Interreg
Balkan-Mediterranean
INNOPLATFORM

2017

INNOSCORECARD

InnoScores

for GREECE / BalkanMed Region

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The main aim of the BalkanMed Innoscorecard is twofold: to promote the opportunities of the BalkanMed region and to address its weaknesses when it comes to the innovation potential.

The main objectives of the BalkanMed Innoscorecard are:

- to adjust and introduce methodology and indicators for closely following the innovation potential of the BalkanMed region and nations in the Balkan Mediterranean area:
  - FYROM
  - Albania
  - Greece
  - Cyprus
  - Bulgaria
- to map the government stakeholders for each of the innovations indicators;
- to map the government documents which cover measures for each concerned indicator;
- to provide data for comparative analysis of the indicators at national and macro regional level;
- to identify the strengths and the weaknesses in the innovation potential of the BalkanMed region, BM nations and regions; and
- to provide an interactive tool for visualising the data.

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Background

Methodology

Innovation within the Innovation Union Plan

Literature and practice provide no agreed definition on what is defined under the term innovation today. There is no one single definition, while the issue is explored on a larger scale and at many levels: organizational, regional, national, EU. Within this grand understanding for the Innovations and their impact, measuring and monitoring the concept is equally challenging and complex.

For the purpose of the project InnoPlatform, we will use the definition sustained in the Innovation Union plan. As described by the Innovation Union plan, Innovation "broadly means change that speeds up and improves the way we conceive, develop, produce and access new products, industrial processes and services. Changes that create more jobs, improve people's lives and build greener and better societies."

Having in mind these expectations from the innovations, it is of no surprise that the "Innovation Union is key to achieving the goals of the Europe 2020 Strategy for a smart, sustainable and inclusive economy. It aims to improve conditions and access to finance for research and innovation in Europe, to ensure that innovative ideas can be turned into products and services that create growth and jobs."

General overview of the Methodology

The BalkanMed Innoscorecard is developed based on the methodology of the EU Innovation Scoreboard 2017 (EUIS, 2017). Several important drivers reflect the choice of the methodology:

1 Balkan Med countries are EU member countries, or EU applicant countries, it is important to be able to follow their progress when it comes to innovative potential against the other EU countries;

2. Compared to other available methodologies as are the methodologies behind the Global Competitiveness Report (2017/2018) and the WIPO Innovation index (2016), EU Innovation Scoreboard (2017) provides a focused methodology which is adjusted to the EU context. This is achieved through the use of selective, yet very significant indicators on the issue of concern i.e. the innovation potential of EU national economies.

Based on the EU Innovation Scoreboard (2017), the BalkanMed Innoscorecard consists of two specific outputs:

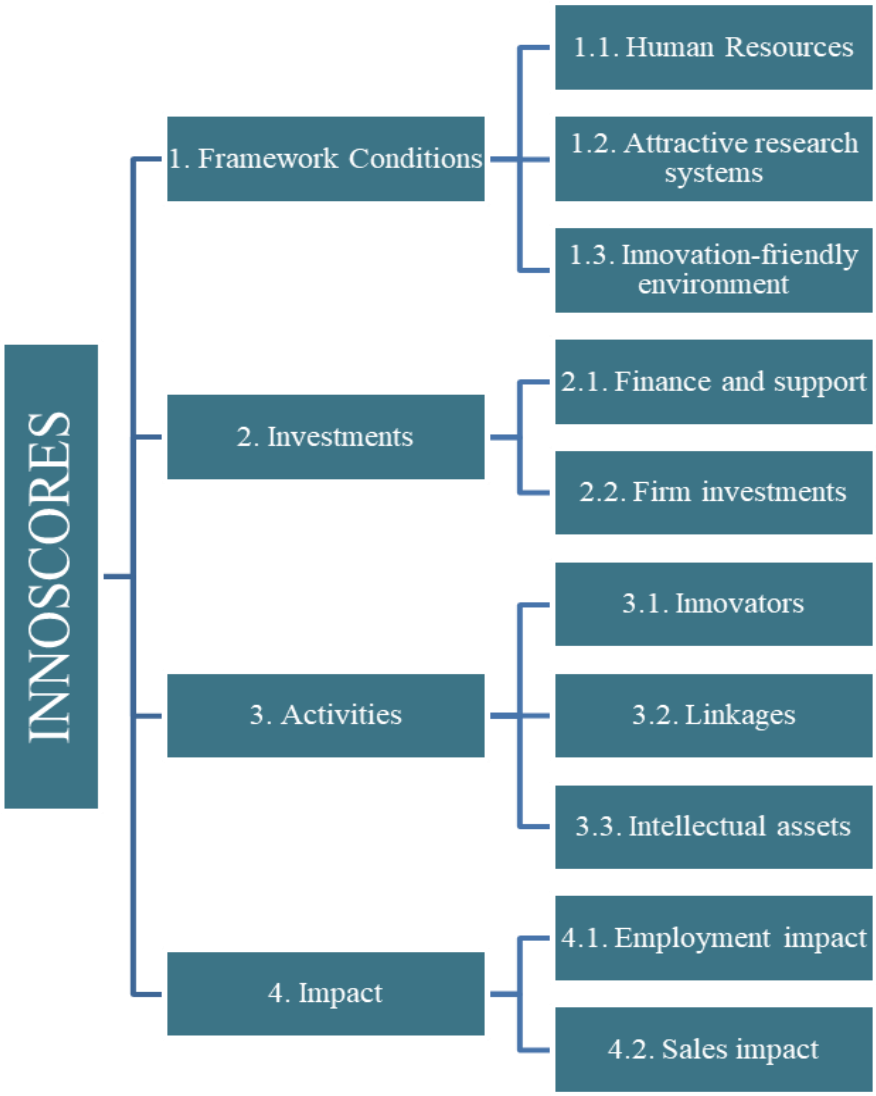
1. National Summary Innovation Indexes for each of the BalkanMed countries with:

a. Data repository on all important national and regional documents,
b. Mapping of government stakeholders; (FYROM, Albania, Greece, Bulgaria, Cyprus);

2. Balkan macro-regional Summary Innovation Index – developed for the purpose of the project Innoplatform.

In line with the EU Innovation Scoreboard 2017, both types of Innoscores (National and BalkanMed Score) will be based on four combined factors, i.e. pillars provided in Figure 1.1.

Figure 1. InnoScorecard Indicators



In the further elaboration of this document, each of the indicators is explained through the following key parameters:

- Name of the Indicator:
- Numerator:

- Denominator:
- Interpretation i.e. the basic principle (assumption) for its use:
- Source of data and available years for the concerned country:
- Remark: commentary which explains the numerator or describes certain specifics of the national context
- Results/Analysis based on the data collected with the excel document under D.3.x.2.
- Government stakeholders:
- Government strategies, programmes, and measures covering the indicator, if any:

NOTE: The analysis of each of the four combined factors/pillars for the particular country is performed within the Deliverable 3.1. i.e. the National Study of the Business Environment and the National Innovation Potential.

National Summary Innovation Indexes

The National Summary Innovation Index is the unweighted average of the re-scaled scores for all indicators where all indicators receive the same weight (1/27 if data are available for all 27 indicators).

The EUIS (2017a) national summary innovation indexes need to be used for all BalkanMed countries for which there is a score in the EUIS (2017). A new one for Albania, will be constructed within this project, which fully follows the EUIS methodology (EUIS 2017b), if minimum 75% of the required data is collected.

For each indicator, a reference year is identified for all countries based on data availability for all those countries for which data availability is at least 75%. For most indicators, this reference year will be lagging for one or two years (EUIS, 2017b, p.22). ***The same should be noted in the Remark section for each of the indicators of the Innoscores*.** If data for a year-in-between are not available, missing values are replaced with the value for the previous year. If data are not available at the beginning of the time series, missing values are replaced with the next available year. If data are missing for all years, no data will be imputed. (EUIS, 2017, p.22).

Performance scores relative to the EU, and the other BalkanMed countries are then calculated in the following way:

- the SII of the respective country is divided by the SII of the EU multiplied by 100;

- the SII of the respective country is divided by the SII of the BalkanMed region multiplied by 100;

Relative performance scores are calculated for the full period (2010-2017) compared to the performance in 2010 and for the latest year also compared to that of the EU and BM.

BalkanMed Regional Summary Innovation Index

The BalkanMed Regional Summary Innovation index covers data from all five countries involved in the project for the explored period (2010- 2017): Albania, Bulgaria, Cyprus, FYROM, and Greece. As the size of the population data might not be adequate for constructing the index based on the methodology used for the EU Composite Innovation Index, the methodology for constructing the BalkanMed Regional Summary Innovation index will be based on the assumption: that the macro region is one political and territorial unit, where each country is a specific region.

1. FRAMEWORK CONDITIONS

1.1 Human resources

Indicator	1.1.1. New doctorate graduates per 1000 population aged 25-34
Numerator	Number of doctorate graduates
Denominator	Population between and including 25 and 34 years
Interpretation	The indicator is a measure of the supply of new second-stage tertiary graduates in all fields of training (ISCED 8). For most countries, ISCED 8 captures PhD graduates.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/databaseEurostat

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Greece had traditionally a relatively high rate of doctorate graduates compared to its population mainly due to the fact that Greek families praised education as one of the most important factors of a successful professional career. During the last seven years, and despite the financial crisis, this rate has not been affected significantly. The slight reduction of the absolute number of doctorate graduates is totally pertinent to the reduction of the overall population in the 25-34 range.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	18.139	16.114	17.108	15.156	16.073	15.398	
Denominator	1.648.972	1.611.378	1.555.268	1.485.858	1.422.403	1.362.687	1.301.807
EUIS	1,10	1,00	1,10	1,02	1,13	1,13	

Government stakeholders: Hellenic Ministry of Education, Research and Religious Affairs, General Secretariat of Research and Technology (www.gsrt.gr),

Important documents: National Documentation Centre (www.ekt.gr)

1 FRAMEWORK CONDITIONS

1.1. Human resources

Indicator	**1.1.2. Percentage population aged 25-34 having completed tertiary education**
Numerator	Number of persons in age class with some form of post-secondary education
Denominator	Population between and including 25 and 34 years
Interpretation	This is a general indicator of the supply of advanced skills. It is not limited to science and technical fields, because the adoption of innovations in many areas, in particular in the service sectors, depends on a wide range of skills. The indicator focuses on a relatively young age cohort of the population, aged 25 to 34, and will therefore easily and quickly reflect changes in educational policies leading to more tertiary graduates.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

It is noted that despite the slight decrease of the absolute population number in the age class, we can see a steady increase of the number of persons with higher education skills from 2010 to 2013, and a stabilization from 2014 forth. The stop in this steady increase can be partly explained by the fact that several higher education institutions were merged or stopped operating as a result of the austerity measures applied to Greece.

Results/Analysis:

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Nominator	504.585	520.475	536.567	552.739	550.470	546.437	533.741
Denominator	1.648.972	1.611.378	1.555.268	1.485.858	1.422.403	1.362.687	1.301,807
EUIS	30,60%	32,30%	34,50%	37,20%	38,70%	40,10%	41,00%

Government stakeholders:

Hellenic Ministry of Education, Research and Religious Affairs, General Secretariat of Research and Technology (www.gsrt.gr),

Important documents: National Documentation Centre (www.ekt.gr)

1 FRAMEWORK CONDITIONS

1.1.Human resources

Indicator	**1.1.3. Percentage population aged 25-64 participating in lifelong learning**
Numerator	The target population for lifelong learning statistics refers to all persons in private households aged between 25 and 64 years. The information collected relates to all education or training, whether or not relevant to the respondent's current or possible future job. Data are collected through the EU Labour Force Survey. The reference period for the participation in education and training is the four weeks preceding the interview, as is usual in the Labour Force Survey.
Denominator	Total population of the same age group, excluding those who did not answer the question concerning participation in (formal and non-formal) education and training
Interpretation	Lifelong learning encompasses all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural or sporting activities.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Lifelong learning was not very popular for the Greek working force; Lately though, the financial instability, the increasing competition and maybe the need for migration has led to an admirable raise of the percentage of people that entered lifelong learning or training programmes.

Results/Analysis:

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Nominator	202.588	171.805	201.082	192.535	190.441	194.642	233.650

Denominator	6.139.038	6.135.908	6.093.382	6.016.706	5.951.294	5.898.247	5.841.262
EUIS	3,30%	2,80%	3,30%	3,20%	3,20%	3,30%	4,00%

Government stakeholders: Hellenic Open University

Important documents: -

1 FRAMEWORK CONDITIONS

1.2 Attractive research systems

Indicator	1.2.1. International scientific co-publications per million population
Numerator	Number of scientific publications with at least one co-author based abroad (where abroad is non-EU for the EU28)
Denominator	Total population
Interpretation	International scientific co-publications are a proxy for the quality of scientific research as collaboration increases scientific productivity.
Source of data and available years for the concerned country	Publication data provided by CWTS (Leiden University) as part of a contract to European Commission (DG Research and Innovation); Population data from Eurostat; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

For this indicator Greece shows a steady growth from 2010 to 2016 although the number of scientific publications compared to the number of post-graduate students and PHD candidates could have been higher.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	11.119.289	11.123.392	11.086.406	11.003.615	10.926.807	10.858.018	10.783.748
Denominator	396,16	429,99	474	498,93	530,26	553,78	590,8
EUIS	396,16	429,99	474	498,93	530,26	553,78	590,8

Government stakeholders: Hellenic Ministry of Education, Research and Religious Affairs, Hellenic Open University

Important documents: Compendium of Bibliometric Science Indicators *www.oecd.org/sti/inno/Bibliometrics-Compendium.pdf*

1 FRAMEWORK CONDITIONS

1.2. Attractive research systems

Indicator	1.2.2. Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the country
Numerator	Number of scientific publications among the top-10% most cited publications worldwide
Denominator	Total number of scientific publications
Interpretation	The indicator is a measure for the efficiency of the research system, as highly cited publications are assumed to be of higher quality. There could be a bias towards small or English-speaking countries given the coverage of Scopus' publication data.
Source of data and available years for the concerned country	Data provided by CWTS (Leiden University) as part of a contract to the European Commission (DG Research and Innovation); European Innovation Scoreboard 2017; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

The indicator of scientific excellence indicates the amount (in %) of a unit's scientific output that is part of the set of the 10% most-cited papers within their respective scientific fields. Counting how many of the 10% most-cited publications correspond to authors in a given country provides a quality-adjusted measure of its research output, in other words, a proxy for scientific excellence Greece is close to the worlds average (10%) and more specifically at the 12,07% mark according to the *OECD and SCImago Research Group (CSIC), Compendium of Bibliometric Science Indicators 2014, based on Scopus Custom Data, Elsevier, December 2014* for the period 2008-2012.
Although the actual data per year are not available, the comparison of the period 2010-2012 EUIS percentage along with the 2008-2012 percentage for the papers among the top-10% most cited ones (12,07%) with period 2013-2015 EUIS percentage indicate clearly that there is a significant improvement during these last three years keeping Greece well above the OECD country world's average for this indicator.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	-	-	-	-	-	-	-

Denominator	-	-	-	-	-	-	-
EUIS	8,68%	8,58%	8,51%	9,11%	8.96%	8.90%	-

Government stakeholders: Hellenic Ministry of Education, Research and Religious Affairs, Hellenic Open University

Important documents: Compendium of Bibliometric Science Indicators
www.oecd.org/sti/inno/Bibliometrics-Compendium.pdf

1 FRAMEWORK CONDITIONS

1.2. Attractive research systems

Indicator	1.2.3. Foreign doctorate students as a percentage of all doctorate students
Numerator	Number of doctorate students from foreign countries
Denominator	Total number of doctorate students
Interpretation	The share of foreign doctorate students reflects the mobility of students as an effective way of diffusing knowledge. Attracting high-skilled foreign doctorate students will secure a continuous supply of researchers.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

No data available for GREECE regarding the foreign doctorate student percentage indicator.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator				-			
Denominator							
EUIS	-	-	-	-	-	-	

Government stakeholders:

Important documents:

1 FRAMEWORK CONDITIONS

1.3 Innovation-friendly environment

Indicator	1.3.1. Broadband penetration
Numerator	Number of enterprises with a maximum contracted download speed of the fastest fixed internet connection of at least 100 Mb/s
Denominator	Total number of enterprises
Interpretation	Realising Europe's full e-potential depends on creating the conditions for electronic commerce and the Internet to flourish. This indicator captures the relative use of this e-potential by the share of enterprises that have access to fast broadband.
Source of data and available years for the concerned country	Eurostat; Community Survey of ICT Usage; E-commerce in Enterprises; European Innovation Scoreboard 2017; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

This indicator remains steady for GREECE for the total period. This is not a very positive sign since the percentage is very low compared to other countries.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	1.586	1.481	1.291	1.154	1.164	1.277	
Denominator	79.338	74.066	64.582	57.736	58.211	63.890	
EUIS	2%	2%	2%	2%	2%	2%	2%

Government stakeholders: Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

1 FRAMEWORK CONDITIONS

1.3. Innovation-friendly environment

Indicator	**1.3.2. Opportunity-driven entrepreneurship (Motivational index)**
Definition	This index is calculated as the ratio between the share of persons involved in improvement-driven entrepreneurship and the share of persons involved in necessity-driven entrepreneurship.
Interpretation	Data from GEM distinguish between two types of entrepreneurship: 1) opportunity-driven entrepreneurship and 2) necessity-driven entrepreneurship. The first includes persons involved in TEA (Total Early-Stage Entrepreneurial Activity) who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income; the second includes persons involved in TEA who are involved in entrepreneurship because they had no other option for work. GEM has constructed the Motivational index to measure the relative degree of improvement-driven entrepreneurship.
Source of data and available years for the concerned country	Global Entrepreneurship Monitor (GEM) for the numerator and denominator and European Innovation Scoreboard 2017 for the final value.

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Results/Analysis:

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Nominator	1.182	1.148	839	779	675	843	
Denominator	79.338	74.066	64.582	57.736	58.211	63.890	
EUIS	1,49	1,55	1,30	1,35	1,16	1,32	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

2. INVESTMENTS

2.1 Finance and support

Indicator	2.1.1. R&D expenditure in the public sector (percentage of GDP)
Numerator	All R&D expenditures in the government sector (GOVERD) and the higher education sector (HERD) (in mill Euro)
Denominator	Gross Domestic Product (in mill Euro)
Interpretation	R&D expenditure represents one of the major drivers of economic growth in a knowledge-based economy. As such, trends in the R&D expenditure indicator provide key indications of the future competitiveness and wealth of the EU. Research and development spending is essential for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available, use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

The R&D expenditure as a percentage of the GDP for GREECE is steadily increasing since 2010 although there is a quite big drop of the country's GDP. This means that it has been identified that Research and Development is a major driver towards growth.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	7,86	8,83	8,64	9,81	9,83	11,22	
Denominator	224.521	205.389	191.915	185.006	181.991	178.137	
EUIS	0.35%	0.43%	0.45%	0.53%	0.54%	0.63%	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

2 INVESTMENTS

2.1. Finance and support

Indicator	2.1.2. Venture capital (percentage of GDP)
Numerator	Venture capital investment is defined as private equity being raised for investment in companies. Management buyouts, management buy-ins, and venture purchase of quoted shares are excluded. Venture capital includes early-stage (seed + start-up) and expansion and replacement capital.
Denominator	Gross Domestic Product
Interpretation	The amount of venture capital is a proxy for the relative dynamism of new business creation. In particular for enterprises using or developing new (risky) technologies, venture capital is often the only available means of financing their (expanding) business.
Source of data and available years for the concerned country	Venture capital data from Invest Europe as the numerator; GDP data from Eurostat as the denominator; European Innovation Scoreboard 2017 for the value of the indicator; http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	22,4	20,5	19,1	-	-	-	
Denominator	224.521	205.389	191.915	185.006	181.991	178.137	
EUIS	0,01	0,01	0,01	-	-	-	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

2 INVESTMENTS

2.2 Firm investments

Indicator	2.2.1. R&D expenditure in the business sector (percentage of GDP)
Numerator	All R&D expenditures in the business sector (BERD) (in mill Euro)
Denominator	Gross Domestic Product (in mill Euro)
Interpretation	The indicator captures the formal creation of new knowledge within firms. It is particularly important in the science-based sectors (pharmaceuticals, chemicals and some areas of electronics) where most new knowledge is created in or near R&D laboratories.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

We can see that the business sector started to slowly increase its expenditure in R&D after 2013 probably as a counter-measure to the non-ending financial crisis and the shrink of the Greek Economy (internal). For this reason, a number of businesses decided to invest to their competence for the European and global market.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	5,38	4,72	4,60	4,99	5,09	5,70	
Denominator	224.521	205.389	191.915	185.006	181.991	178.137	
EUIS	0,24%	0,23%	0,24%	0,27%	0,28%	0,32%	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

2 INVESTMENTS

2.2.Firm investments

Indicator	2.2.2. Non-R&D innovation expenditures (percentage of turnover)
Numerator	Sum of total innovation expenditure for enterprises, excluding intramural and extramural R&D expenditures (in mill Euro)
Denominator	Total turnover for all enterprises (in mill Euro)
Interpretation	This indicator measures non-R&D innovation expenditure as a percentage of total turnover. Several of the components of innovation expenditure, such as investment in equipment and machinery and the acquisition of patents and licenses, measure the diffusion of new production technology and ideas.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

No data available for this Indicator as regards to Greece.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator							
Denominator							
EUIS	0,74%	0,74%	0,74%	0,87%	0,87%	0,87%	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents:

2 INVESTMENTS

2.2.Firm investments

Indicator	2.2.3. Enterprises providing training to develop or upgrade ICT skills of their personnel
Numerator	Number of enterprises that provided any type of training to develop ICT related skills of their personnel
Denominator	Total number of enterprises
Interpretation	ICT skills are particularly important for innovation in an increasingly digital economy. The share of enterprises providing training in that respect is a proxy for the overall skills development of employees.
Source of data and available years for the concerned country	Eurostat; Community Survey of ICT Usage; E-commerce in Enterprises; European Innovation Scoreboard 2017; Use of official national sources; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	119	111	96	63	87	95	
Denominator	79.338	74.066	64.582	57.736	58.211	63.890	
EUIS	15%	15%	15%	11%	15%	15%	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3. INNOVATION ACTIVITIES

3.1 Innovators

Indicator	3.1.1. SMEs introducing product or process innovations (percentage of SMEs)
Numerator	Number of SMEs who introduced at least one new product or a new process to one of their markets
Denominator	Total number of SMEs
Interpretation	Technological innovation, as measured by the introduction of new products (goods or services) and processes, is a key ingredient to innovation in manufacturing activities. Higher shares of technological innovators should reflect a higher level of innovation activities.
Source of data and available years for the concerned country	Eurostat (Community Innovation Survey) for the numerator and the denominator; European Innovation Scoreboard 2017 for the value of the score; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

This indicator is very important in terms of the innovation potential of the country. It is obvious that due to the severe drop of the number of total SME's in Greece there was a drop of the percentage of those that introduce one new product or process in 2013 and 2014; Partly, this may be explained by the fact that the ongoing financial crisis forced alot of the most innovative companies to move to other countries. It is very promising that in 2015, there is a big raise of the percentage of innovative SME's vs the total number which has also had a raise.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	29.551	27.589	24.053	17.084	17.225	22.073	
Denominator	79.204	73.946	64.470	57.622	58.096	63.779	
EUIS	37.31%	37.31%	37.31%	29.65%	29.65%	34.61%	

Government stakeholders: Ministry of Finance & Development, General Secretariat of Research and Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.1.Innovators

Indicator	3.1.2. SMEs introducing marketing or organisational innovations (percentage of SMEs)
Numerator	Number of SMEs who introduced at least one new marketing innovation or organisational innovation to one of their markets
Denominator	Total number of SMEs
Interpretation	The Community Innovation Survey mainly asks firms about their technological innovation. Many firms, in particular in the services sectors, innovate through other non-technological forms of innovation. Examples of these are marketing and organisational innovations. This indicator captures the extent to which SMEs innovate through non-technological innovation.
Source of data and available years for the concerned country	Eurostat (Community Innovation Survey); European Innovation Scoreboard 2017 for the value of the score; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Greece had traditionally showed a high percentage of non-technical innovation among the SME's due to the fact that a lot of them are in the touristic/service provision sector. In accordance to the previous indicator there was a drop from 2013 and on but in general the percentage of the SMEs that introduced at least one marketing or organisational innovation to one of their markets remains high.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	40.623	37.926	33.066	25.935	26.149	25.600	
Denominator	79.204	73.946	64.470	57.622	58.096	63.779	
EUIS	51,29%	51,29%	51,29%	45,01%	45,01%	40,14%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.1.Innovators

Indicator	3.1.3. SMEs innovating in-house (percentage of SMEs)
Numerator	Number of SMEs with in-house innovation activities. Innovative enterprises are defined as enterprises which have introduced new products or processes either in-house or in combination with other firms.
Denominator	Total number of SMEs
Interpretation	This indicator measures the degree to which SMEs, that have introduced any new or significantly improved products or production processes, have innovated in-house. The indicator is limited to SMEs, because almost all large firms innovate and because countries with an industrial structure weighted towards larger firms tend to do better.
Source of data and available years for the concerned country	Eurostat (Community Innovation Survey) for the numerator and the denominator; European Innovation Scoreboard 2017 for the value of the score; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

The number of SMEs with in-house innovation activities is traditionally at the context of 30% and has remained in this level even in the period 2013-2015. This gives an indication that in-house innovation is considered a crucial factor of the competitiveness of an SME during difficult financial and economic circumstances.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	26.493	24.734	21.565	15.344	15.470	20.026	
Denominator	79.204	73.946	64.470	57.622	58.096	63.779	
EUIS	33,45%	33,45%	33,45%	26,63%	26,63%	31,40%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.2 Linkages

Indicator	3.2.1. Innovative SMEs collaborating with others (percentage of SMEs)
Numerator	Number of SMEs with innovation co-operation activities, i.e. those firms that had any co-operation agreements on innovation activities with other enterprises or institutions in the three years of the survey period
Denominator	Total number of SMEs
Interpretation	This indicator measures the degree to which SMEs are involved in innovation co-operation. Complex innovations, in particular in ICT, often depend on the ability to draw on diverse sources of information and knowledge, or to collaborate in the development of an innovation. This indicator measures the flow of knowledge between public research institutions and firms, and between firms and other firms. The indicator is limited to SMEs, because almost all large firms are involved in innovation co-operation.
Source of data and available years for the concerned country	Eurostat (Community Innovation Survey) for the numerator and the denominator; European Innovation Scoreboard 2017 for the value of the score; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

This indicator illustrates the same trend as the two previous ones; the percentage of the the total number of Greek SME's cooperating with other SMEs was satisfactory (2010-2012), there was a slight drop in the period between 2013-2014 followed by an interesting come-back in 2015.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	26.493	24.734	21.565	15.344	15.470	20.026	
Denominator	79.204	73.946	64.470	57.622	58.096	63.779	
EUIS	13,31%	13,31%	13,31%	12,43%	12,43%	14,76%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.2.Linkages

Indicator	3.2.2. Public-private co-publications per million population
Numerator	Number of public-private co-authored research publications. The definition of the "private sector" excludes the private medical and health sector. Publications are assigned to the country/countries in which the business companies or other private sector organisations are located.
Denominator	Total population
Interpretation	This indicator captures public-private research linkages and active collaboration activities between business sector researchers and public sector researchers resulting in academic publications.
Source of data and available years for the concerned country	Publication data provided by CWTS (Leiden University) as part of a contract to European Commission (DG Research and Innovation); Population data from Eurostat; European Innovation Scoreboard 2017; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Greece had an impressive number of public-private co-authored scientific publications which is steadily declining from 2011 and forth.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	1.520.006	1.649.599	1.350.324	1.159.781	1.170.261	859.955	
Denominator	11.119.289	11.123.392	11.086.406	11.003.615	10.926.807	10.858.018	
EUIS	13,67%	14,83%	12,18%	10,54%	10,71%	7,92%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.2.Linkages

Indicator	3.2.3. Private co-funding of public R&D expenditures (percentage of GDP)
Numerator	All R&D expenditures in the government sector (GOVERD) and the higher education sector (HERD) financed by the business sector
Denominator	Gross Domestic Product
Interpretation	This indicator measures public-private co-operation. University and government R&D financed by the business sector are expected to explicitly serve the more short-term research needs of the business sector.
Source of data and available years for the concerned country	Eurostat; European Innovation Scoreboard 2017; http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Very low investment in R&D for the government and Greek High Education sector that is financed by the business sector.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	0,67	0,62	0,58	0,37	0,55	0,71	
Denominator	224.521 (€)	205.389 (€)	191.915 (€)	185.006 (€)	181.991 (€)	178.137 (€)	
EUIS	0,03%	0,03%	0,03%	0,02%	0,03%	0,04%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.3 Intellectual assets

Indicator	3.3.1. PCT patent applications per billion GDP (in PPS)
Numerator	Number of patent applications filed under the PCT, at international phase, designating the European Patent Office (EPO). Patent counts are based on the priority date, the inventor's country of residence and fractional counts.
Denominator	Gross Domestic Product in Purchasing Power Standard (in billion)
Interpretation	The capacity of firms to develop new products will determine their competitive advantage. One indicator of the rate of new product innovation is the number of patents. This indicator measures the number of PCT patent applications.
Source of data and available years for the concerned country	Patent data from the OECD; Population data from Eurostat; European Innovation Scoreboard 2017; http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Greece shows a satisfactory number of patent applications, which has slightly increased during the last few years

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	1.029	810	865	1134	1167	1.175	
Denominator	239.518,7	218.958,4	210.995,0	210.167,2	212.233,0	213.683,5	
EUIS	0,43	0,37	0,41	0,54	0,55	0,55	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.3.Intellectual assets

Indicator	3.3.2. Trademark applications per billion GDP (in PPS)
Numerator	Number of trademark applications applied for at European Union Intellectual Property Office (EUIPO) plus number of trademark applications applied for at World Intellectual Property Office (WIPO) ("yearly Madrid applications by origin")
Denominator	Gross Domestic Product in Purchasing Power Standard (in billion)
Interpretation	Trademarks are an important innovation indicator, especially for the service sector. The Community trademark gives its proprietor a uniform right applicable in all Member States of the European Union through a single procedure which simplifies trademark policies at European level. It fulfils the three essential functions of a trademark: it identifies the origin of goods and services, guarantees consistent quality through evidence of the company's commitment vis-à-vis the consumer, and it is a form of communication, a basis for publicity and advertising.
Source of data and available years for the concerned country	Trademark data from European Union Intellectual Property Office (EUIPO) and World Intellectual Property Office (WIPO); Population data from Eurostat; European Innovation Scoreboard 2017; http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

This indicator was very low for Greece and still is, although there is a quite significant increase especially from 2014 and forth.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	4.526	4.641	5.190	6.851	8.637	8.782	
Denominator	239.518,7	218.958,4	210.995,0	210.167,2	212.233,0	213.683,5	
EUIS	1,89	2,12	2,46	3,26	4,07	4,11	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

3 INNOVATION ACTIVITIES

3.3.Intellectual assets

Indicator	3.3.3. Design applications per billion GDP (in PPS)
Numerator	Number of individual designs applied for at European Union Intellectual Property Office (EUIPO)
Denominator	Gross Domestic Product in Purchasing Power Standard (in billion)
Interpretation	A design is the outward appearance of a product or part of it resulting from the lines, contours, colours, shape, texture, materials and/or its ornamentation. A product can be any industrial or handicraft item including packaging, graphic symbols and typographic typefaces but excluding computer programmes. It also includes products that are composed of multiple components, which may be disassembled and reassembled. Community design protection is directly enforceable in each Member State and it provides both the option of an unregistered and a registered Community design right for one area encompassing all Member States.
Source of data and available years for the concerned country	Design data from European Union Intellectual Property Office (EUIPO); Population data from Eurostat; European Innovation Scoreboard 2017; http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

This indicator was very low for Greece and still is, although there is a quite significant increase especially in 2014 and forth.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	1.101	1.007	949	1.597	1.867	2.094	
Denominator	239.518,7	218.958,4	210.995,0	210.167,2	212.233,0	213.683,5	
EUIS	0,46	0,46	0,45	0,76	0,88	0,98	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

4. IMPACT

4.1 Employment impact

Indicator	4.1.1. Employment in knowledge-intensive activities (percentage of total employment)
Numerator	Number of employed persons in knowledge-intensive activities in business industries. Knowledge-intensive activities are defined, based on EU Labour Force Survey data, as all NACE Rev.2 industries at 2-digit level where at least 33% of employment has a tertiary education degree (ISCED 5-8).
Denominator	Gross Domestic Product in Purchasing Power Standard (in million)
Interpretation	Knowledge-intensive activities provide services directly to consumers, such as telecommunications, and provide inputs to the innovative activities of other firms in all sectors of the economy.
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available, use official national sources for the numerator and denominator. http://ec.europa.eu/eurostat/data/database

Remark (commentary which explains the numerator or describes certain specifics of the national context):

The employment in knowledge-intensive activities in Greece has always been high and close to the EU28 average. This indicates a potential benefit in transforming the economy into a more innovative driven one.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	27.305	27.305	27.305	27.305	27.305	27.305	
Denominator	239.518,7 (€)	218.958,4 (€)	210.995,0 (€)	210.167,2 (€)	212.233,0 (€)	213.683,5 (€)	
EUIS	11.40%	12.40%	12.50%	12.20%	12.00%	12.20%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

4 IMPACT

4.1Employment impact

Indicator	4.1.2. Employment in fast-growing enterprises (percentage of total employment)
Numerator	Number of employees in high-growth enterprises in 50% 'most innovative' industries, defined as: B06 (Extraction of crude petroleum and natural gas) B09 (Mining support service activities) C11 (Manufacture of beverages) C12 (Manufacture of tobacco products) C19 (Manufacture of coke and refined petroleum product) C20 (Manufacture of chemicals and chemical products) C21 (Manufacture of basic pharmaceutical products and pharmaceutical preparations) C26 (Manufacture of computer, electronic and optical products) C27 (Manufacture of electrical equipment) C28 (Manufacture of machinery and equipment not elsewhere classified) C29 (Manufacture of motor vehicles, trailers and semi-trailers) C30 (Manufacture of other transport equipment) C32 (Other manufacturing) D35 (Electricity, gas, steam and air conditioning supply) E39 (Remediation activities and other waste management services) G46 (Wholesale trade, except of motor vehicles and motorcycle) H51 (Air transport) J58 (Publishing activities) J59 (Motion picture, video and television programme production, sound recording and music publishing activities) J60 (Programming and broadcasting activities) J61 (Telecommunications) J62 (Computer programming, consultancy and related activities) J63 (Information service activities) K64 (Financial service activities, except insurance and pension funding)

	K65 (Insurance, reinsurance and pension funding, except compulsory social security) K66 (Activities auxiliary to financial services and insurance activities) L68 (Real estate activities) M69 (Legal and accounting activities) M70 (Activities of head offices; management consultancy activities) M71 (Architectural and engineering activities; technical testing and analysis) M72 (Scientific research and development) M73 (Advertising and market research) M74 (Other professional, scientific and technical activities) M75 (Veterinary activities) N79 (Travel agency, tour operator and other reservation service and related activities)
Denominator	Total employment for enterprises with 10 or more employees
Interpretation	This indicator provides an indication of the dynamism of fast-growing firms in innovative sectors as compared to all fast-growing business activities. It captures the capacity of a country to rapidly transform its economy to respond to new needs and to take advantage of emerging demand.
Source of data and available years for the concerned country	Calculations by European Commission (Joint Research Centre); European Innovation Scoreboard 2017; http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

No data available for this indicator.

Results/Analysis:

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
EUIS	n/a	n/a	n/a	n/a	n/a	n/a	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: -

4 IMPACT

4.2 Sales impact

Indicator	4.2.1. Exports of medium and high technology products as a share of total product exports
Numerator	Value of medium and high tech exports, in national currency and current prices, including exports of the following SITC Rev.3 products: 266, 267, 512, 513, 525, 533, 54, 553, 554, 562, 57, 58, 591, 593, 597, 598, 629, 653, 671, 672, 679, 71, 72, 731, 733, 737, 74, 751, 752, 759, 76, 77, 78, 79, 812, 87, 88 and 891
Denominator	Value of total product exports
Interpretation	The indicator measures the technological competitiveness of the EU, i.e. the ability to commercialise the results of research and development (R&D) and innovation in international markets. It also reflects product specialisation by country. Creating, exploiting and commercialising new technologies are vital for the competitiveness of a country in the modern economy. Medium and high technology products are key drivers for economic growth, productivity and welfare, and are generally a source of high value added and well-paid employment.
Source of data and available years for the concerned country	Eurostat (ComExt) for Member States; UN ComTrade for non-EU countries; European Innovation Scoreboard 2017; https://comtrade.un.org/data/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Greek medium and high technology exports are relevantly low especially if you compare this indicator with the employment in knowledge-intensive enterprises' indicator.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator	6.534 (€)	7.051(€)	6.570 (€)	6.419 (€)	6.937 (€)	6.239 (€)	
Denominator	27.855 (€)	33.154 (€)	34.894 (€)	35.704 (€)	35.538 (€)	27.497 (€)	
EUIS	23.46%	21.27%	18.83%	17.98%	19.52%	22.69%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

4 IMPACT

4.2.Sales impact

Indicator	4.2.2. Knowledge-intensive services exports as percentage of total services exports
Numerator	Exports of knowledge-intensive services is defined as the sum of credits in EBOPS 2010 (Extended Balance of Payments Services Classification) items: SC1 (Sea transport) SC2 (Air transport) SC3A (Space transport) SF (Insurance and pension services) SG (Financial services) SH (Charges for the use of intellectual property) SI (Telecommunications, computer, and information services) SJ (Other business services) SK1 (Audio-visual and related services)
Denominator	Total value of services exports
Interpretation	The indicator measures the competitiveness of the knowledge-intensive services sector. Competitiveness-enhancing measures and innovation strategies can be mutually reinforcing for the growth of employment, export shares, and turnover at the firm level. The indicator reflects the ability of an economy, notably resulting from innovation, to export services with high levels of value added, and successfully take part in knowledge-intensive global value chains.
Source of data and available years for the concerned country	Calculations by European Commission (Joint Research Centre); European Innovation Scoreboard 2017; https://comtrade.un.org/data/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

Traditionally this indicator was close to the EU28 average for Greece; though, it seems that the financial crisis affected it and in the last few years there is a steady decrease of the percentage of the knowledge-intensive services as a fraction of the total services' exports.

Results/Analysis:

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Nominator	23.127(€)	22.617(€)	19.852(€)	19.348(€)	21.176(€)	13.763(€)	
Denominator	37.803 (€)	39.820 (€)	35.425 (€)	37.231 (€)	41.200 (€)	30.972 (€)	
EUIS	61.18%	56.80%	56.04%	51.97%	51.40%	44.44%	

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

4 IMPACT

4.2.Sales impact

Indicator	4.2.3. Sales of new-to-market and new-to-firm innovations as percentage of turnover
Numerator	Sum of total turnover of new or significantly improved products, either new-to-the-firm or new-to-the-market, for all enterprises (in mill Euro)
Denominator	Total turnover for all enterprises (in mill Euro)
Interpretation	This indicator measures the turnover of new or significantly improved products and includes both products which are only new to the firm and products which are also new to the market. The indicator thus captures both the creation of state-of-the-art technologies (new-to-market products) and the diffusion of these technologies (new-to-firm products).
Source of data and available years for the concerned country	European Innovation Scoreboard 2017 for the indicator; Eurostat for the values of the numerator and denominator; If not available use official national sources for the numerator and denominator. http://www.stat.gov.mk/

Remark (commentary which explains the numerator or describes certain specifics of the national context):

No Data for Greece regarding this indicator.

Results/Analysis:

Year	2010	2011	2012	2013	2014	2015	2016
Nominator							
Denominator							
EUIS							

Government stakeholders: Greek Ministry of Finance & Development

Important documents: Innovation Union Scorecards (IUS) 2010-2016

5. Conclusions – National Summative Innovation Score

Summary Innovation Index for GREECE

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
SII	67.5	68.5	69.1	70.1	61.7	63.8	68.2

Greece is not considered as a leading or strong innovative country. Despite the fact that in 2016 Greece had a positive change in performance (0,7) relatively to 2010, the financial crisis undoubtedly affected its innovation potential if we take into account the individual performance indicator metrics.

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