds that Greece has been characterised by (Katsarova, 2013).

5 Focus on R&I in National and Regional Smart Specialisation Strategies

Policy developments

The Smart Specialisation strategy RIS3 was developed both at national and at regional level (13 regional plus 1 national smart specialisation strategies) in the period 2013-2015.

At the national level, RIS3 places emphasis on eight sectors: Agrofood; Life Sciences & Health – Pharma; Information and Communication Technologies; Energy; Environment and Sustainable Development; Transport and Logistics; Materials – Construction; Culture - Tourism - Cultural & Creative Industries. These priority areas were further analysed during deliberations involving policy makers from relevant public and private bodies and relevant stakeholders (academic, businesses) that were organised by the General Secretariat for Research and Technology (GSRT). The national RIS3 was prepared by the GSRT, and adopted in July 2015 by the Council for Smart Specialization Strategy.

The adoption of the smart specialization strategy was accompanied by the approval of the largest Operational Programme “Restart” (EPANEK) which includes a large part of the actions outlined in the strategy (NRFP, 2016). Funds for Thematic Objective 1 (Research & Innovation) are estimated to reach €1.25b and when coupled with the national contribution will reach €1.5b, implying an increase by 50% compared to the amount initially earmarked for R&D (€1b) in the framework of the current programming period (2014-2020).

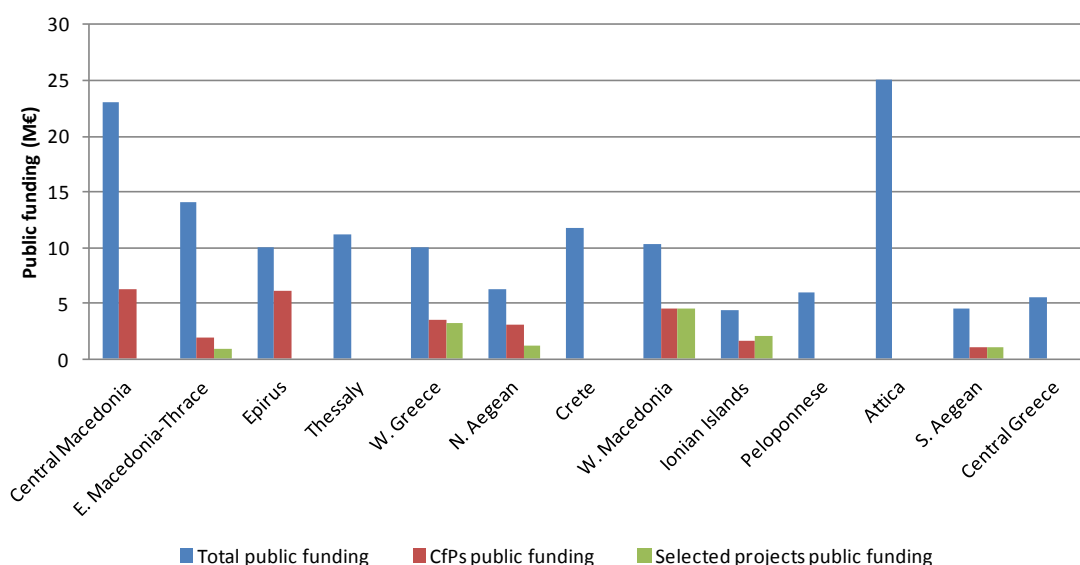
At the regional level, thirteen RIS3 were developed following consultation processes with local stakeholders i.e. the research and business communities in order to define the regional specialisations although in varying degrees and formats across the different regions. The Entrepreneurial Discovery Process was applied in all regions. Participants in the various EDP events had the opportunity to improve their understanding about innovation and the importance of building bridges between research, businesses as well as society. They were also given the chance to generate ideas for business development that could be supported by RIS3. Based on the respondents’ estimations, there was balance between the research and business representation in these events (40% and 36% respectively) although in some regions participation of businesses superseded 50%. Public administration was estimated to have taken part by 15% and society’s engagement (in the form of societal organisations) was around 9%. More than 5,000 people were mobilised at the regional level through 169 events, and 850 people in 40 events at the national level. (Metaxas, 2017) As local people witnessed, this process was instrumental in bridging the gap between the local universities and businesses as collaboration among them has been limited so far.

Progress on implementation

In relation to launching calls for proposals, eight out of the thirteen regions have issued at least one call so far. The share of the proposals’ budgets and selected projects’ budget against the total RIS3 budget in the region is shown in Figure 2. Overall, the share of selected projects’ budget against total RIS3 budget is 9.16% at the regional level and 9.63% at the national level, with no projects legally contracted as yet (Metaxas, 2017)⁴⁴

⁴⁴ RIS3 actions are distributed across a number of Thematic Priorities (TO1). However, currently only actions that belong to TO1 (Strengthening Research, Technological Development and Innovation) have been activated in the ROPs and the national OP Competitiveness Entrepreneurship and Innovation (EPANEK). Thus, all call and budget data refer to TO1. (Metaxas, 2017)

Figure 3: Activation status of RIS3 budgets in Greek regions



Source: Metaxas 2017, p. 9 Chart 2.

At the national level, eight calls have been launched until now including: the call “Research-Create-Innovate” which increased its budget from €256m to €342m due to high demand ; three calls for bilateral cooperation projects between Greece and Germany, Russia and Israel (total budget €15.5 m), two calls devoted to the funding of Research Infrastructures (RI) (€73 m and €20 m); two calls to support collaborative research projects, one under ERA-NETs (€4.5 m) and another one for specialised actions within the sectors of aquaculture, industrial materials, open innovation and culture (€30 m).

An interesting difference was recorded by Metaxas (2017) in relation to the types of projects supported. At the national level most of the budget has been devoted to calls for supporting SMEs for RTDI or collaborative research projects (i.e. Investment Priority 1b) rather than research infrastructure projects (Investment Priority 1a). At the regional level the situation was reverse. Most of the regions preferred to issue call for proposals supporting non-economic activities of research infrastructures, not falling under the state aid rules, because it was easier for them to manage the different stages of preparation (less bureaucratic and less complex) and the small number of potential applications. (Metaxas, 2017)

The launching of calls for proposals has been slow mainly due to the need to solve issues in relation to the preparation of the call draft, compliance to State Aid rules and the mandate of the regions to launch R&I calls which was until then managed centrally by GSRT. While the regional Managing Authorities have gradually managed to deal with these issues, a bottleneck that still persists is the obligation to develop an electronic version of the call for proposals in the central Information System of State Aid by the Management Organisation Unit (Ministry of Economy, Development & Tourism). This step creates serious delays due to lack of human resources. Overall, the main barriers to RIS3 implementation as reported by the regions include: delays or problems in setting up the RIS3 governance structures, poor coordination between regional and national bodies responsible for RIS3, insufficient exploitation on the side of the regions of the benefits that come from EU initiatives (e.g. networking, learning, exchange of good practices), low levels of awareness of and experience in funding instruments other than Regional Operational Programmes/Operational Programmes, and lack of human resources and/or know-how for setting up the RIS3 monitoring system. (Metaxas, 2017)

On a positive note, overall, the calls were designed to fully match the RIS3 priorities taking also into account the results of the EDP. At the same time, several good practices

were identified among the regions including the EDP Focus Groups and Project Development Labs that were organised by the Region of Eastern Macedonia-Thrace with the support of JRC-IPTS, the use of an electronic platform for the submission, classification and initial evaluation of ideas/projects from stakeholders during the EDP in Crete and Thessaly, and the RIS3 governance structure in Crete where all the relevant Regional Authority units and departments are delegated to different governance levels resulting to enough resources to run the whole process. (ibid.)

Two cases that are interesting to present further are Western Greece and Crete.

Western Greece was one of the very first Greek regions to launch calls for collaborative projects (€2 m) and support to SMEs for RTDI investments (€1.5 m) (Priority 1b) instead of infrastructures (1a) that was preferred by the majority of the other regions. The EDP involved around 550 representatives (business 30%, academia 65%). Also contrary to the majority of the other regions, in this case the governance structure is operational and deals with all key aspects of RIS3 implementation. This region, as the others, faced a long period of delay in the launch of calls due to low level of readiness in relation to legal and regulative framework, state aid information system, etc.). The monitoring system is fully developed including indicators in line with the RIS3 intervention logic and identification of data sources, but it suffers from lack of human resources. Other main issues reported by the region included poor coordination between regional bodies responsible for planning and implementing RIS3 and the respective national bodies, as well as lack of know-how for interregional co-operation (within Greece and/or EU regions). Source: Metaxas 2017

In Crete, the EDP involved around 800 representatives (business 30%, academia 40%, public administration 10% and civil society 20%) through 60 meetings/workshops and 3 thematic platforms (environment, tourism, and agrifood). The governance structure is fully operational involving all the units of the Regional Authority and the monitoring system is also set in place. However, no calls have been launched yet, mainly due to the time that was needed for the EDP and making the governance system fully operational. Yet, a number of calls are in the pipeline including small-scale demonstration research projects (priority 1b, 1.5M€); collaborative research projects in tourism, agrifood and knowledge management (priority 1b, 8.5M€), and environment (priority 4f, 2M€); and development of ICT applications for creative culture and tourism (priority 2c, 4M€). Source: Metaxas 2017

Monitoring mechanisms and the feedback loop

Governance and monitoring systems are set up both at the national and regional levels. Monitoring of RIS3 at national level will be effected by GSRT through a dedicated Action including output and result indicators, field studies, and public consultation with the business and research community, and evaluation studies of actions by independent experts. At the regional level the monitoring task is assigned to the Managing Authorities of the Regions that are also responsible for monitoring the OPs. Each regional RIS3 has a special chapter devoted to the monitoring and evaluation system that should be set up to support the implementation of RIS3. The national RIS3 governance system is illustrated in Figure 3 below. It is complemented by the governance systems created for each of the 13 regions of the country.

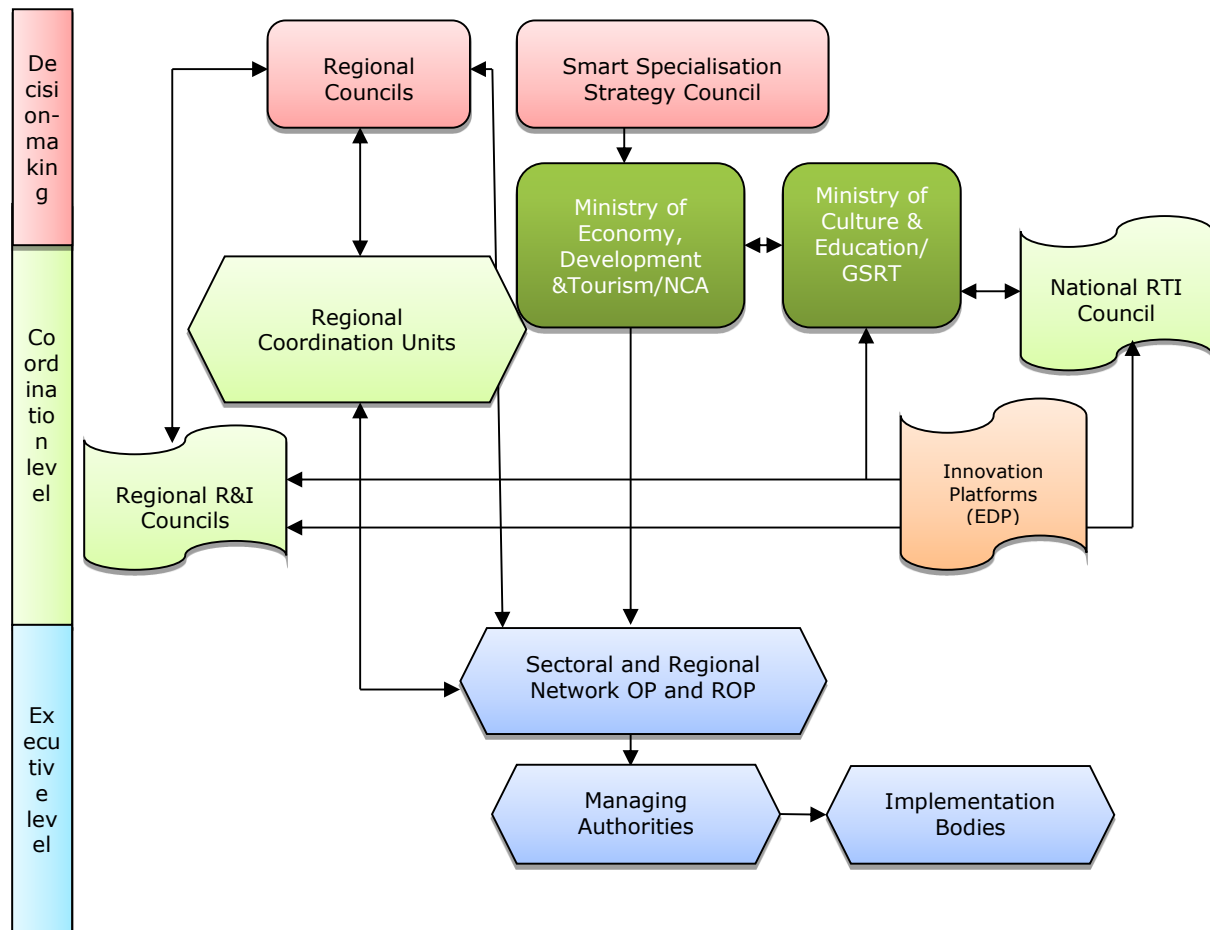
The first level (**decision-making**) consists of the Smart Specialisation Strategy Council that is coordinated by the Ministry of Economy, Development and Tourism. It includes representatives from all the relevant Ministries for the design and implementation of the national RIS3 (such as Ministry of Culture and Education, Ministry of Labour, etc.). The Council also includes a representative of the Association of Greek Regions. The S3 Council⁴⁵ makes recommendations regarding the approval, monitoring and revision of the

⁴⁵ Created with KYA 76201/EYΣΣΑ 1700/17.7.2015

S3 and met for the first time on 29 July 2015 where they decided to suggest to the relevant Ministers the adoption on the national Smart Specialisation Strategy.

At regional level decisions are taken by the Regional Councils of the 13 Regional Authorities of the country. In this role they are assisted by the Regional Councils for Research and Innovation (RCRIs)⁴⁶.

Figure 4: Governance system for Smart Specialisation in Greece



Source: National RIS3 Document (p. 143, in Greek)

The General Secretariat of Research and Technology (GSRT) and the National Coordination Authority (NCA of the Ministry of Economy, Development and Tourism) hold the role of **coordination** of the national and regional RIS3. At regional level the respective coordination is done by the Regional Coordination Units assisted by the Regional Councils for R&I (RCRIs). This level also includes the EDP mechanism and the innovation platforms set up by GSRT that enable EDP implementation.

At **executive** level, there are the sectoral or regional executive bodies (i.e. Managing Authorities). These are coordinated (in terms of S3 implementation) by the Sectoral and Regional Network of OPs for Smart Specialisation (SS). In this Network the National Coordination Authority (NCA), GSRT, and the Sectoral and Regional Managing Authorities are represented. This level also includes bodies implementing RIS3 actions.

As already mentioned, all Regions have designed their RIS3 governance structures involving the decision-making as well as coordination and executive levels. However, it is only in three Regions (Epirus, Western Greece, and Crete) that these structures are fully

⁴⁶ The creation and operation of the Regional Council for R&I was prescribed by Law 4310/2014 which was later replaced by Law 4386/2016.

operational today (September 2017). In relation to RIS3 monitoring and evaluation, 12 out of the 13 regions have defined output and result indicators that they are in line with the intervention logic of RIS3. Core teams that will be responsible for RIS3 monitoring have been set up in 4 regions, while 7 regions reported an intention to use external experts to support their monitoring system. (Metaxas, 2017)

Given the slow development of the RIS3 activities and the monitoring systems in most regions, monitoring data are only currently and partially being collected. Thus, any effort to identify and analyse RIS3 impacts is premature. Hopefully, some monitoring results will be possible to produce in time for the interim evaluation that is scheduled for the first quarter in 2018.

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Abbreviations

HQA	Hellenic Quality Assurance and Accreditation Agency
BERD	Business Expenditures on Research and Development
CDH	International Survey on Careers of Doctorate
DESI	Digital Economy and Society Index
EC	European Commission
ERA	European Research Area
ERC	European Research Council
ESETAK	National Strategy for Research, Technological Development and Innovation
ESIF	European Structural and Investment Funds
ESM	European Stability Mechanism
ETEAN S.A	Hellenic Fund for Entrepreneurship and Development
EU	European Union
EU-28	European Union including 28 Member States
FDI	Foreign Direct Investment
GBAORD	Government Budget Appropriations or Outlays on R&D
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditures on R&D
GII	Global Innovation Index
GOV	Government
GSRT	General Secretariat for Research and Technology
GVA	Gross Value Added
HEI	Higher Education Institute
IfG	Institute for Growth
KEP	Citizens Service Centres
NAGREF	National Agricultural Research Foundation
NCRT	National Council for Research and Technology
NDC	National Documentation Centre
PCP	Pre-commercial Procurement

PCT	Patent Co-operation Treaty
PNP	Private non-profit sector
PPI	Public Procurement for Innovation
PRO	Public Research Organisation
R&D	Research and development
R&I	Research and innovation
RIS	Regional Smart Specialisations
SBA	Small Business Act
SME	Small and Medium-sized Enterprise
TEI	Technological Education Institutes
TEPIX	Entrepreneurship Fund
TFP	Total Factor Productivity
WEF	World Economic Forum

Factsheet

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP per capita (euro)	21400	20300	18600	17300	16500	16400	16300	16200		
Value added of services as share of the total value added (% of total)	79.74	81.08	81.07	80.13	79.85	80.15	80.13	79.7		
Value added of manufacturing as share of the total VA (%)	8.54	8.19	8.89	9.1	9.52	9.51	9.41	9.87		
Employment in manufacturing as share of total employment	9.85	9.15	8.94	8.75	8.42	8.09	8.12	7.94		
Employment in services as share of total employment (%)	69.97	71.47	72.78	72.9	72.95	73.33	74.11	74.56		
Share of Foreign controlled enterprises in the total nb of enterprises (%)				0.2	0.24	0.27	0.31			
Labour productivity (Index, 2010=100)	100	100	96.7	94.9	94.1	95.7	94.2	93.6		
New doctorate graduates (ISCED 6) per 1000 population aged 25-34		0.46			0.47	0.42				
Summary Innovation Index (rank)	19	20	20	19	21	22	23	22		
Innovative enterprises as a share of total number of enterprises (CIS data) (%)				52.3		51				
Innovation output indicator (Rank, Intra-EU Comparison)			22	22	22	23				
Turnover from innovation as % of total turnover (Eurostat)				11.8						
Country position in Doing Business (Ease of doing business index WB)(1=most business-friendly regulations)						58	60	61	61	67
Ease of getting credit (WB GII) (Rank)						65	69	72		
Venture capital investment as % of GDP (seed, start-up and later stage)	0.006	0.002	0.004	0	0.001	0	0			
EC Digital Economy & Society Index (DESI) (Rank)						26	26	26	26	
E-Government Development Index Rank		41		37		34		43		
Online availability of public services – % of individuals having interactions with public authorities via Internet (last 12 months)	14	16	27	34	36	45	46	49	47	
GERD (as % of GDP)	0.63	0.6	0.67	0.7	0.81	0.83	0.97	0.99		
GBAORD (as % of GDP)	0.36	0.3	0.31	0.38	0.48	0.44	0.52	0.54		
R&D funded by GOV (% of GDP)	0.34	0.29	0.33	0.35	0.42	0.44	0.51	0.42		
BERD (% of GDP)	0.23	0.24	0.23	0.24	0.27	0.28	0.32	0.42		
Research excellence composite indicator (Rank)	15	16	13	12	13	13				
% of scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country		8.41	8.39	8.81	8.76	8.66				
Public-private co-publications per million population	12.98	13.67	14.83	12.18	10.54	10.71	7.92			
World Share of PCT applications	0.07	0.06	0.06	0.05	0.06	0.05	0.05			
Global Innovation Index				55	50	45	40	44		

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