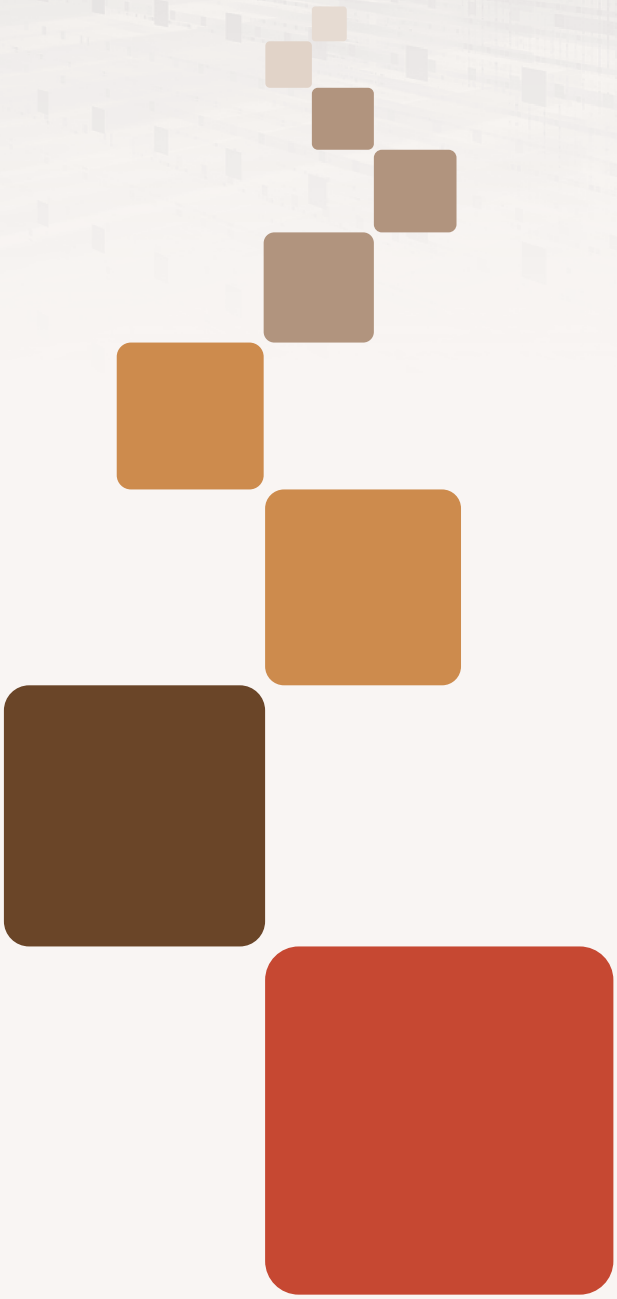
INNOVATION

IN GREEK ENTERPRISES

2012-2014



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INNOVATION IN GREEK ENTERPRISES 2012-2014

National Documentation Centre (EKT) / National Hellenic Research Foundation (NHRF)
Athens 2017

This publication presents the results of the Community Innovation Survey 2012-2014 realised by the National Documentation Center in cooperation with the Hellenic Statistical Authority.

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PREFACE

This publication of the National Documentation Centre (EKT) presents the results of the survey on innovation in Greek enterprises between 2012 and 2014. The nationwide survey was carried out by EKT in collaboration with the Greek Statistical Authority (ELSTAT), for the second time, after that of 2010-2012, as part of Eurostat's Community Innovation Survey that covers all EU member states. Thus, it is a major factual tool for understanding and analyzing innovation in Greece since it provides empirical data for nearly 14,000 enterprises (in Industry and Services) that employ 10 or more employees.

Data presented in this publication follows established European and international classifications, and provides input on key aspects of innovation, such as the innovation types, the innovative business activities, and the introduction of new products to business and the market. Furthermore, it publishes data on highly topical subjects, such as environmental innovation, the role of the public sector and public procurement for boosting innovation, and the synergies of enterprises with other entities, to name but a few.

In addition to the above, this publication includes data on the participation of Greek innovative enterprises in global value chains, and the collaboration between Greek innovative companies and universities - research centers. In more detail, participation and position of Greek firms in global value chains is a measure of their potential in international competition, while partnerships between the innovative private sector and higher education and research institutions examines the degree of the dynamism of knowledge flows and research exploitation in real economy.

As far as Greece's performance is concerned, enterprises continue to innovate, despite the current economic difficulties, placing the country 12th among EU28 member states, in terms of the rate of innovative enterprises. In total, EUR 1.6 billion is invested in innovative activities while a significant part of Greek enterprises cooperate with other entities towards developing innovative products / processes.

Innovation is an activity which is highly valued by policy makers at national and supranational level, the business world and academia. In the EU emphasis is laid on promoting innovation in its growth Strategy towards 2020, with smart specialization being

a clear example of this policy. In this context, local characteristics and comparative advantages are identified and prioritized at regional level, in order to facilitate innovation. In this spirit, at EKT we aim to continue to produce and provide relevant data, data that will contribute to the public debate on innovation and economic growth, as well as assist policy makers by way of providing evidence to inform the actual policy making process. It is with this in mind that this publication should be read.

Dr Evi Sachini

Director EKT

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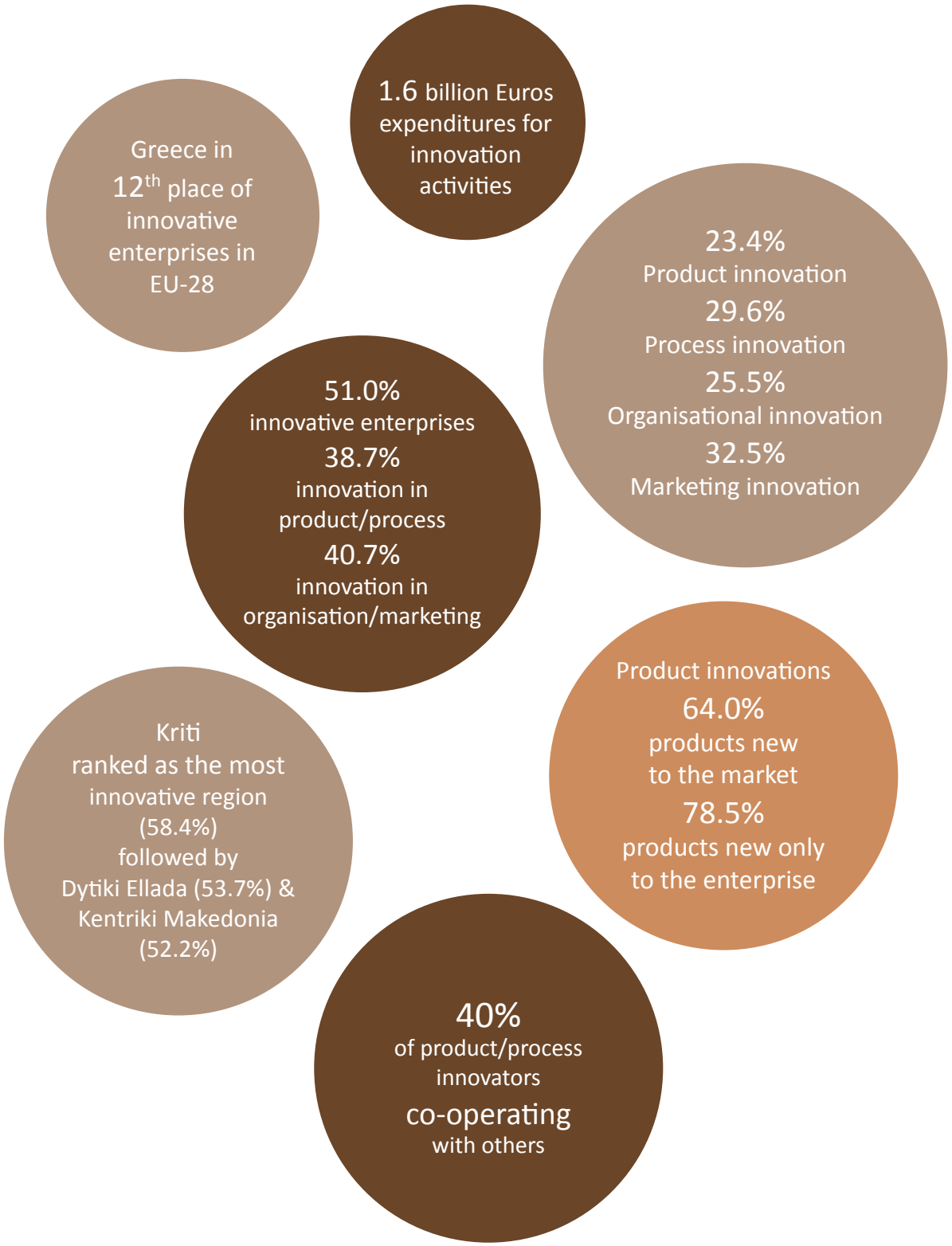
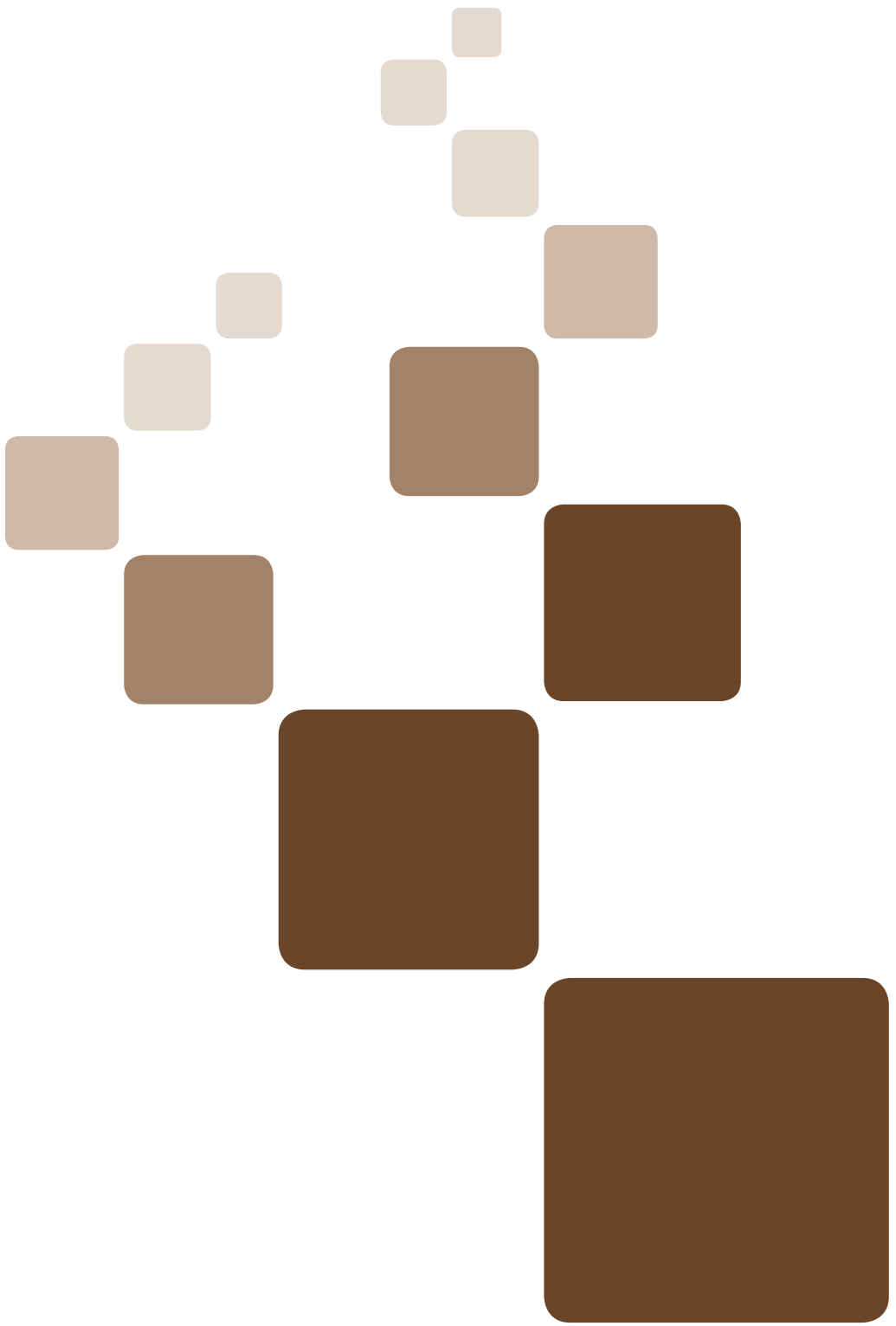

1.6 billion Euros expenditures for innovation activities
Greece in 12th place of innovative enterprises in EU-28
23.4% Product innovation
29.6% Process innovation
25.5% Organisational innovation
32.5% Marketing innovation
51.0% innovative enterprises
38.7% innovation in product/process
40.7% innovation in organisation/marketing
Product innovations
64.0% products new to the market
78.5% products new only to the enterprise
Kriti ranked as the most innovative region (58.4%) followed by Dytiki Ellada (53.7%) & Kentriki Makedonia (52.2%)
40% of product/process innovators co-operating with others



Chapter 1

Innovation indicators

This chapter presents the main innovation indicators for Greek enterprises, for the period 2012-2014, based on the Community Innovation Survey conducted by the National Documentation Centre (EKT).

The Community Innovation Survey (CIS) is the official European survey for the collection of data and the production of indicators for innovation and innovation activities of enterprises in the EU. It is conducted every two years by all EU member states using a common model questionnaire and is done so in accordance with the European legislation, the methodological guidelines of the Oslo Manual[1] and the recommendations of Eurostat in order to ensure high quality and comparability of the indicators across all EU member states.

The target population of the CIS survey is the total population of enterprises, with 10 or more employees, in core sectors of economic activity, as indicated below.

In Greece, according to the national statistical business register, maintained by the Hellenic Statistical Authority, the survey population, with reference to the three year period 2012-2014, was 13,843 enterprises. The following table presents the structure of this population as distributed across the three size classes, based on the number of employees of the enterprises, and their primary sector of economic activity.

	Survey population of enterprises for 2012-2014
Total survey population	**13,843**
Size class (based on the number of employees)	
10 to 49 employees	11,842
50 to 249 employees	1,787
250 employees or more	214
Sectors of economic activity (classification following NACE rev2)	
Industry	**6,352**
B (05-09): Mining and quarrying	117
C (10-33): Manufacturing	5,971
D (35): Electricity, gas, steam and air conditioning supply	64
E (36-39): Water supply; Sewerage, waste management and remediation activities	200
Services	**7,491**
G (46): Wholesale trade, except for motor vehicles and motorcycles	4,482
H (49-53): Transportation and storage	1,416
J (58-63): Information and communication	771
K (64-66): Financial and insurance activities	157
M (71-73):Professional, scientific and technical activities (Architectural and engineering activities; technical testing and analysis / Scientific research and development / Advertising and market research)	665

[1] Oslo Manual "Guidelines for Collecting and Interpreting Innovation Data", 3rd ed., 2005, Joint Publication of OECD and Eurostat (http://metrics.ekt.gr/sites/emetrics/files/Manuals/OSLO-EN_2005.pdf)

1.1 Innovative enterprises

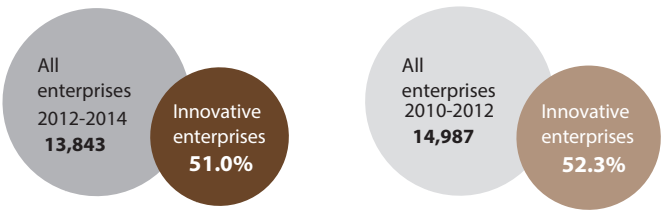
According to the results, during 2012-2014, 51.0% of Greek enterprises were innovative in one or more types of innovation.

Compared with the period 2010-2012, a slight decrease in the proportion of innovative enterprises is recorded (Figure 1).

An innovation is the introduction of a new or significantly improved product (good or service) or process (a new organisational method, or a new marketing method by an enterprise).

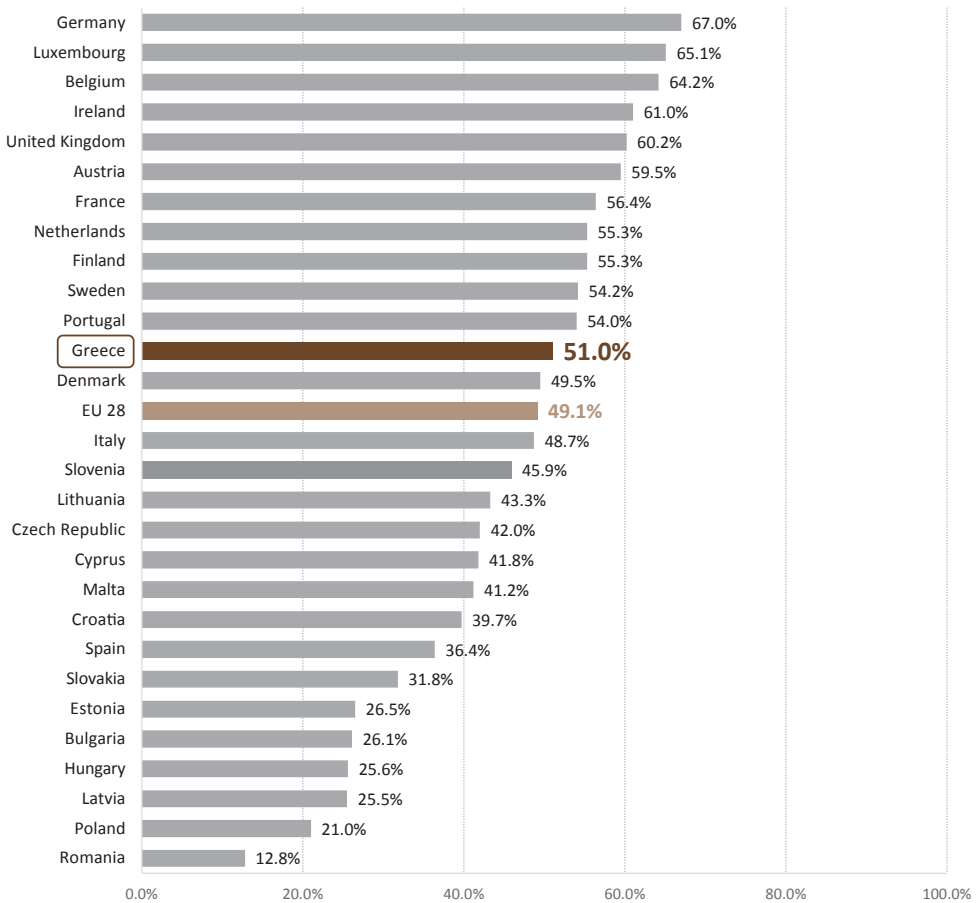
The minimum requirement for an innovation is that the product, process, marketing method or organisational method must be new (or significantly improved) to the enterprise. This includes products, processes and methods that enterprises are the first to develop and those that have been originally developed or used by other enterprises or organisations, as long as they are introduced for the first time by that enterprise.*

Figure 1. Total population and innovative enterprises (as % of all enterprises), 2010-2012 and 2012-2014



With a percentage above the EU-28 average (49.1%), Greece is ranked 12th out of the EU-28 member states for the period 2012-2014 (Figure 2).

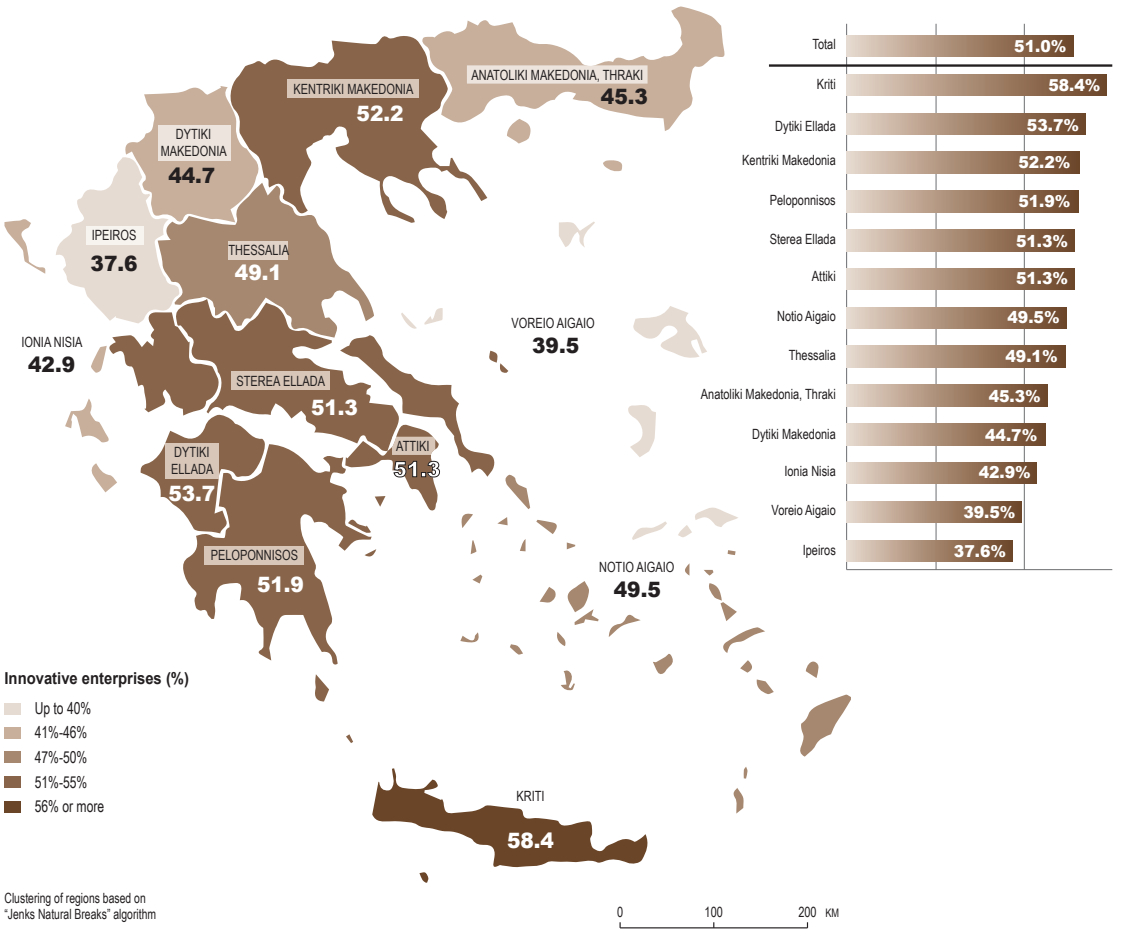
Figure 2. Innovative enterprises in the EU-28 member states, 2012-2014 (% of all enterprises in each country)



* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

At the Greek regional level, the largest share of innovative enterprises was recorded for the region of Kriti (58.4%). This was followed by Dytiki Ellada with 53.7%, Kentriki Makedonia with 52.2% and Peloponnisos with 51.9% (Map 1).

Map 1. Innovative enterprises by NUTS2 region, 2012-2014 (% of all enterprises in each region)



1.2 Characteristics of innovative enterprises

This section presents innovative enterprises by size class, based on the number of employees and by primary sector of economic activity.

It also examines differences between innovative and non-innovative enterprises with regard to basic characteristics such as turnover, number of employees and geographical markets where enterprises sell their goods or services.

The share of innovation increased progressively with the size of enterprise ranging from 49.7% for enterprises with 10-49 employees, 55.2% for enterprises with 50-249 employees and reaching 86.4% for enterprises with 250 or more employees (Figure 3).

Figure 3. Innovative enterprises by size class, 2012-2014 (% of all enterprises in each size class)

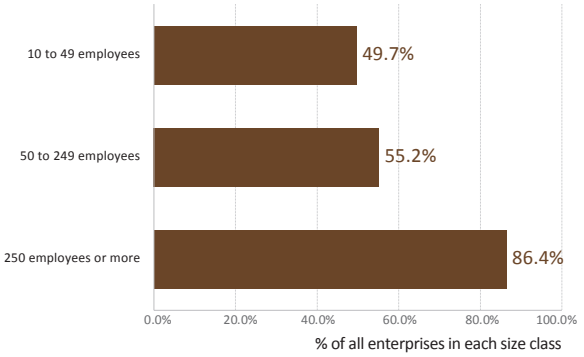
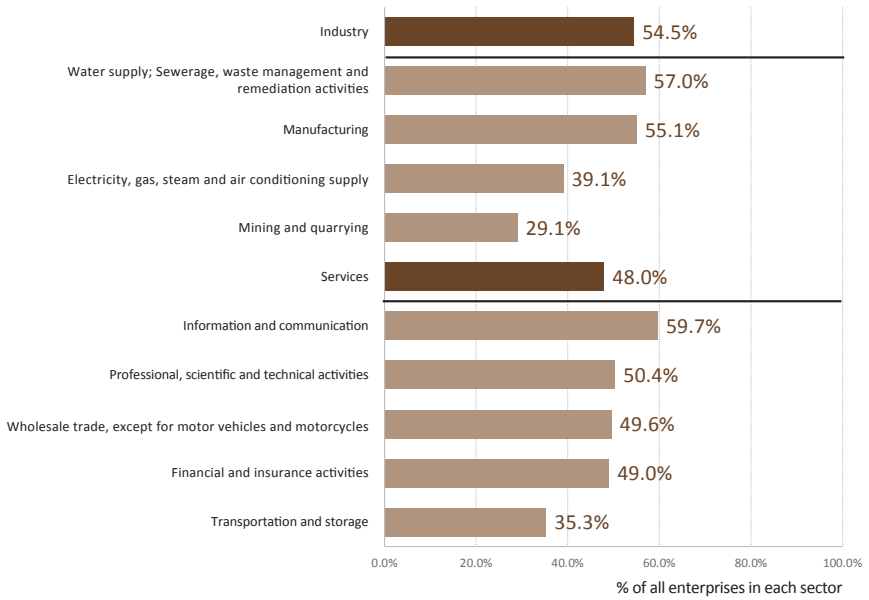


Figure 4 shows the percentages for innovative enterprises in the two main sectors of economic activity, Industry and Services. Innovative enterprises in the Industry sector outdid those in Services (54.5% and 48%, respectively).

Figure 4. Innovative enterprises by primary sector of economic activity, 2012-2014 (% of all enterprises in each sector)



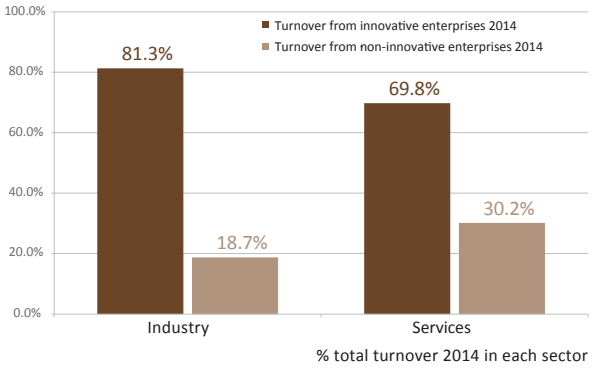
In the Industry sector, the highest percentage (57%) of innovative enterprises was reported in the 'Water supply-sewerage, waste management and remediation activities' sector populated with 200 enterprises. This was followed by the 'Manufacturing' sector (55.1%). Having a total of 5,971 enterprises, this is the main branch of the Industry sector. Outstanding in 'Manufacturing' were the following sectors: 'Manufacture of basic pharmaceutical products and pharmaceutical preparations' (78.3%), 'Manufacture of electrical equipment' (72.7%) and 'Manufacture of computer, electronic and optical products' (70.3%).

In the Services sector, the highest percentage (59.7%) of innovative enterprises was in 'Information and Communication', the leading sectors for which were 'Computer programming, consultancy and related activities' 84.4%, 'Information Service Activities' (73.7%) and 'Telecommunications' (56.8%).

Innovative enterprises performed better in terms of turnover. Figure 5 presents the contribution of innovative and non-innovative enterprises to the total turnover of the Industry and Services sectors.

For the Industry sector, 81.3% of turnover is a result of innovative enterprises. For the Services sector, this amounted to 69.8%.

Figure 5. Distribution of turnover in the two main sectors of economic activity for innovative and non-innovative enterprises, 2014 (% of total turnover in each sector)



Innovative enterprises also dominated in terms of employment. As can be seen in Figure 6, the largest share of employees for 2014 in both the Industry and Services sectors were employed by innovative enterprises (73.5% and 70.5%, respectively).

Figure 6. Distribution of number of employees in the two main sectors of economic activity for innovative and non-innovative enterprises, 2014 (% of total number of employees)

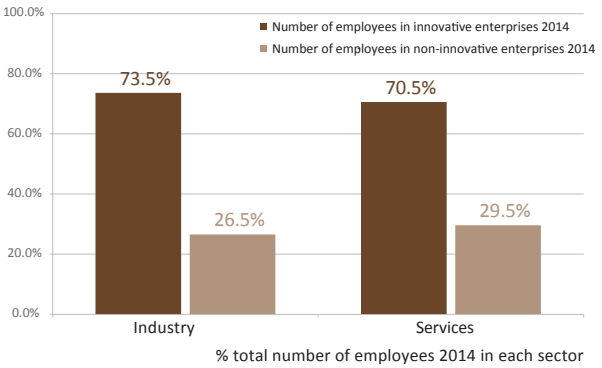
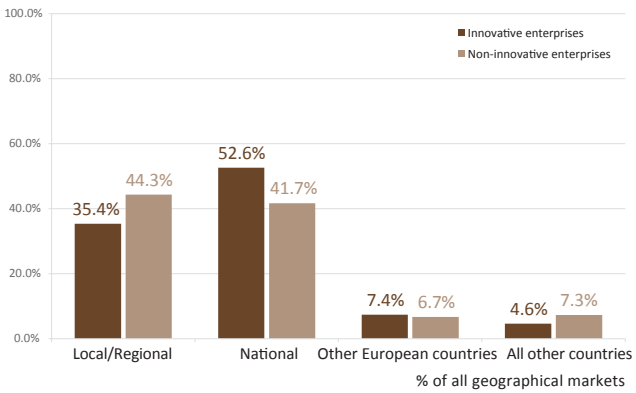


Figure 7 shows the most significant geographical markets for both innovative and non-innovative enterprises in terms of turnover for the 2012-2014 period.

The national market was the biggest market for 52.6% of innovative enterprises. It was followed by the local/regional market which was the most significant for 35.4% of innovative enterprises. The picture was reversed for the non-innovative enterprises, where the local/regional market was of greater significance than the national market with shares of 44.3% and 41.7% respectively.

Foreign markets, within or outside Europe, were less important for both innovative and non-innovative enterprises.

Figure 7. Distribution of innovative and non-innovative enterprises on the basis of the most important geographical market, 2012-2014 (% of all enterprises in each market)



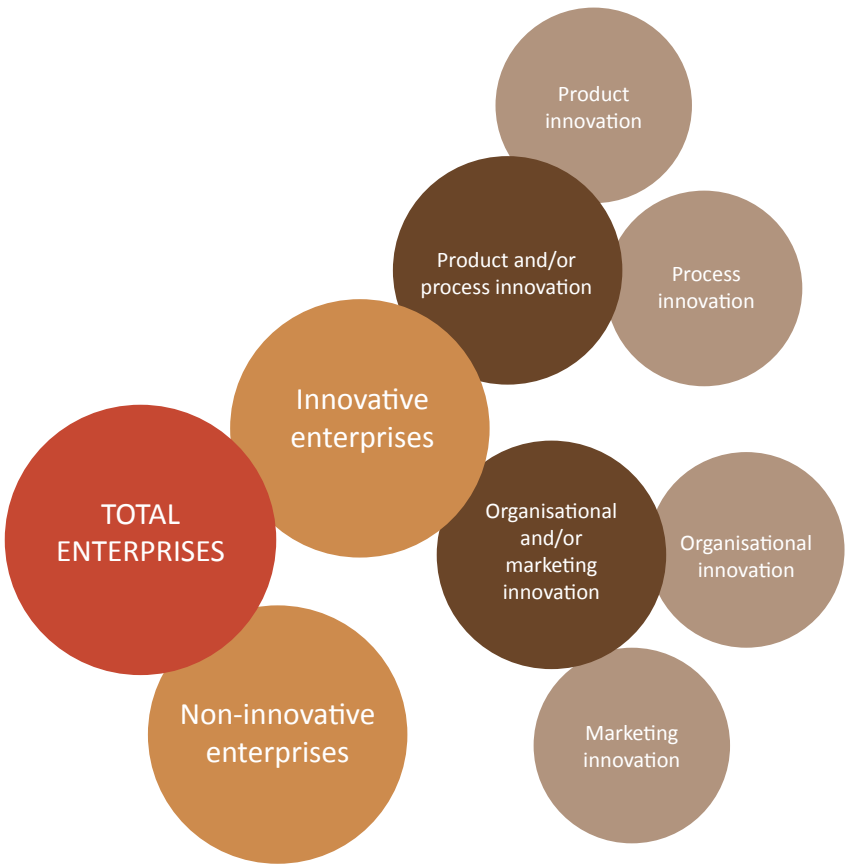
1.3 Product and/or process innovation

Innovative enterprises are usually divided into two broad categories: a) 'Product and/or process innovation'; b) 'Organisational and/or marketing innovation' (For a presentation of the types of innovation, see Figure 8).

Product and/or process innovation includes enterprises innovative in products (goods or services) and/or processes, regardless of whether they implement organisational and/or marketing innovations. Also included in this category are enterprises that, during 2012-2014, carried out activities to introduce product/process innovations which were still ongoing or had been abandoned/suspended before completion at the end of 2014. 'Product and/or process innovation' is presented in section 1.3.

Organisational and/or marketing innovation includes enterprises that innovate in organisational and/or marketing methods regardless of whether they implement product and/or process innovation. 'Organisational and/or marketing innovation' is presented in section 1.4.

Figure 8. Types of innovation

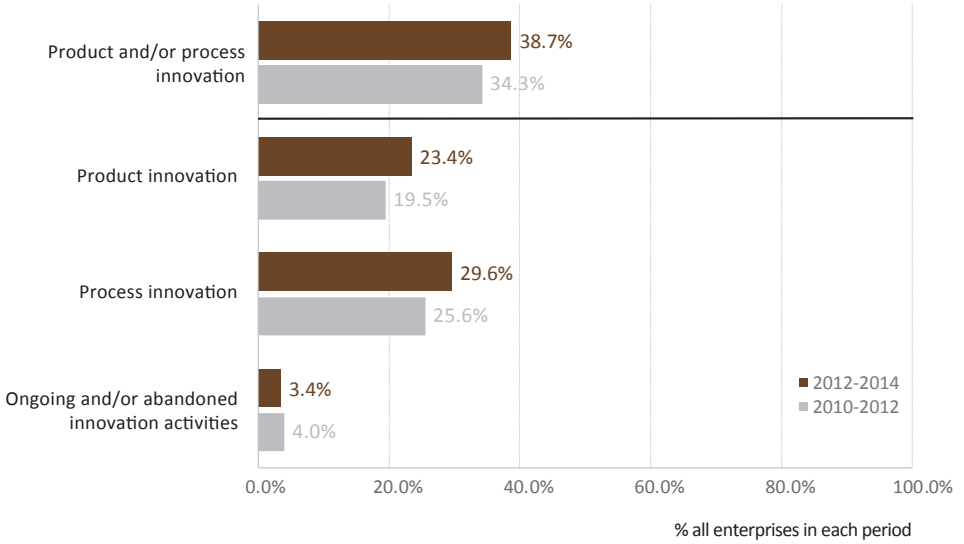


During the 2012-2014 period, 38.7% of enterprises introduced product and/or process innovation. Product innovation accounted for 23.4% and process innovation for 29.6% of all enterprises, regardless of whether they were innovative in other types of innovation at the same time (Figure 9).

A small share of enterprises (3.4%) were engaged in innovation activities for the introduction of product and/or process innovations that were still ongoing or abandoned/suspended before completion at the end of 2014.

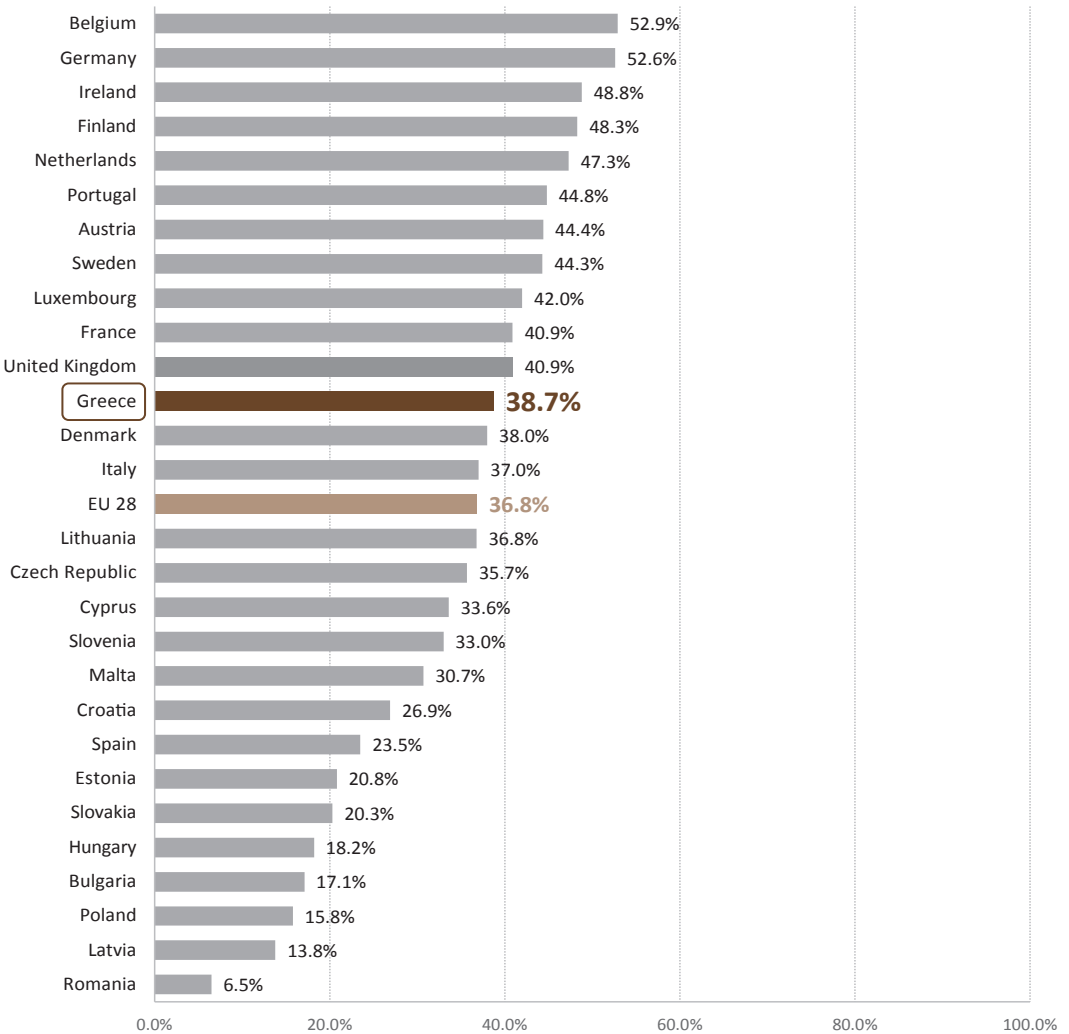
In comparison with the three-year period 2010-2012, there was an increase in product and/or process innovation as a result of an increase in both types of innovation. Enterprises with innovation activities either still ongoing or abandoned/suspended showed a slight decline.

Figure 9. Product and/or process innovative enterprises and the specific types of innovation, 2010-2012 and 2012-2014 (% of all enterprises)



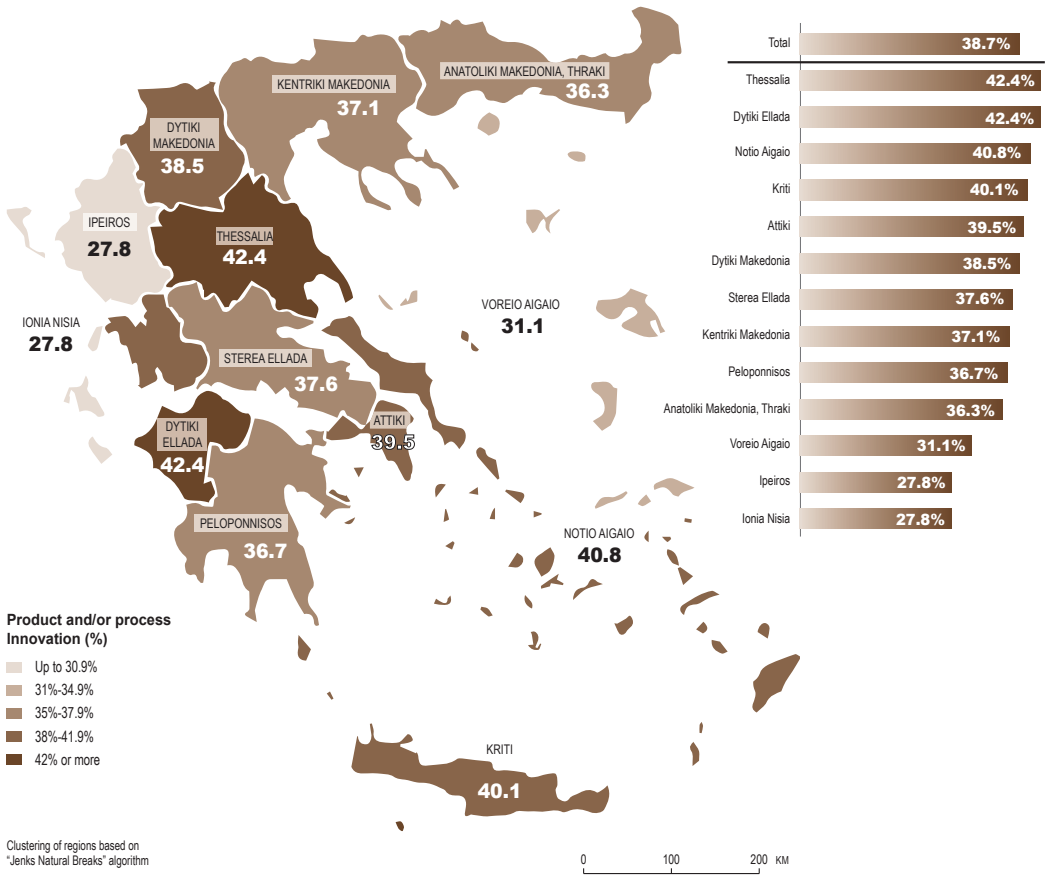
With 38.7%, Greece is ranked 12th out of the EU-28 member states for enterprises with product and/or process innovation. The average for the EU-28 member states stands at 36.8% (Figure 10).

Figure 10. Product and/or process innovative enterprises in the EU-28 member states, 2012-2014 (% of all enterprises in each country)



Map 2 illustrates the product and/or process innovative enterprises by Greek regions for 2012-2014. The leading regions are Thessalia and Dytiki Ellada with 42.4%. Notio Aigaio is in third place with 40.8% and is followed by Kriti with 40.1%.

Map 2. Product and/or process innovative enterprises by NUTS2 region, 2012-2014 (% of all enterprises in each region)



1.3.1 Product innovation

Product innovative enterprises can be further broken down into those introducing goods innovation (whether or not they introduce services innovation) and those which introduce services innovation (whether or not they introduce goods innovation).

During the period 2012-2014, 16.9% of Greek enterprises introduced goods innovation, a slightly higher percentage than in the 2010-2012 period. Services innovation had a share of 13.6%, which was also higher than the previous three-year period (Figure 11).

A product innovation is the introduction to the market of a product, good or service, the characteristics or the intended uses of which are significantly improved.

The term 'product' refers to either a good or a service.

A good is usually a tangible object such as an appliance, furniture, a camera in a mobile phone, a portable MP3, a GPS or packaged software as well as downloadable software, music and film.

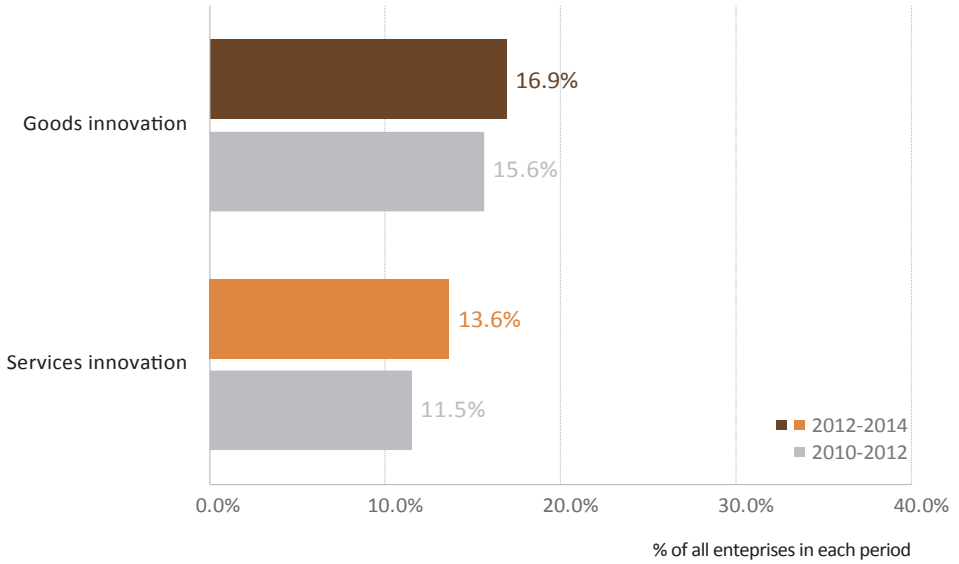
A service is usually intangible such as internet services, like web-banking or bill payment systems, retailing, insurance, educational courses, air travel, consulting, etc.

A product innovative enterprise may introduce innovations in goods and/or in services.

A product innovation (new or significantly improved) must be new for the enterprise but not necessarily for the enterprise's sector or market. Also, it may have been originally developed either by the enterprise or by other enterprises or organisations.*

* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

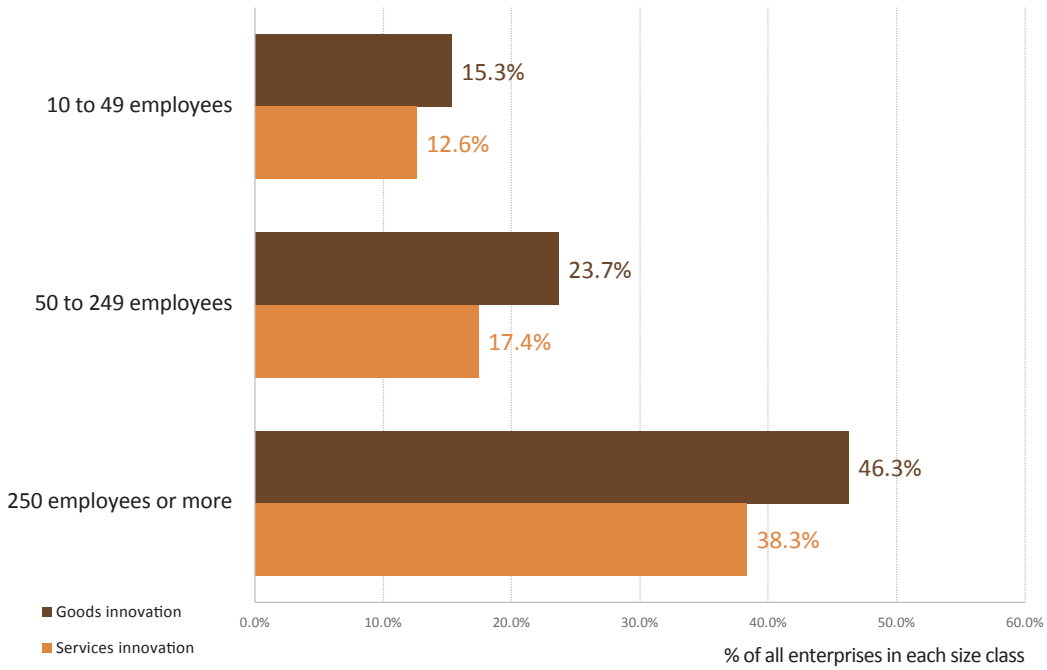
Figure 11. Product innovative enterprises by product category, 2010-2012 και 2012-2014 (% of all enterprises in each period)



Figures 12 and 13 present enterprises with goods and services innovation during the 2012-2014 period, by size class and by main sector of economic activity respectively.

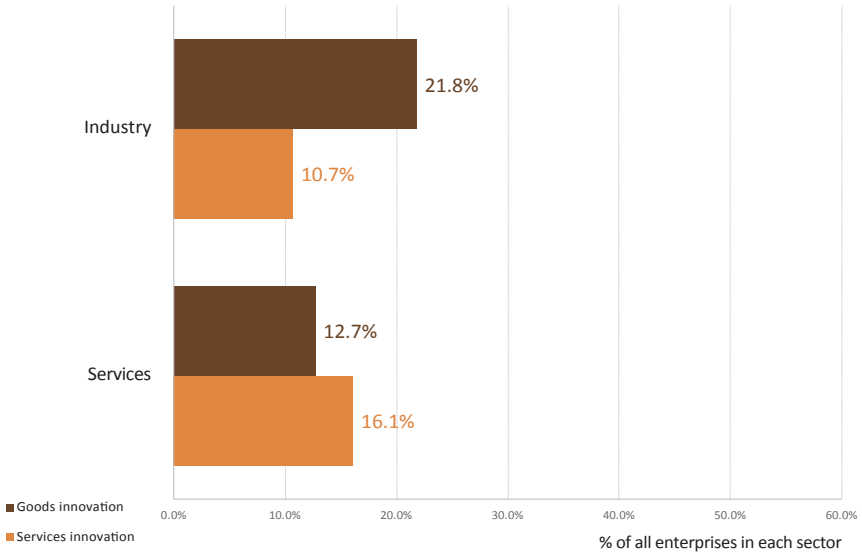
For all size classes of Greek enterprises, percentages for goods innovation were higher than services innovation. Percentages for both categories increased progressively with the enterprise size.

Figure 12. Product innovative enterprises by product category and by size class, 2012-2014 (% of all enterprises in each size class)



Goods innovation dominated the Industry sector (21.8%), while services innovation was significantly lower (10.7%). In contrast, the Services sector was led by services innovation (16.1%) with goods innovation being 12.7% (Figure 13).

Figure 13. Product innovative enterprises by product category and by main sector of economic activity, 2012-2014 (% of all enterprises in each sector)



1.3.2 Process innovation

In process innovation, implementation of a new or significantly improved process can be broken down into three categories: the production process, delivery methods and supporting activities.

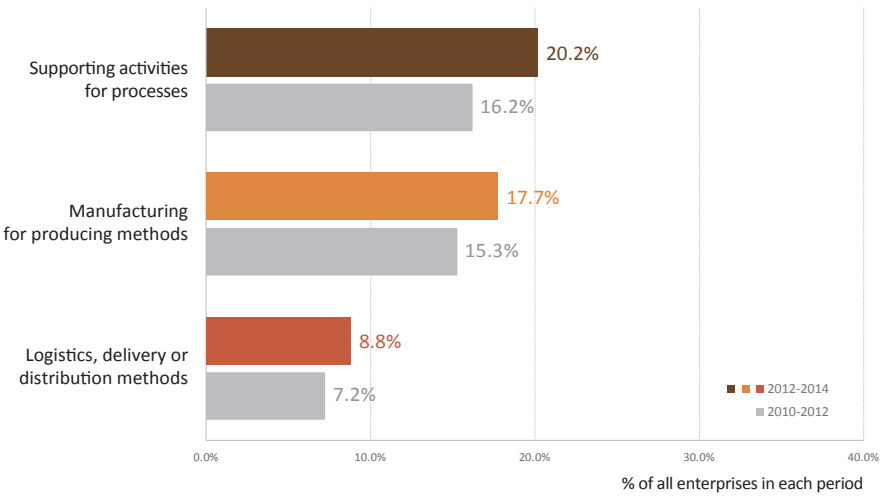
Most of the enterprises introduced innovations for the support of their processes (20.2%) and for manufacturing for producing methods goods/services (17.7%). Noticeably fewer enterprises engaged in innovation for delivery/distribution methods of products (8.8%). Percentages for all three categories were higher than for the 2010-2012 period (Figure 14).

A process innovation is the implementation of a new or significantly improved production process, distribution method, or supporting activity for the goods or services provided by the enterprise.

The following three categories are distinguished:

- Methods of manufacturing for producing goods or services
- Logistics, delivery or distribution methods for the inputs, goods or services
- Supporting activities for the processes, such as maintenance systems or operations for purchasing, accounting, or computing.*

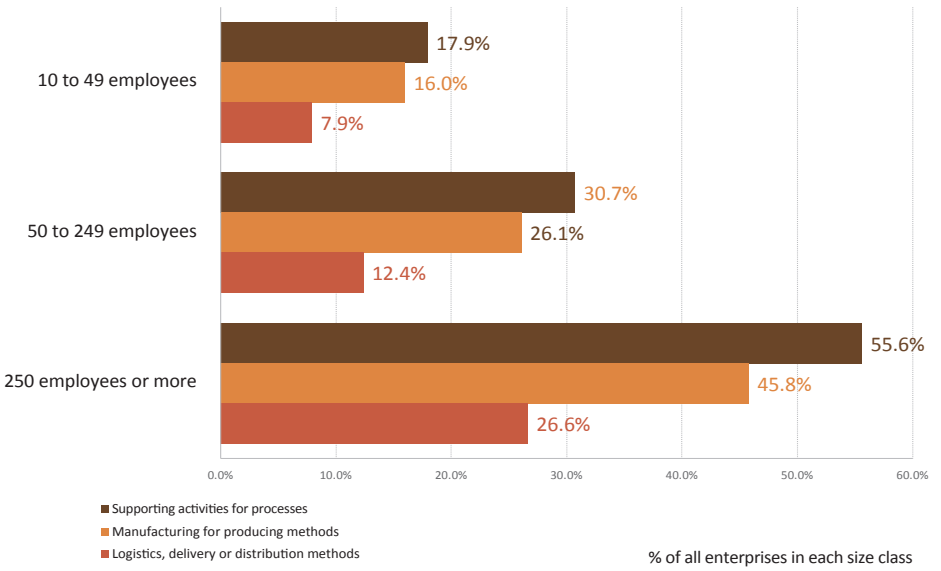
Figure 14. Process innovative enterprises by process category, 2010-2012 and 2012-2014 (% of all enterprises in each period)



* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

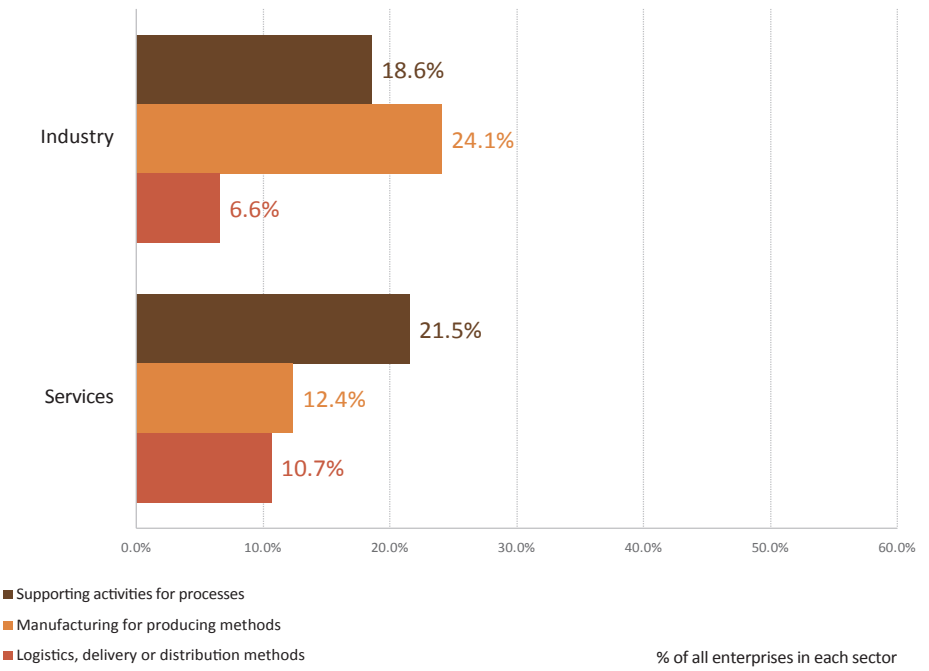
In relation to the size classes, the three categories of process innovation were similarly distributed. Supporting activities for processes were ranked first, methods of manufacturing/producing products were second and were followed by delivery/distribution methods for products. The share of innovation for each category increased progressively with the enterprise size (Figure 15).

Figure 15. Process innovative enterprises by process category and by size class, 2012-2014 (% of all enterprises in each size class)



The industry sector was dominated by enterprises with innovation in methods of manufacturing for producing products, 24.1%, while in the Services sector the highest percentage, 21.5%, was for enterprises innovating in supporting activities for processes (Figure 16).

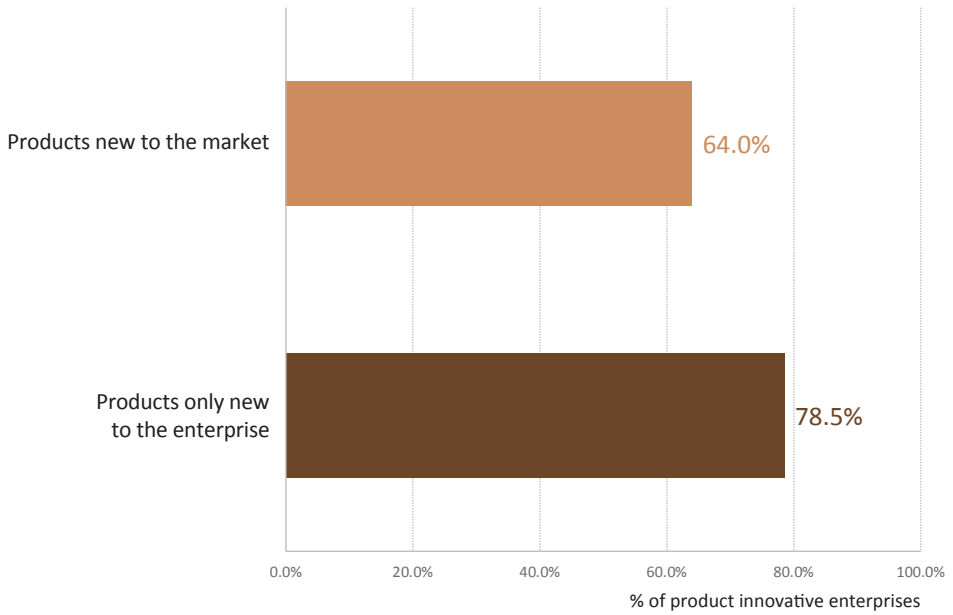
Figure 16. Process innovative enterprises by process category and by main sector of economic activity, 2012-2014 (% of all enterprises in each sector)



1.3.3 Introduction of product and/or process innovation

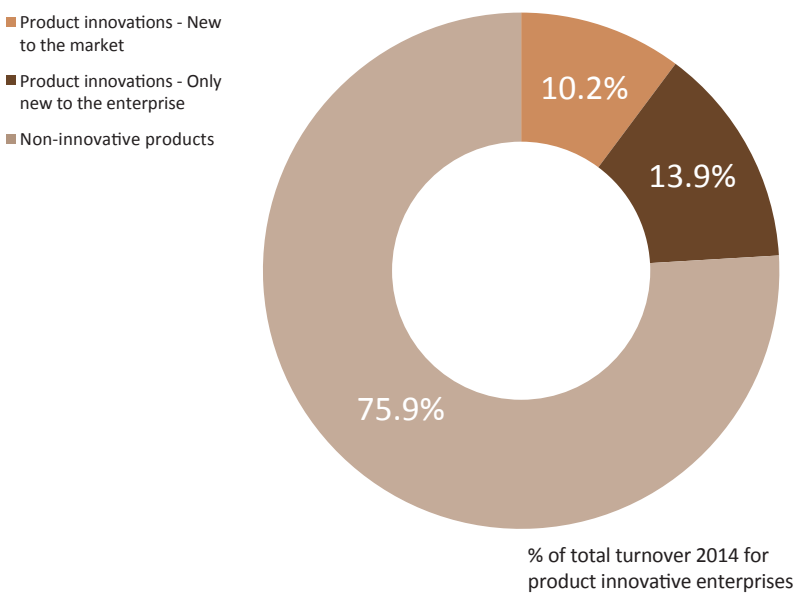
During 2012-2014, 64.0% of total product innovative enterprises introduced products new to the market and 78.5% products new only to the enterprise itself (Figure 17).

Figure 17. Product innovative enterprises with innovations new to the market and only new to the enterprise, 2012-2014 (% of all product innovative enterprises)



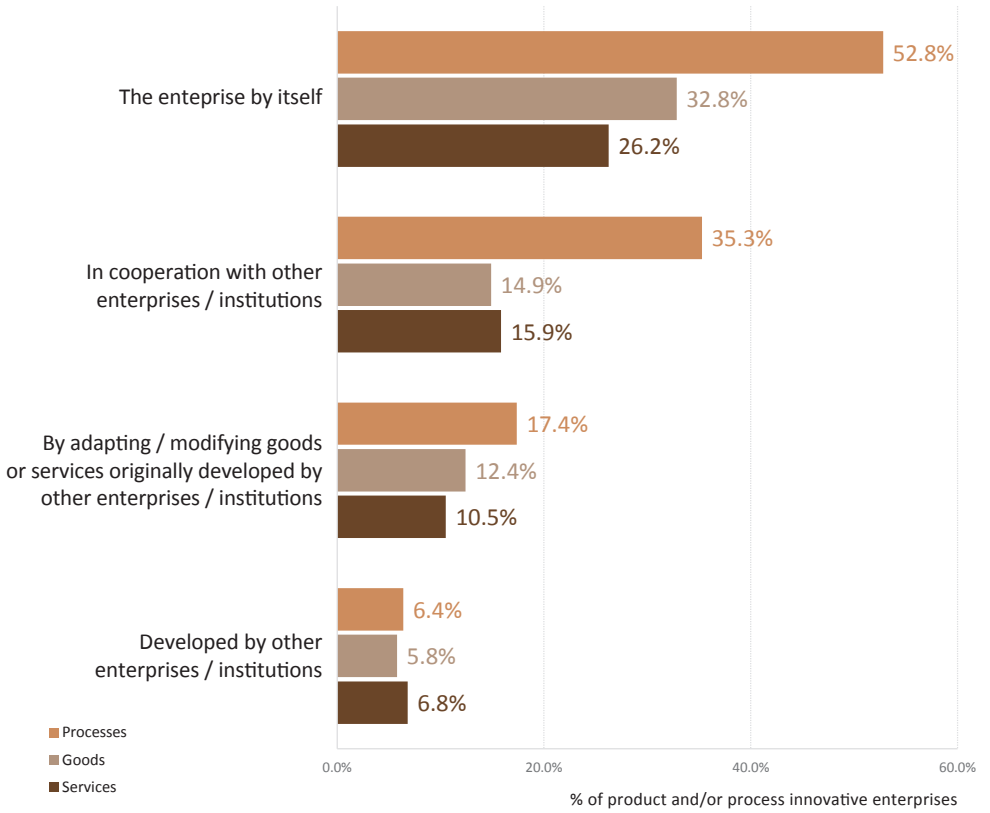
The contribution of product innovations to the total turnover of product innovative enterprises reached 24.1% in 2014, of which the largest contribution resulted from product innovation only new to the enterprise (13.9%), followed by product innovation new to the market (10.2%) (Figure 18).

Figure 18. Distribution of turnover from innovative / non-innovative products, 2014 (% of total turnover for product innovative enterprises)



The majority of enterprises developed product (goods, services) and/or process innovations by themselves, something that in the case of process innovation exceeded 50%. This was followed by enterprises which developed innovations in co-operation with other enterprises or institutions. Even fewer enterprises developed innovations by adapting or modifying products and processes originally developed by other enterprises or institutions both in goods/services and process innovations. The development of innovations only by other enterprises or institutions was limited in all cases (Figure 19).

Figure 19. Development of product and/or process innovations, 2012-2014 (% of product and/or process innovative enterprises)

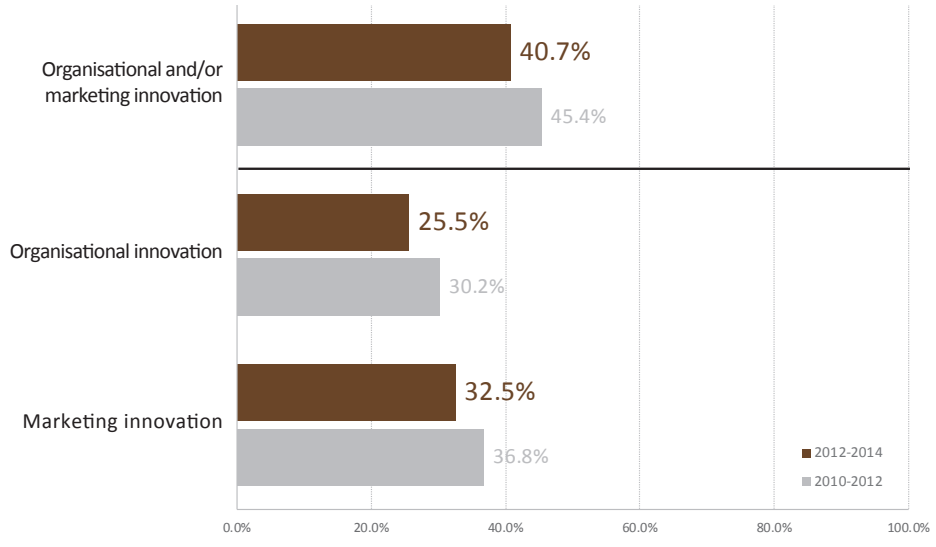


1.4. Organisational and/or marketing innovation

Organisation and/or marketing innovative enterprises (regardless of whether or not they engaged in product/process innovation) represented 40.7% of the survey population. Marketing innovation accounted for 32.5% which made it the most innovative type for the three-year period 2012-2014, while organisational innovation accounted for 25.5%.

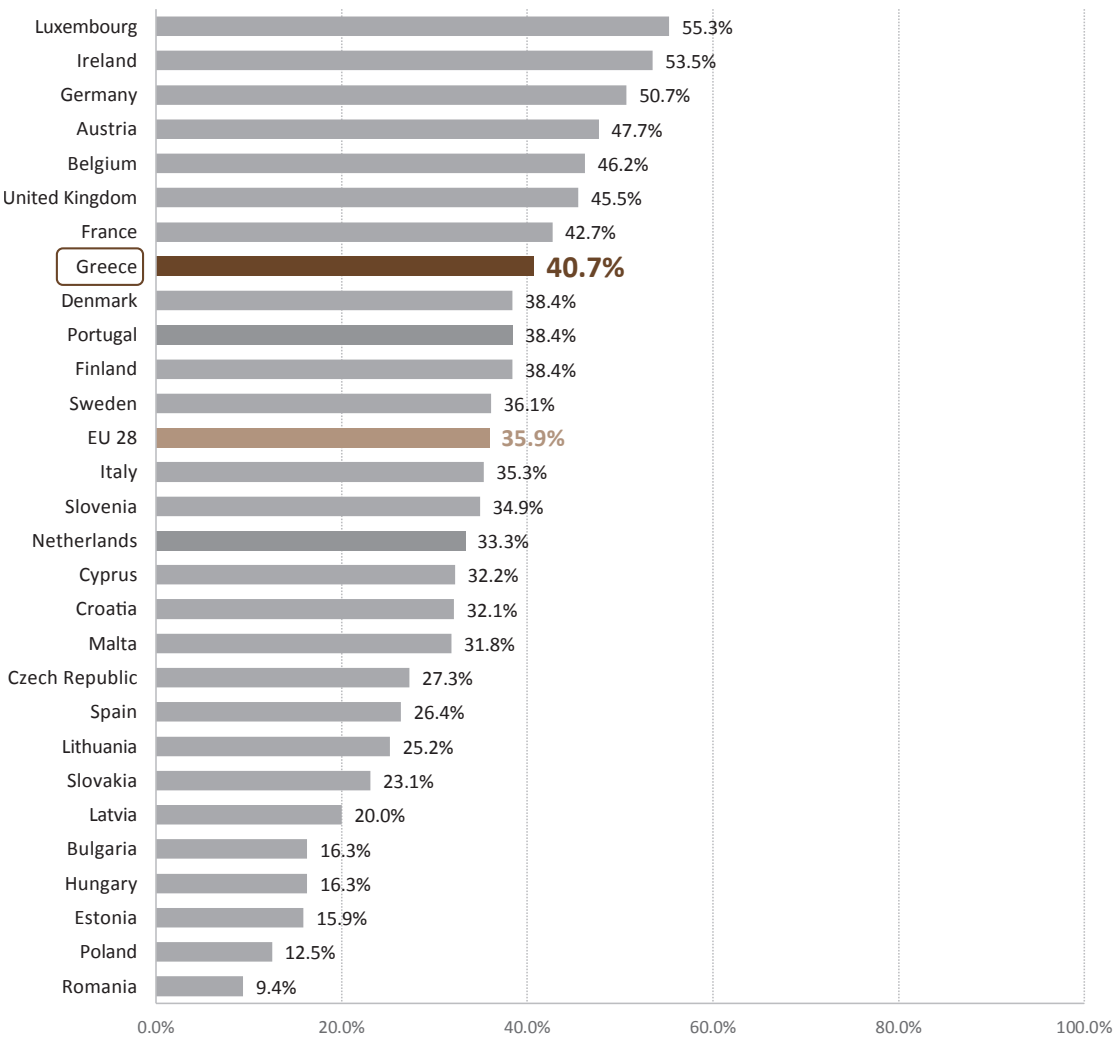
In comparison with 2010-2012, a decline in the share of enterprises with organisational and/or marketing innovation was recorded (Figure 20).

Figure 20. Organisation and/or marketing innovative enterprises and specific types of innovation, 2010-2012 and 2012-2014 (% of all enterprises in each period)



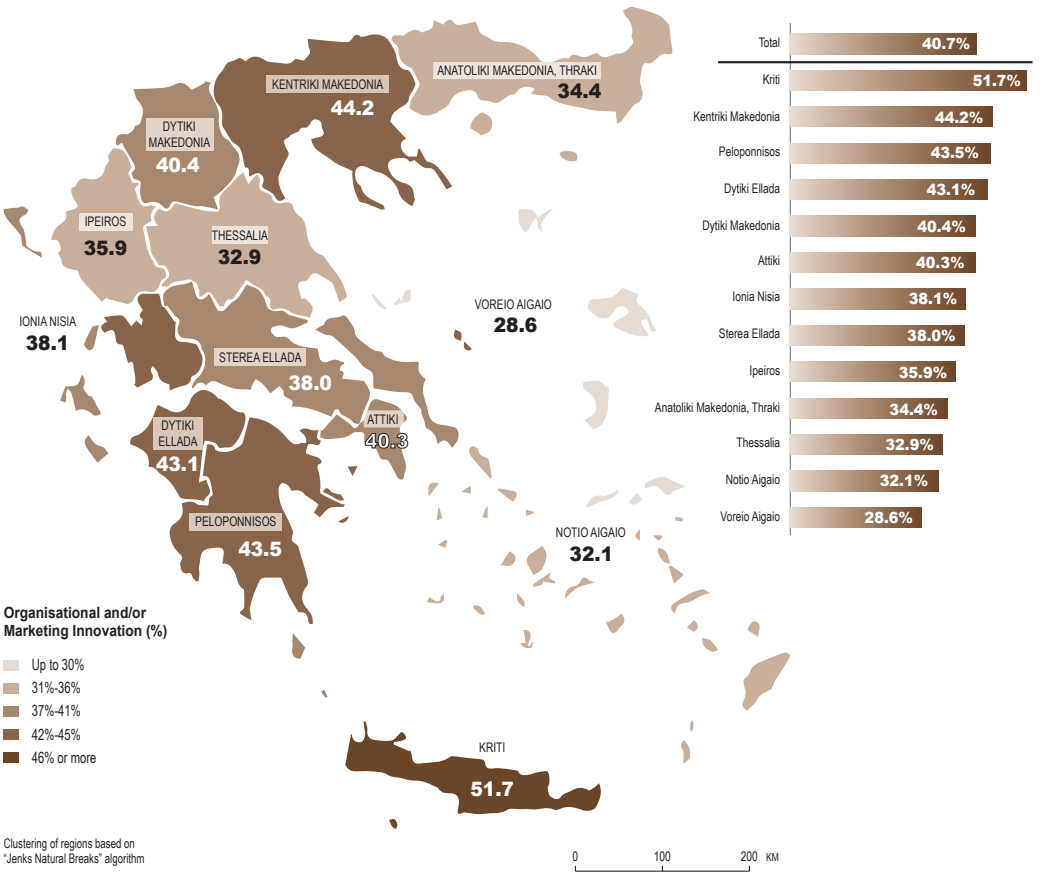
Greece is placed in 8th place, with 40.7%, in terms of organisational and/or marketing innovation. The European average is 35.9% (Figure 21).

Figure 21. Organisation and/or marketing innovative enterprises in the EU-28 member states, 2012-2014 (% of all enterprises in each country)



Map 3 illustrates the percentages of enterprises with organisational and/or marketing innovation in the Greek regions. With 51.7%, Kriti is placed in the first position, followed by Kentriki Makedonia (44.2%) and Peloponnisos (43.5%).

Map 3. Organisation and/or marketing innovative enterprises by NUTS2 region, 2012-2014 (% of all enterprises in each region)



1.4.1 Organisational innovation

Figure 22 presents the percentages for Greek enterprises which introduced organisational innovation in the three categories (see box).

The majority of enterprises innovated in business practices for organising procedures (18.8%). This was followed by enterprises with innovation in methods of organising work responsibilities and decision making (14.1%) and those with innovation in methods of organising external relations (9.1%).

Compared with the 2010-2012 period, all three categories declined, particularly in methods of organising work responsibilities and decision making.

An organisational innovation is the implementation of a new organisational method in the enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by the enterprise.

This type of innovation must be the result of strategic decisions taken by the management of the enterprise.

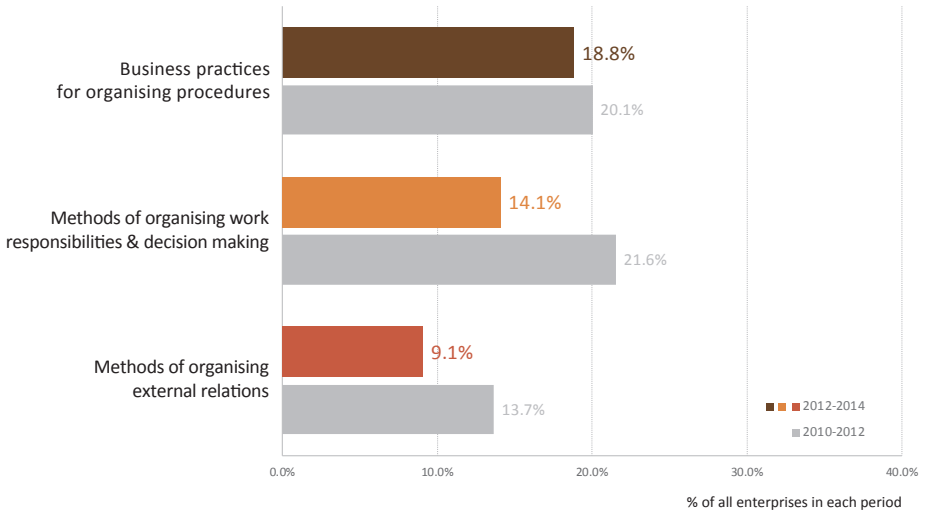
The following three categories are distinguished:

- New business practices for organising procedures (i.e. first time use of supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.)
- New methods of organising work responsibilities and decision making (i.e. first time use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.)
- New methods of organising external relations with other enterprises or public organisations (i.e. first time use of alliances, partnerships, outsourcing or sub-contracting, etc.)

An organisational innovative enterprise may develop innovations in one or more of the above categories.*

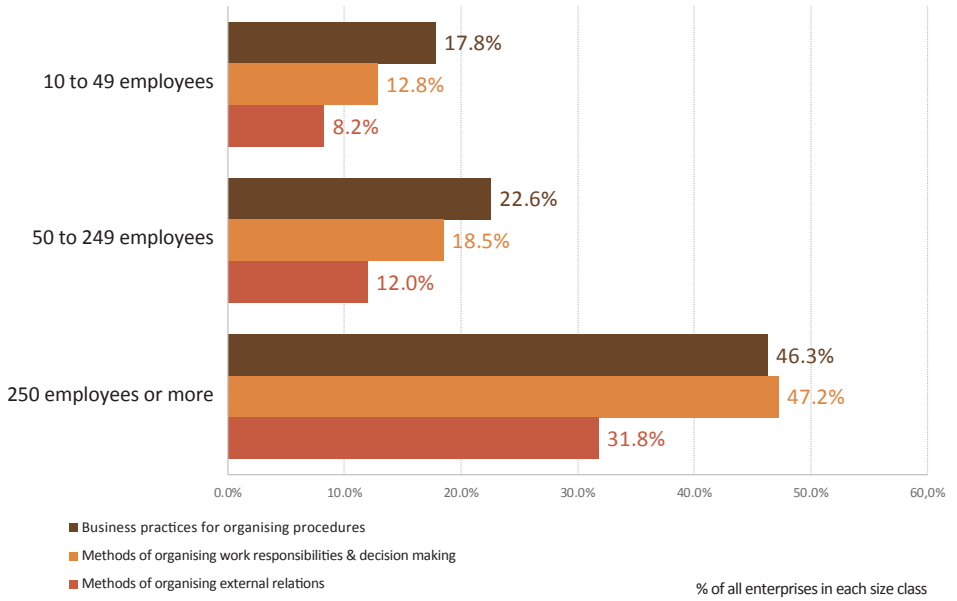
* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

Figure 22. Organisation innovative enterprises by organisational category, 2010-2012 and 2012-2014 (% of all enterprises in each period)



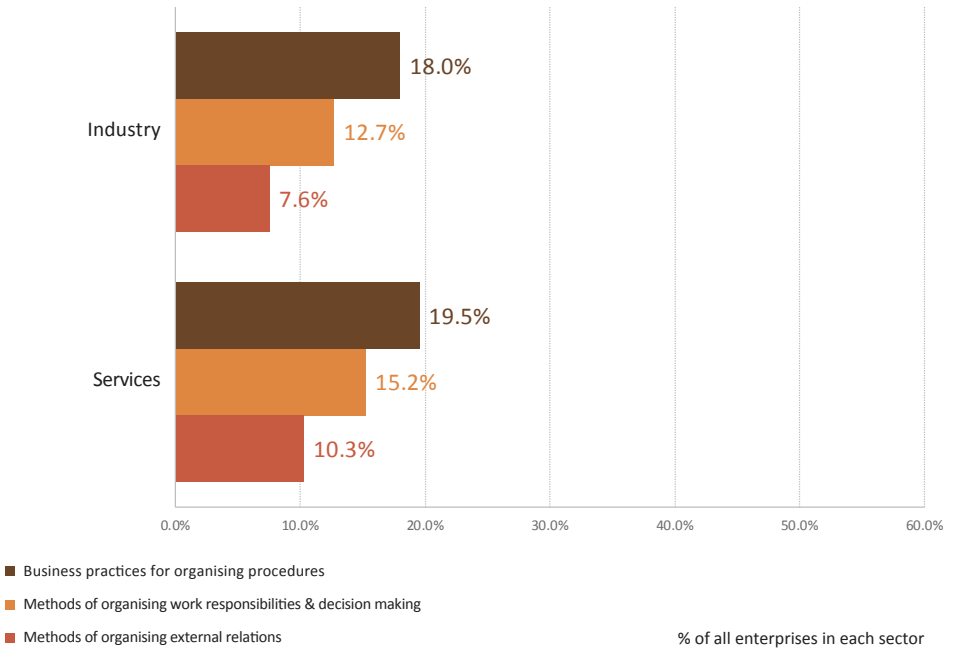
Percentages among the categories of organisational innovation differed depending on the size of the enterprise. For enterprises with 10-49 employees and 50-249 employees, innovation in business practices for organising procedures was the highest (17.8% and 22.6%, respectively). For enterprises with 250 employees or more, 47.2% implemented new methods of organising work responsibilities and decision making (Figure 23).

Figure 23. Organisation innovative enterprises by organisational category and by size class, 2012-2014 (% of all enterprises in each size class)



Categories of organisational innovation are ranked in the same order for both sectors (Industry, Services), with lower percentages being observed in the Industry sector (Figure 24).

Figure 24. Organisation innovative enterprises by organisational category and by main sector of economic activity, 2012-2014 (% of all enterprises in each sector)



1.4.2 Marketing innovation

Most enterprises either introduced new marketing methods for promoting their products (20.7%), or carried out innovation in marketing through significant changes to the aesthetic design or packaging of the product (19.5%). There were fewer enterprises carrying out innovation in methods for pricing the product (11.7%) or for placement/sales (7.9%) (Figure 25).

Percentages were slightly lower in all four categories in comparison with the 2010-2012 period. This was particularly noticeable in the case of methods for pricing and methods for product placement/sales.

A marketing innovation is the implementation of a new marketing concept or strategy that differs significantly from the enterprise's existing marketing methods and which has not been used before.

The following four categories are distinguished:

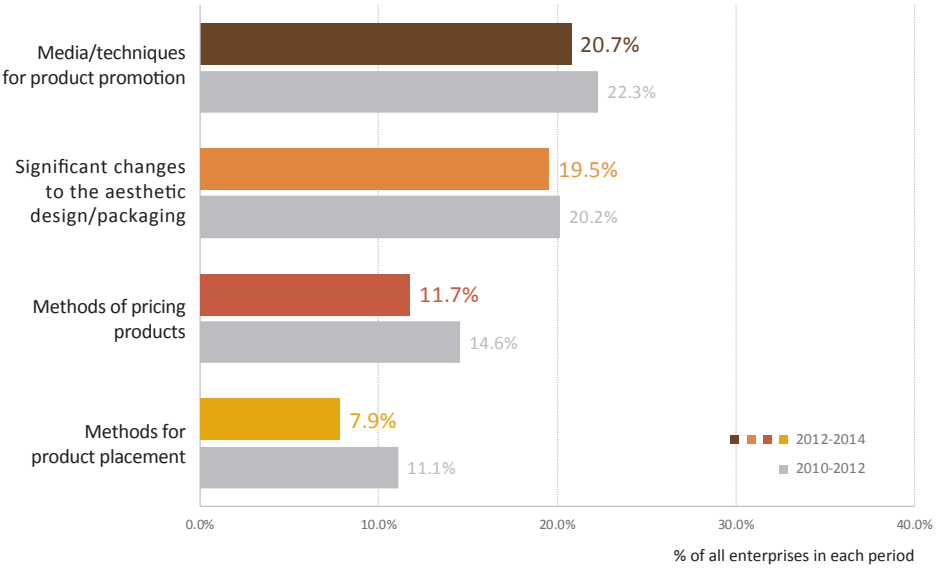
- Significant changes to the aesthetic design or packaging of a good or service (changes that alter the product's functional or user characteristics are excluded, as these are product innovations)
- New media or techniques for product promotion: first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc.
- New methods for product placement or sales channels: first time use of franchising or distribution licences, direct selling, exclusive retailing, new concepts for product presentation, etc.
- New methods of pricing goods or services: first time use of variable pricing by demand, discount systems, etc..

Seasonal, regular and other routine changes in marketing methods are excluded.

A marketing innovative enterprise may develop innovations in one or more of the above categories.*

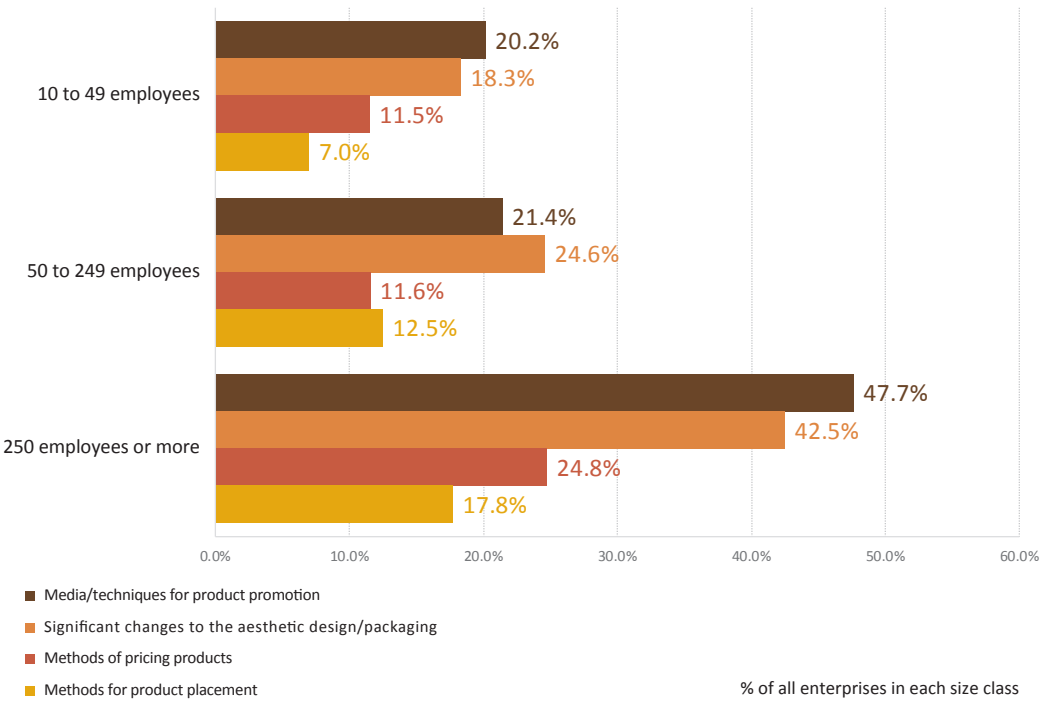
* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

Figure 25. Marketing innovative enterprises by marketing category, 2010-2012 and 2012-2014 (% of all enterprises in each period)



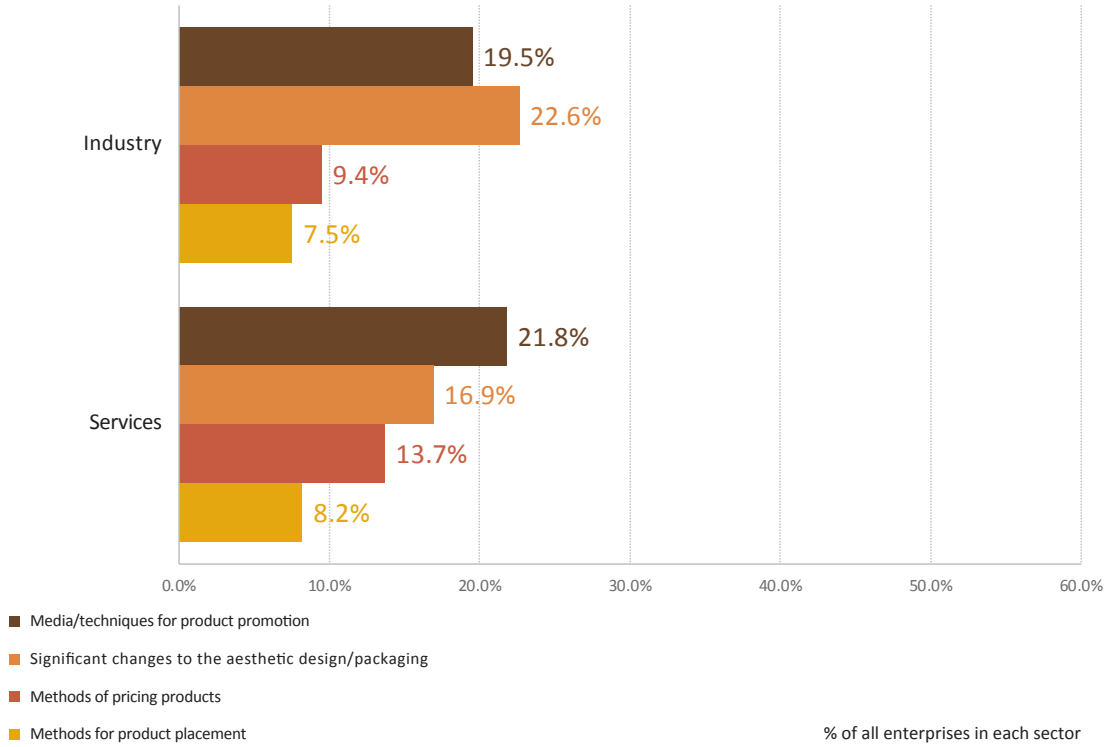
New methods of promoting a product were the most important marketing innovation for enterprises with 10-49 employees (20.2%) and for enterprises with 250 employees or more (47.7%). For enterprises with 50-249 employees, innovation in aesthetic design/packaging ranked first (24.6%) (Figure 26).

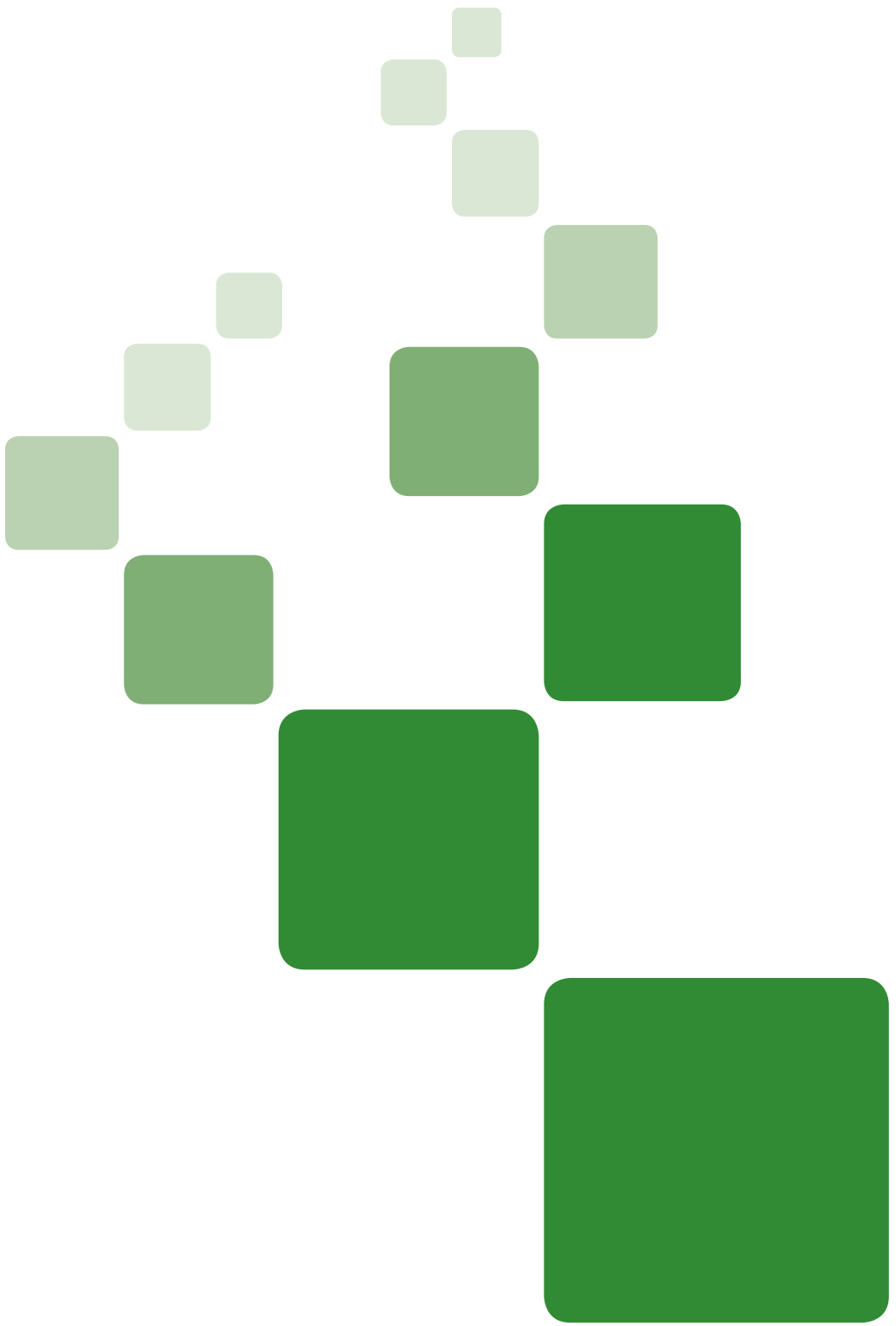
Figure 26. Marketing innovative enterprises by marketing category and by size class, 2012-2014 (% of all enterprises in each size class)



In the Industry sector, marketing innovative enterprises mainly implemented innovations in aesthetic design/packaging of the products (22.6%) and in media/techniques of promotion (19.5%). In the Services sector, innovations in media/techniques of products promotion was the leading category of marketing innovation with 21.8% (Figure 27).

Figure 27. Marketing innovative enterprises by marketing category and by main sector of economic activity, 2012-2014 (% of all enterprises in each sector)





Chapter 2

Innovation activities and relevant factors for the introduction of product and/or process innovation

The chapter examines the activities and the factors which favour the development of product and process innovation, the so-called 'technological innovation'.

Firstly, the innovation activities and expenditures of enterprises in the development of product and/or process innovation is presented.

Innovation activities comprise all scientific, technological, organisational, financial and commercial actions which actually, or are intended to, lead to the implementation of product and/or process innovation. In addition to all types of Research and Development (R&D), innovation activities include the acquisition of machinery, equipment, buildings, software and licences. Engineering and development work, design, training and marketing are also included when they are specifically undertaken to develop and/or implement a product and/or process innovation.

The chapter then analyses important factors which influence the development and competitiveness of a product and/or process innovation. It presents the collaborations between enterprises and other entities in the development of product and/or process innovation and the means of intellectual property used.

Finally, it considers the contribution of the Greek public sector to innovation development through financial support for the innovation activities of enterprises.

2.1 Expenditures for innovation activities

Most product and/or process innovative enterprises acquired machinery, equipment, software and buildings for the implementation of their innovations (65.9%). The percentage of activities for in-house R&D (40.2%) almost equalled that of activities for the design of the innovation (40.4%).

From the other categories of innovation activities, 36.9% of enterprises with innovative products and/or processes invested in training their staff for the innovations introduced, 35.1% invested in other related activities and 34.5% in activities for the introduction of innovations to the market.

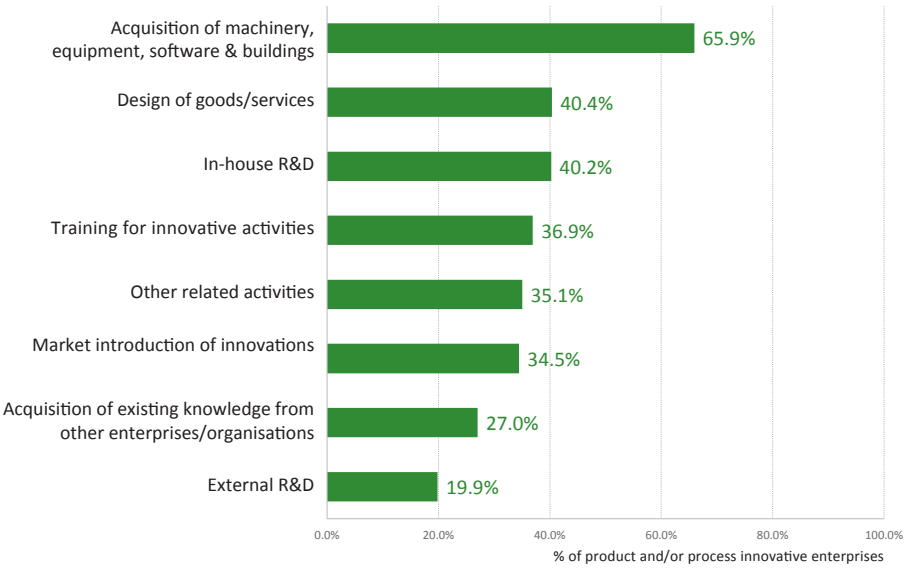
27% of enterprises invested in acquiring existing knowledge from other enterprises/organisations, while fewer invested in contracting R&D out to third parties (19.9%) (Figure 28).

Innovation activities for the introduction of product and/or process innovation

- In-house R&D: Research and development activities undertaken by the enterprise to create new knowledge or to solve scientific or technical problems (including software development in-house that meets this requirement)
- External R&D: Contracted-out R&D by the enterprise to other enterprises (including enterprises in their own group) or to public or private research organisations
- Acquisition of machinery, equipment, software & buildings: Acquisition of advanced machinery, equipment, software and buildings to be used for new or significantly improved products or processes
- Acquisition of existing knowledge from other enterprises or organisations: Acquisition of existing know-how, copyrighted works, patented and non-patented inventions, etc. from other enterprises or organisations for the development of new or significantly improved products and processes
- Training for innovative activities: In-house or contracted out training for the personnel specifically for the development and/or introduction of new or significantly improved products and processes
- Market introduction of innovations: In-house or contracted out activities for the market introduction of new or significantly improved goods or services, including market research and launch advertising
- Design: In-house or contracted out activities to alter the shape, appearance or usability of goods or services
- Other activities: Other in-house or contracted out activities to implement new or significantly improved products and processes such as feasibility studies, testing, tooling up, industrial engineering, etc.*

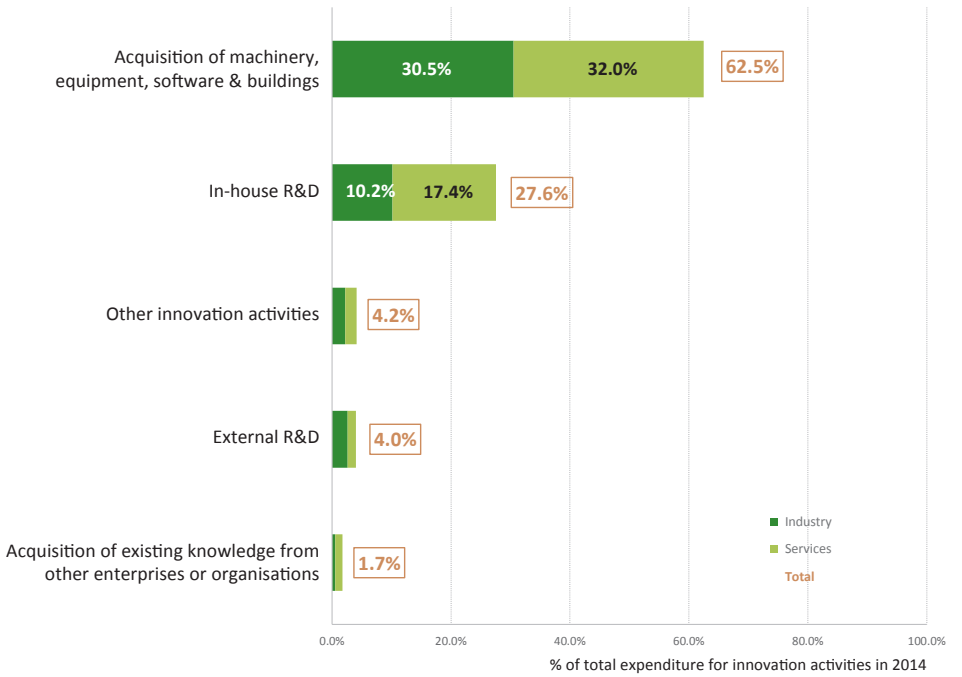
* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

Figure 28. Innovation activities implemented by enterprises, 2012-2014 (% of product and/or process innovative enterprises)



The total expenditure for innovation activities in 2014 amounted to 1.6 billion euros. 62.5% of this expenditure was channelled into acquiring machinery, equipment, software and buildings, with approximately the same level of investment from the two main sectors of economic activities, Industry and Services. This was followed by expenditure on in-house R&D (27.6%). Expenditure for other activities was significantly lower (Figure 29).

Figure 29. Distribution (%) of expenditures in each innovation activity, in total and by sector of economic activity, 2014



Note: Other innovation activities include training, activities for introduction of innovations to the market, design and other relevant innovation activities.

2.2 Co-operations for innovation activities

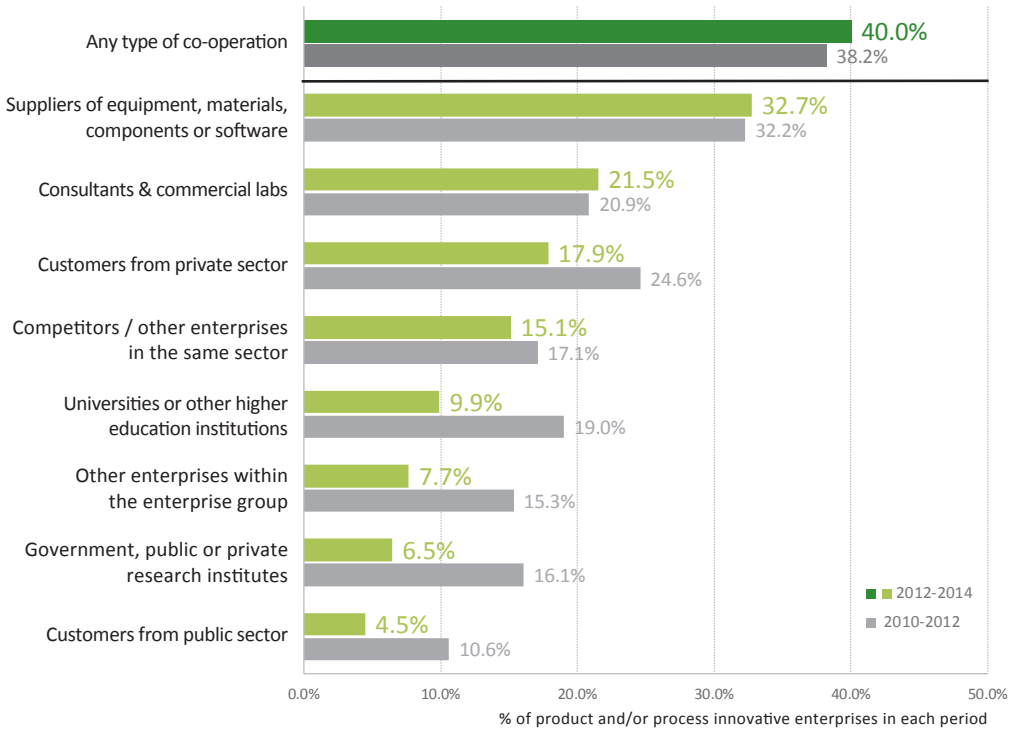
2.2.1 Partners of co-operation

During the period 2012-2014, enterprises engaged in any type of collaborative development of innovative products and/or processes accounted for 40%, slightly higher than the 2010-2012 period (38%). Suppliers of equipment, materials, software remained the main co-operation partners (32.7%), while consultants and commercial labs were in second place (21.5%). This was followed by customers from the private sector at 17.9%, competitors/other enterprises in the same sector 15.1% and Universities or other higher education institutions at 9.9% (Figure 30).

Innovation co-operation is active participation of the enterprise with other enterprises or organisations on innovation activities. Both partners do not need to commercially benefit.

Pure contracting out of work with no active co-operation of the enterprise is excluded.*

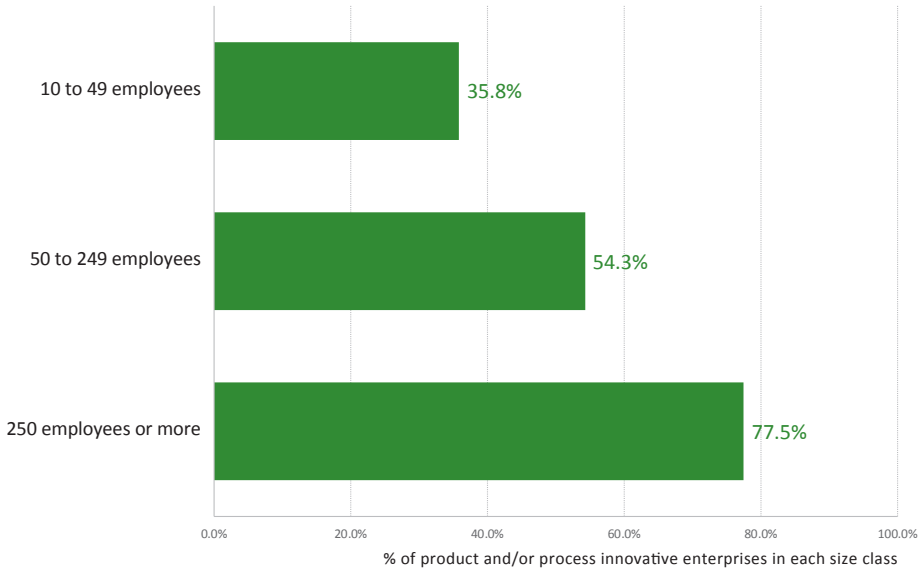
Figure 30. Co-operation partners with which the enterprises co-operate, 2010-2012 and 2012-2014 (% of product and/or process innovative enterprises)



In regards to the size of enterprises, product/process innovative enterprises co-operating with others reached 35.8% in enterprises with 10 to 49 employees, 54.3% in those with 50 to 249 employees and 77.5% in large enterprises (250 employees or more) (Figure 31).

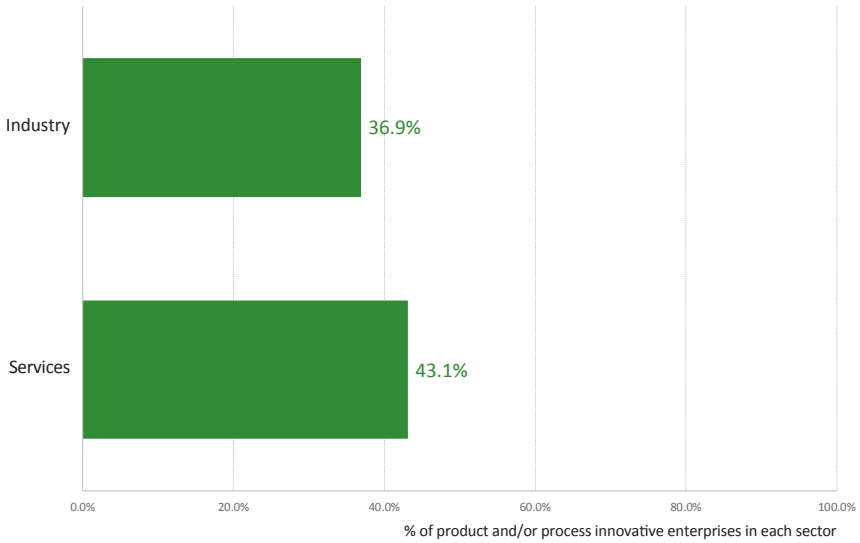
* Source: OECD and Eurostat (2015), Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data

Figure 31. Product and/or process innovative enterprises engaged in any type of co-operation by size class, based on the number of employees, 2012-2014 (% of product and/or process innovative enterprises in each size class)



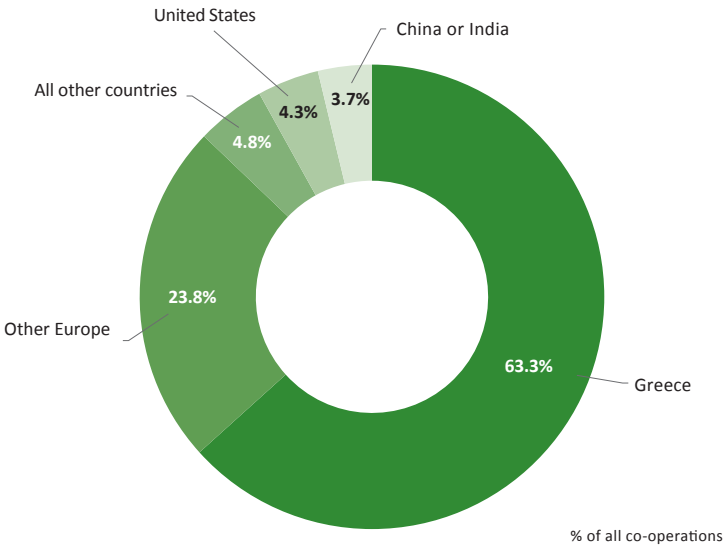
43.1% of product/process innovative enterprises in the Services sector co-operated with other partners in developing innovations, while the corresponding percentage for Industry was 36.9% (Figure 32).

Figure 32. Product and/or process innovative enterprises engaged in any type of co-operation by main sector of economic activity, 2012-2014 (% of product and/or process innovative enterprises in each sector)



Product/process innovative enterprises mainly collaborated with partners within Greece (63.3%), followed by partners from the rest of Europe (23.8%). Percentages were lower for enterprises collaborating with partners from the US, 4.3%, China/India 3.7% and other countries 4.8% (Figure 33).

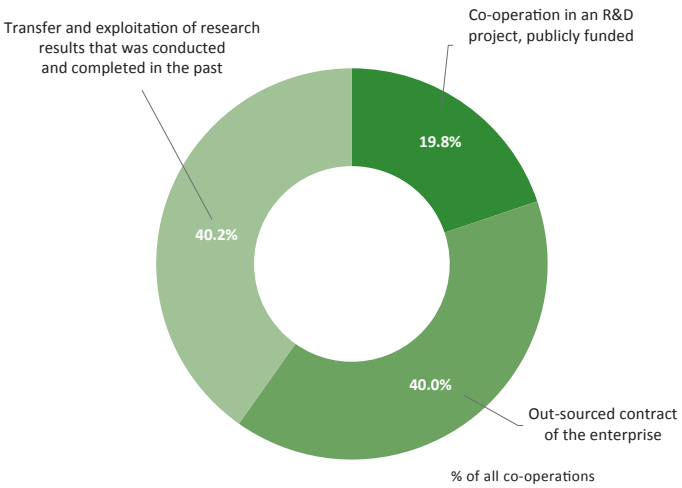
Figure 33. Distribution (%) of co-operation partners by geographical region, 2012-2014



2.2.2 Co-operations with Universities, Technological Educational Institutes (TEI) and Research Institutes

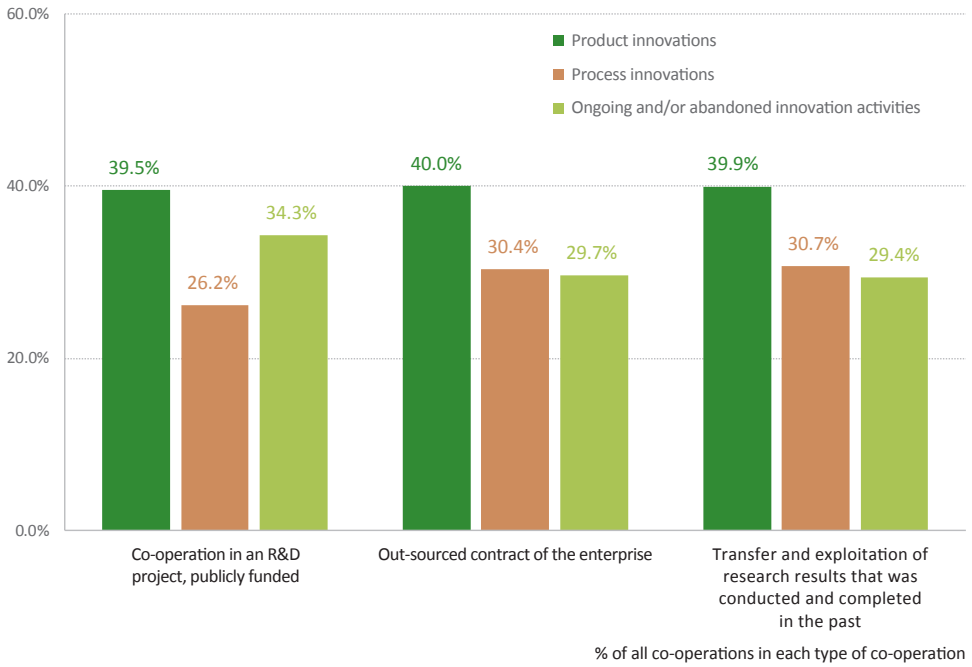
Further examination of the collaboration of product/process innovative enterprises with research bodies - Universities, TEI and research institutes - reveals that in most cases the said collaboration concerned either transfer and use of results from earlier research conducted by co-operative partners (40.2% of enterprises collaborating with Universities, TEI and/or research institutes) or contracting out work related to innovation to Universities, TEI and/or research institutes (40.0%). A significant, though smaller number of collaborations resulted from publicly funded R&D projects (Figure 34).

Figure 34. Distribution (%) of co-operations with Universities, TEI and research institutes, based on type of co-operation, 2012-2014



In considering the effect of the above co-operations on innovative products and/or processes, it is clear that in all cases the percentage of innovative products was higher, while the share of co-operations for ongoing or abandoned innovation activities before the end of 2014 was relatively significant (Figure 35).

Figure 35. Distribution (%) of types of co-operation with Universities, TEI and research institutes, based on type of innovation/innovation activities implemented, 2012-2014



2.3. Intellectual property rights and licensing

The most favoured means of intellectual property protection for Greek product and/or process innovative enterprises is trademark registration. During 2012-2014, the percentage of enterprises with product and/or process innovation that applied for trademarks, irrespective of whether or not the application was for the innovation they had implemented, came to 16.1%. A much smaller share of those enterprises applied for patents (3.3%), industrial design registration (3.0%) or the European certificate of utility model (1.5%) (Figure 36).

Intellectual Property (IP) is a term referred to types of property that result from creations of the human mind (the intellect). These creations may be inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

Intellectual Property Rights (IPR) are private legal rights that protect IP creations.

The following IP types are distinguished:

Patents: new creations that involve an inventive step and that are susceptible of industrial application. The invention may relate to a product, a process or an industrial application.

Utility model: intangible good of limited creation. The respective certificate is granted for three-dimensional object with a predetermined shape and form, which provides a solution to a technical problem and possesses the characteristics of 'new' and capable of industrial application.

Industrial design: the outward visible appearance of the whole or part of a product resulting from the specific features thereof, such as the lines, shape, color etc.

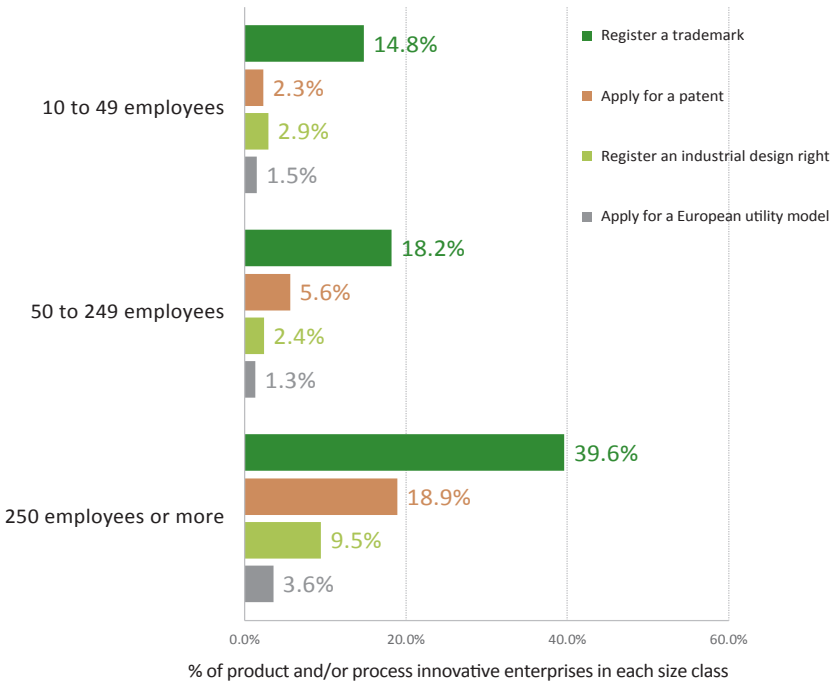
Trademark: any sign capable of being represented graphically, able to distinguish the goods or services of an enterprise from those of other enterprises. It may consist of words, including names of natural or legal persons, aliases, depictions, drawings, letters, numbers, sounds, including musical phrases, the shape of the product or its packaging. The title of a newspaper or magazine can also be considered as a mark.*

* Sources: http://enterprise-hellas.gr/, https://www.obi.gr/, https://www.iprhelpdesk.eu/, http://gge.gov.gr/

Figure 36. Applications for intellectual property rights (IPR), 2012-2014 (% of product and/or process innovative enterprises)

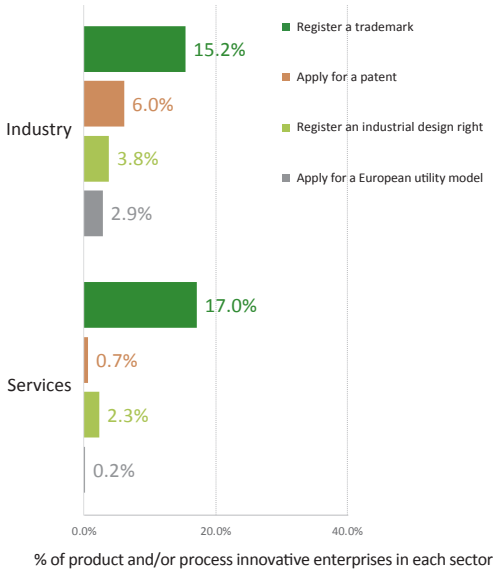
An analysis of IPR applications based on the size of the product and/or process innovative enterprises, shows that, in all cases, enterprises with more than 250 employees applied at a higher rate than medium (50-249 employees) and small enterprises (10-49 employees) (Figure 37).

Figure 37. Applications for intellectual property rights (IPR) by size class, based on the number of employees, 2012-2014 (% of product and/or process innovative enterprises in each size class)



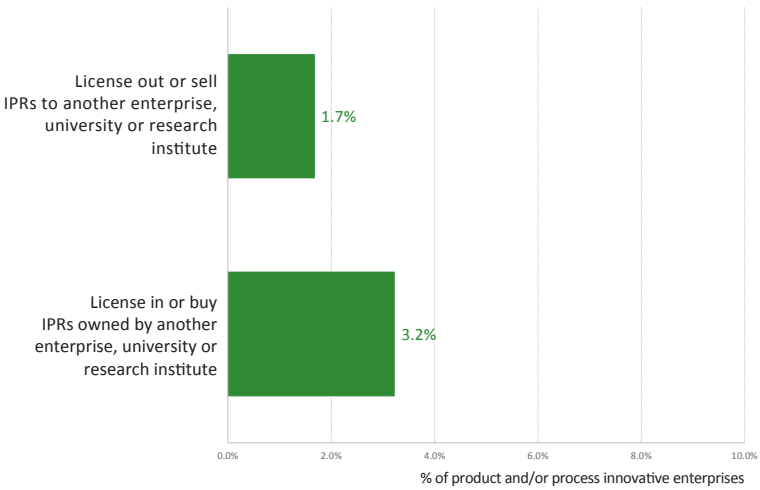
Equally interesting is an analysis of IPR applications in Industry and Services as there were significant differences between them. In the Industry sector, the percentage of enterprises applying for patents was 6.0% and for the European certificate of utility model, was 2.9%, a significantly higher figure than the corresponding applications in the Services sector. Dominating the Services sector was registration for trademarks at 17.0% (Figure 38).

Figure 38. Applications for intellectual property rights (IPR) by main sector of economic activity, 2012-2014 (% of product and/or process innovative enterprises in each sector)



With respect to Greek enterprises selling intellectual property rights, 1.7% of product and/or process innovation enterprises granted licences or sold patents, industrial design rights, copyright and/or trademarks to other enterprises, universities or research institutes. The percentage of enterprises obtaining licences or buying IPR reached 3.2% (Figure 39).

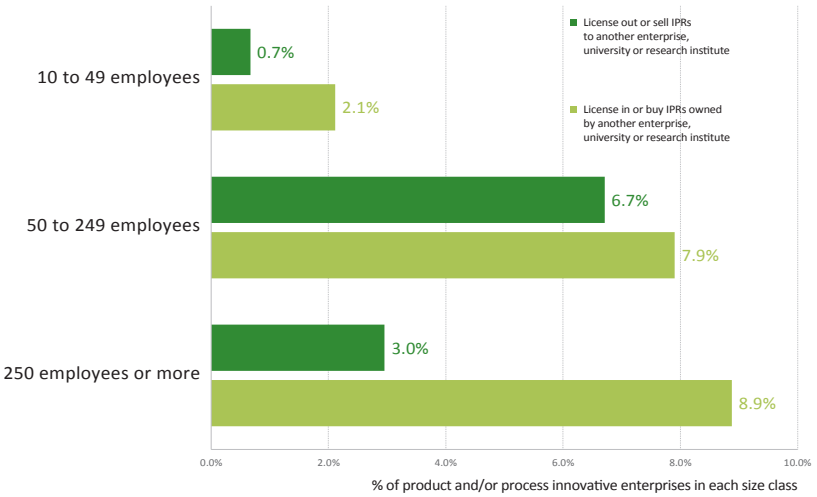
Figure 39. Selling/licensing out and/or buying/licensing in intellectual property rights (IPR), 2012-2014 (% of product and/or process innovative enterprises)



Figures 40 and 41 present the percentages of product and/or process innovative enterprises which sold/granted licences or purchased/licensed IPR by size class and by main sector of economic activity.

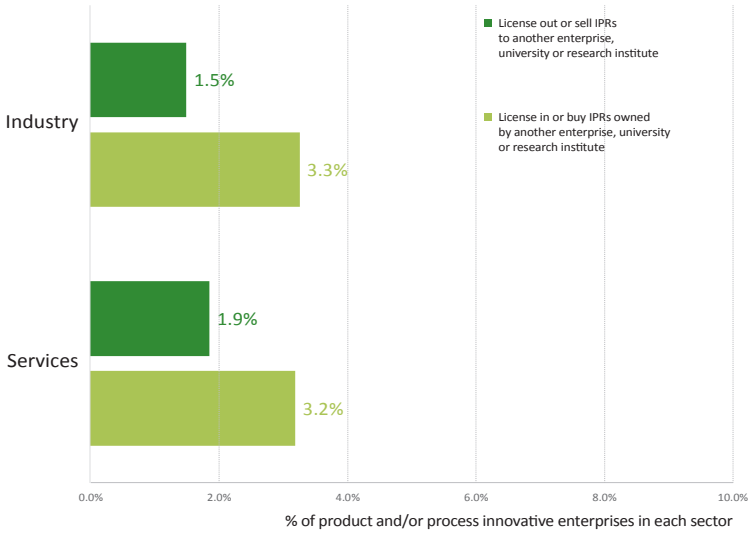
In all size classes, purchased/licensed IPR outperformed sold/granted licences. The highest percentage of enterprises which sold/granted intellectual property rights was in enterprises with 50-249 employees (6.7%). Enterprises with 250 employees or more which purchased/licensed intellectual property rights accounted for the highest percentage (8.9%), followed by enterprises with 50-249 employees (7.9%) (Figure 40).

Figure 40. Selling/granting licences and/or buying/licensing in intellectual property rights (IPR) by size class, based on the number of employees, 2012-2014 (% of product and/or process innovative enterprises in each size class)



In terms of the main sectors of economic activity, Industry and Services, there were no significant differences. In the Services sector, there was a relatively higher percentage of enterprises selling/granting IPR licence in comparison with the Industry sector, while the percentages for purchased/acquired rights were similar for both sectors (Figure 41).

Figure 41. Selling/granting licences and/or purchasing /licensing in intellectual property rights (IPR) by main sector of economic activity, 2012-2014 (% of product and/or process innovative enterprises in each sector)



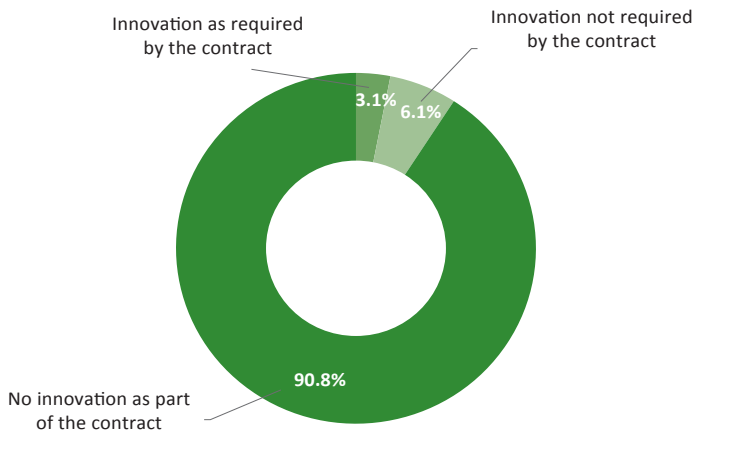
2.4 The role of the public sector

The role of the public sector, through the contracts it signs with enterprises for procurement of goods and services, in addition to public funding of projects, subsidies, etc. is internationally acknowledged as being particularly important for leveraging innovation. In Greece's case, public procurement plays a marginal role in supporting innovation in Greek enterprises, while funding, mainly through NSRF (National Strategy Reference Framework), is judged to be particularly important.

2.4.1 Innovation in public procurement contracts

During the period 2012-2014, 24.7% of the enterprises in the survey population established contractual relationships with the Greek public sector. Of those, only 3.1% carried out innovation activities as a requirement of the contract, while 6.1% stated that they engaged in innovation activities without that being a requirement of the contract. The overwhelming percentage of enterprises having contracts with the Greek public sector did not carry out any innovation activities (90.8%) (Figure 42).

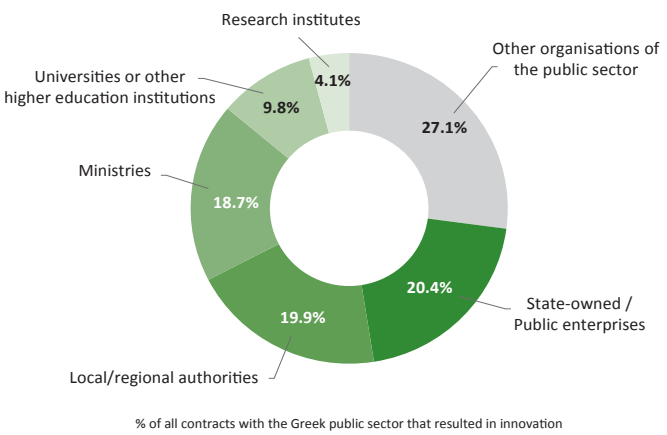
Figure 42. Innovation activities resulting from procurement contracts with the Greek public sector, 2012-2014 (%)



Greek enterprises under contract with public sector organisations from abroad recorded higher percentages on conducting innovation. In fact, 15.7% carried out innovation activities as a requirement of their contracts and 11.6% without this being a requirement of their contracts.

The majority of enterprises' contractual relationships with the Greek public sector under which innovation activities were performed, were signed with public enterprises (20.4%). This was followed by contracts with Regional Authorities (19.9%), Ministries (18.7%), and Universities, TEI (9.8%). Note, however, that most contracts that involved innovation activities (27.1%) were commissioned by public services (Figure 43).

Figure 43. Distribution (%) of enterprises with contracts that carried out innovation activities, based on contracting authority, 2012-2014

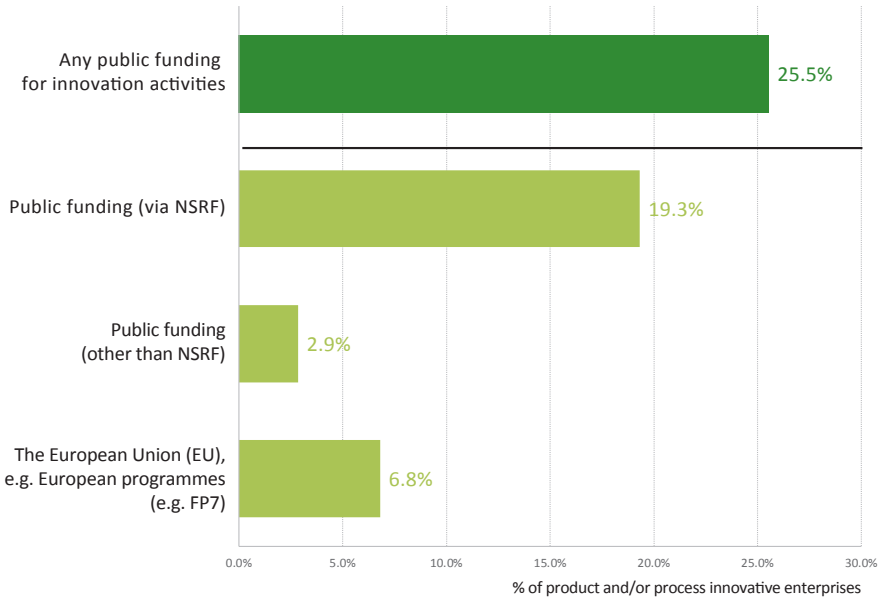


2.4.2 Public financial support for innovation activities

Public funding is an important parameter which helps enterprises innovate, as 25.5% of product and/or process innovative enterprises have received some sort of public funding to carry out innovation activities. In

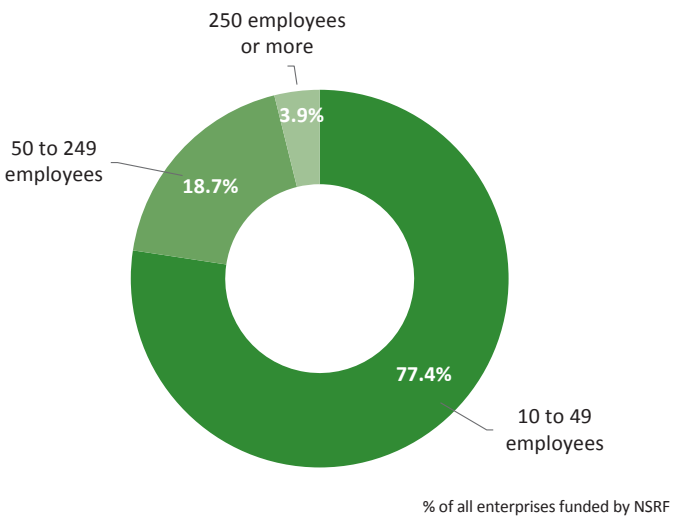
this respect, the resources of NSRF were the most important source of public funding as the total share of product and/or process innovative enterprises receiving NSRF funding came to 19.3%. The European Union, mainly through Framework Programmes for research, provided economic support for 6.8% of product and/or process innovative enterprises during 2012-2014 (Figure 44).

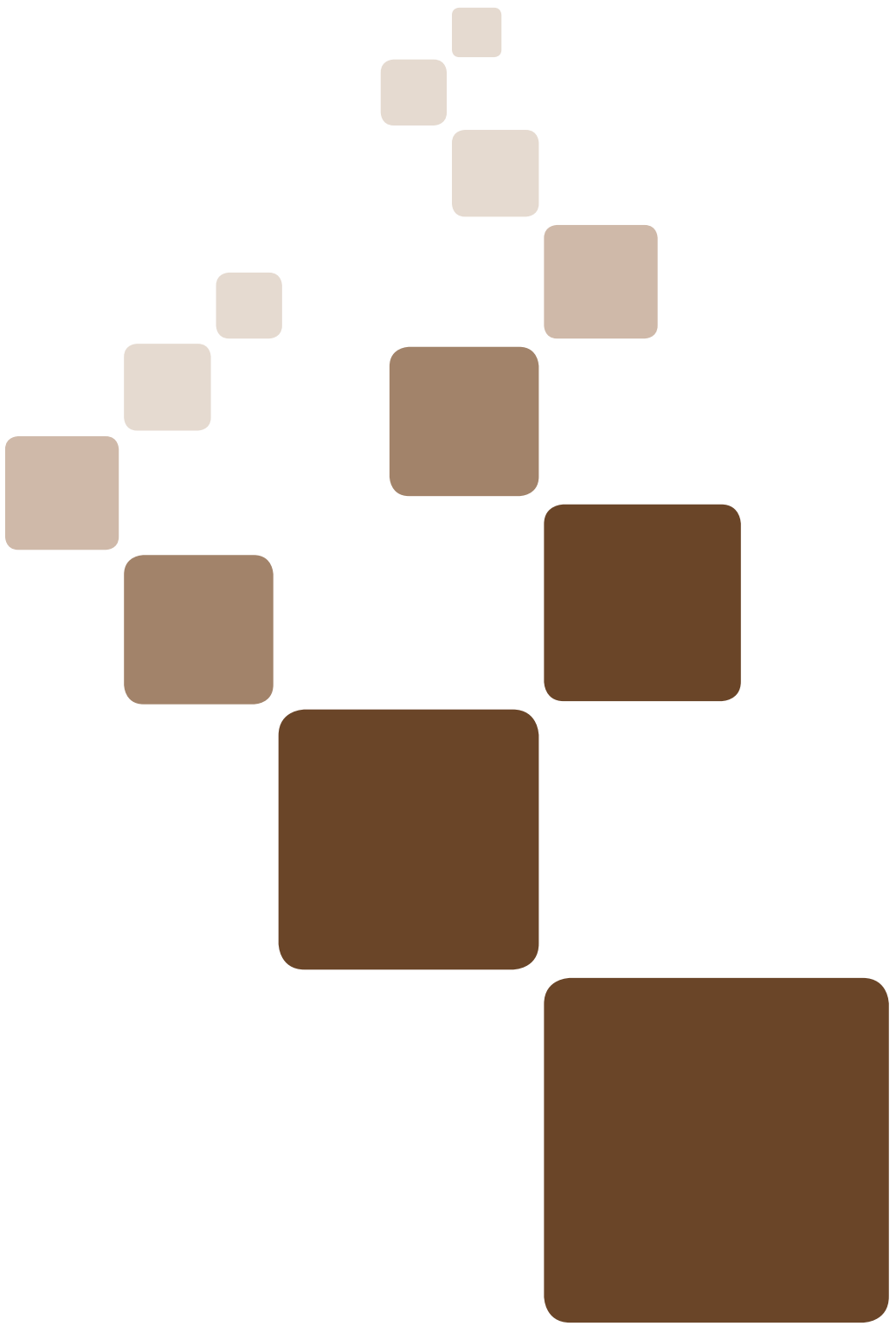
Figure 44. Public financial support for innovation activities, 2012-2014 (% of product and/or process innovative enterprises)



Analysis by size class of product and/or process innovative enterprises receiving NSRF funding for their innovation activities shows that 77.4% are enterprises with 10 to 49 employees, 18.7% enterprises with 50 to 249 employees and 3.9% enterprises with 250 employees or more (Figure 45).

Figure 45. Distribution (%) of enterprises funded by NSRF for innovation activities, by size class, based on number of employees, 2012-2014





Chapter 3

Eco-innovation

This chapter looks at enterprises which introduced an innovation (product, process, marketing or organisational method) which leads to environmental benefits.

Almost half (47.3%) of the total number of Greek innovative enterprises were environmentally innovative during the 2012-2014 period as they introduced innovations (product, process, marketing or organisational method) which led to environmental benefits.

An innovation with environmental benefits is a new or significantly improved product (good or service), process, organisational method or marketing method that creates environmental benefits compared to alternatives.

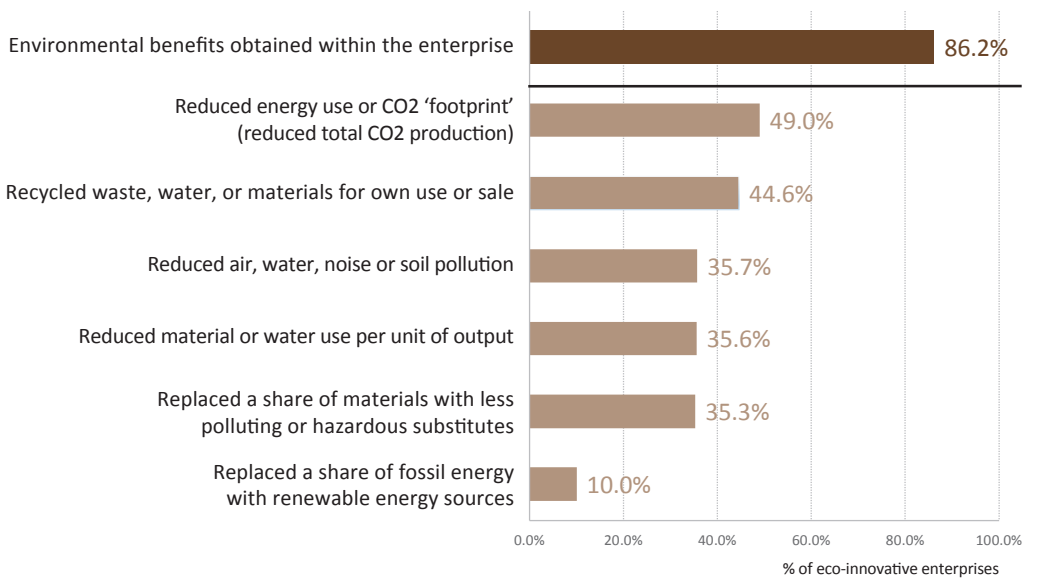
The environmental benefits can be the primary objective of the innovation or a by-product of other objectives. They can occur during the production of a good or service, or during its consumption or use by the end user of a product.

The end user can be an individual, another enterprise, the Government, etc.*

3.1 Innovations with environmental benefits

86.2% of environmentally innovative enterprises noted benefits within the enterprise. These included lower levels of energy use or a reduced CO2 footprint (49%), recycling of waste, water and/or materials for own use or sale (44.6%), reduced air, water, noise and/or soil pollution (35,7%), a lower use of materials or water (35.6%) and less use of hazardous or polluting material (35.3%). There was far less focus on renewable energy sources with only 10% of environmentally innovative enterprises reporting benefits from replacing fossil energy with renewable energy sources (Figure 46).

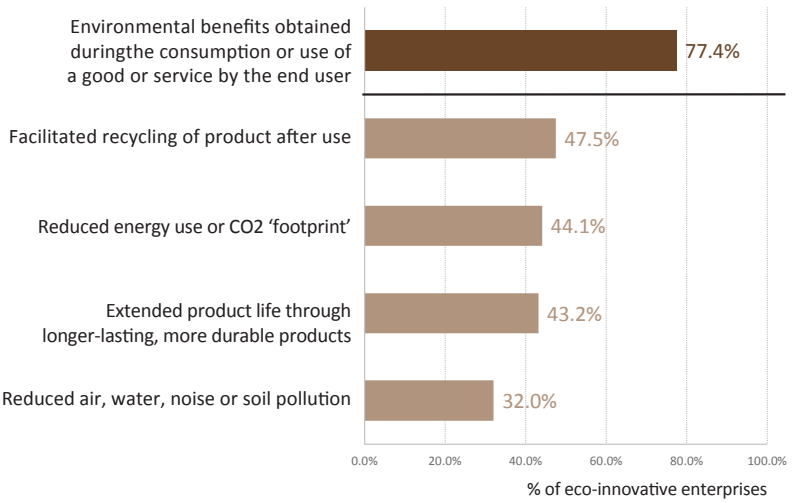
Figure 46. Environmental benefits within the enterprise, 2012-2014 (% of eco-innovative enterprises)



* Source: Eurostat, CIS2014 Model Questionnaire

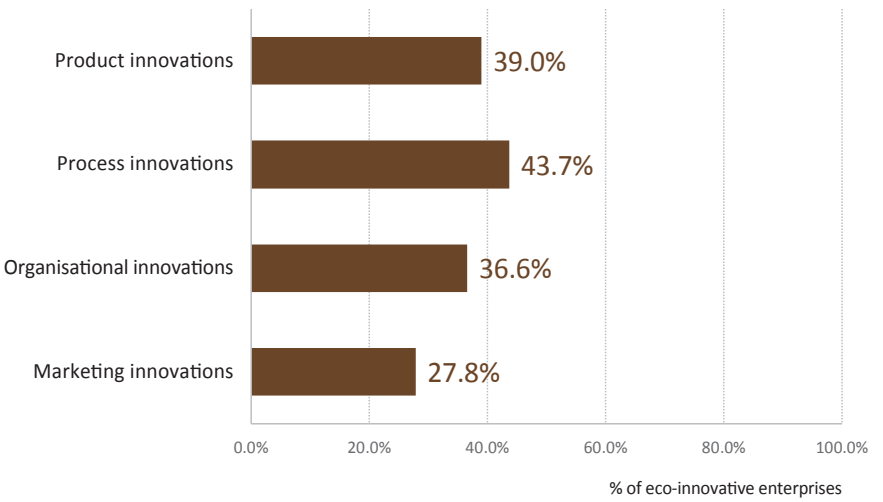
During the same period, 2012-2014, 77.4% of environmentally innovative enterprises noted environmental benefits during the consumption or use of goods and services by the end user/consumer. 47.5% of environmentally innovative enterprises noted that the innovations introduced facilitated the recycling of products after their use, 44.1% recorded reduced levels of energy use or CO2 footprint, 43.2% the longer life of the product and 32% the reduction of air, water, noise and/or soil pollution (Figure 47).

Figure 47. Environmental benefits during consumption or use of the good/service by the end user, 2012-2014 (% of eco-innovative enterprises)



Enterprises reported environmental benefits due to innovation of all types (product, process, marketing or organisational). The highest share (43.7%) of environmentally innovative enterprises noted environmental benefits arising from the implementation of process innovations. This was followed by product innovations (39%), organisational innovations (36.6%) and marketing innovations (27.8%) (Figure 48).

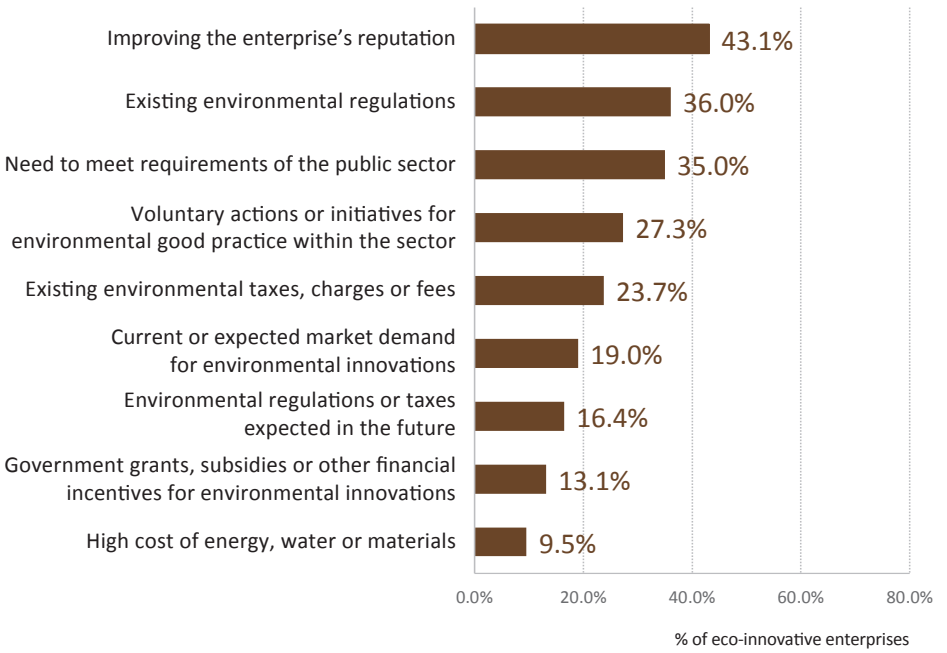
Figure 48. Type of innovation (product, process, organisation and marketing) from which environmental benefits arose, 2012-2014 (% of eco-innovative enterprises)

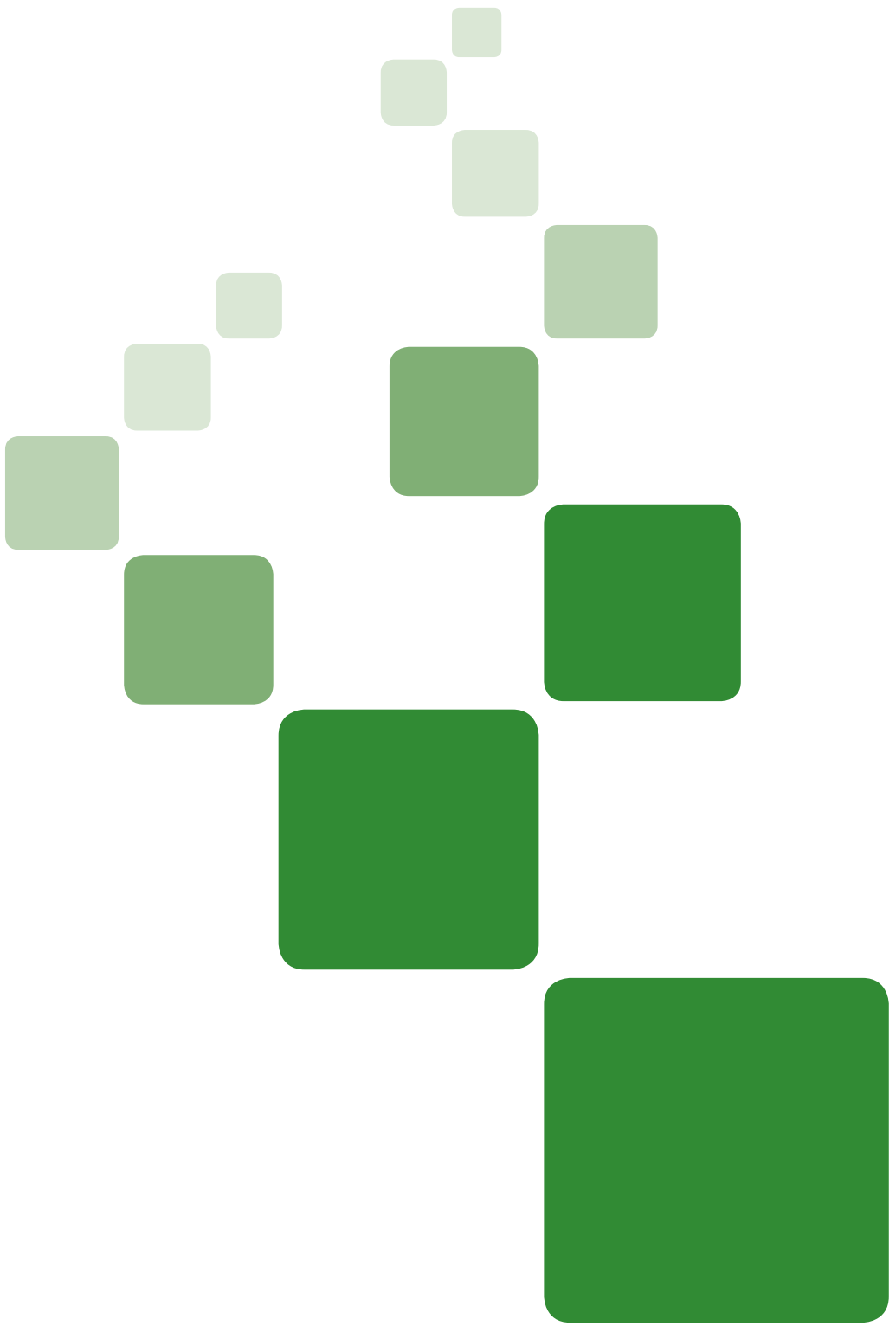


3.2 Factors that drive enterprises to introduce innovations with environmental benefits

Of the total number of environmentally innovative enterprises, 43.1% considered the improvement of the enterprise's reputation as a very important factor when introducing innovations with environmental benefits. This was followed by compliance with the existing environmental regulations (36%), the need to meet the requirements of the public sector (35%), voluntary actions or initiatives for environmental good practices within the enterprise's sector (27.3%), and existing environmental taxes, charges or fees (23.7%) (Figure 49).

Figure 49. Drivers enabling the introduction of innovations with environmental benefits as reported by eco-innovative enterprises, 2012-2014 (% of eco-innovative enterprises)





Chapter 4

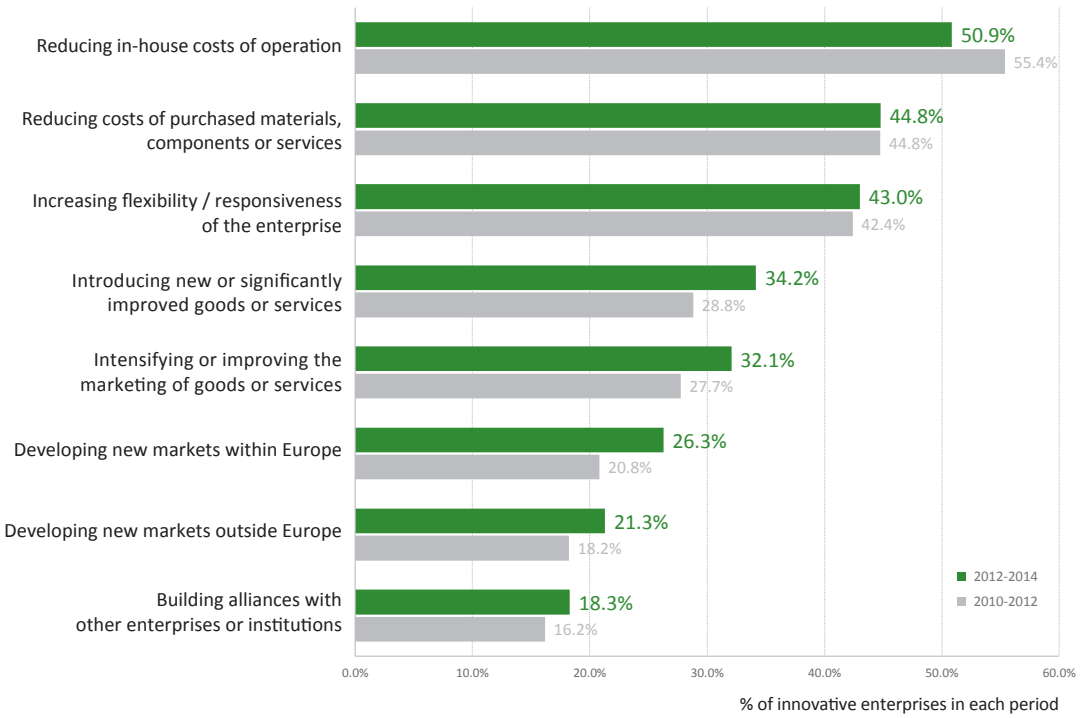
Growth of innovation

The chapter reviews the strategies for and obstacles to the growth of innovation as reported by innovative enterprises during the period 2012-2014. Additionally, it gives the reasons why non-innovative enterprises did not carry out any innovations in that three-year period, while highlighting the various obstacles they cited.

4.1 Strategies of innovative enterprises

Reducing in-house operational costs as well as materials, components or services costs formed the basic strategy of innovative enterprises with 50.9% and 44.8% respectively. They were followed by the increase in flexibility/responsiveness of enterprises with 43%, the introduction of new/significantly improved products (34.2%) and the intensification/improvement of marketing (32.1%). It is interesting to note that these strategies were prioritised in the same order during the 2010-2012 period (Figure 50).

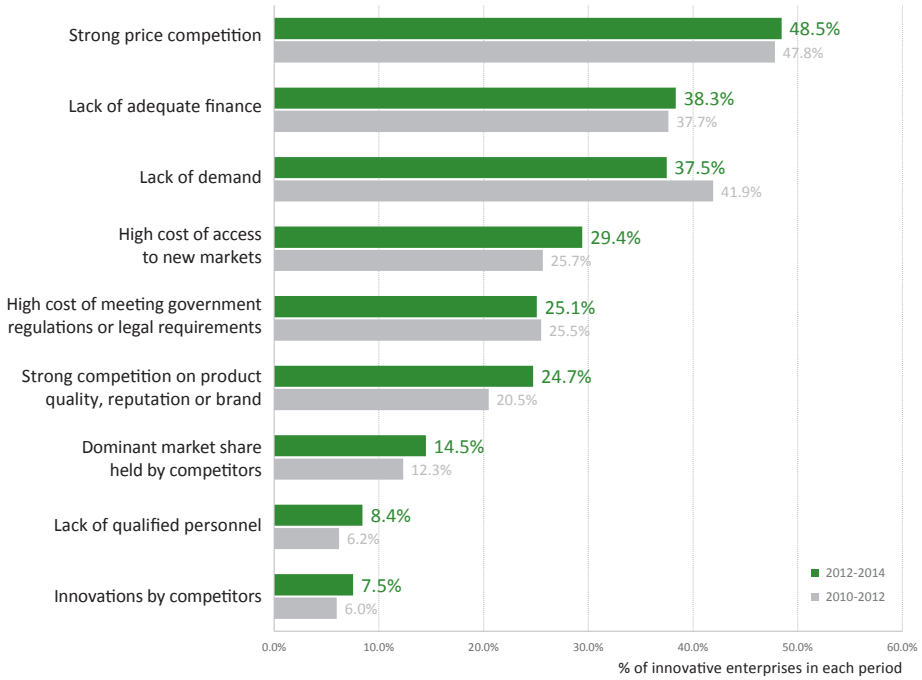
Figure 50. Highly important strategies in innovative enterprises, 2010-2012 and 2012-2014



4.2 Obstacles for innovative enterprises

The main obstacles for innovative enterprises were strong price competition and the lack of adequate finance (48.5% and 38.3%, respectively). Further obstacles included a lack of demand (37.5%), the high cost of accessing new markets (29.4%), the high cost of meeting government regulations (25.1%), strong competition (24.7%) and other obstacles with lower percentages. Ranking of obstacles for innovative enterprises remained the same for the 2010-2012 period, however, lack of demand fell from second to third place (Figure 51).

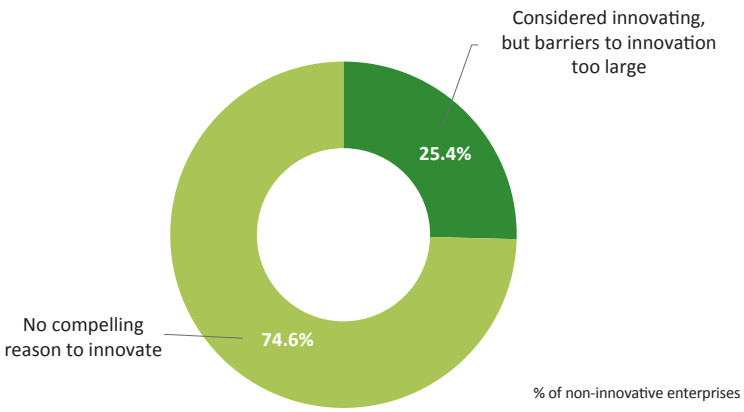
Figure 51. Highly important obstacles faced by innovative enterprises, 2010-2012 and 2012-2014



4.3 Non-innovators

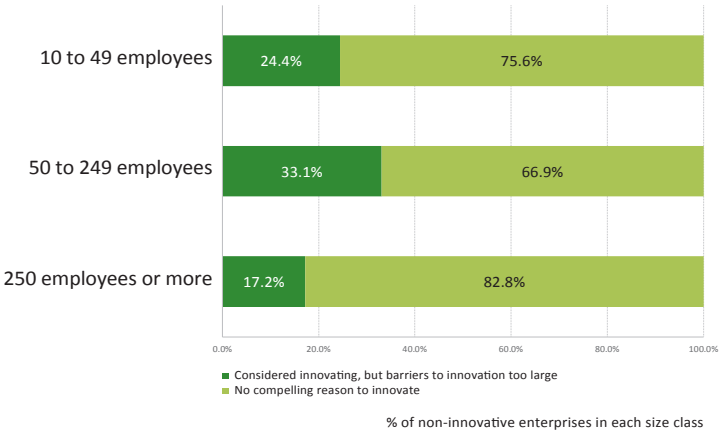
Of the total number of non-innovative enterprises, the majority (74.6%) reported that there was no compelling reason to engage in any innovation, while 25.4% stated that even while they considered introducing innovation the barriers to implementing it were too large (Figure 52).

Figure 52: Reasons for no innovation/innovation activities, 2012-2014 (% of non-innovative enterprises)



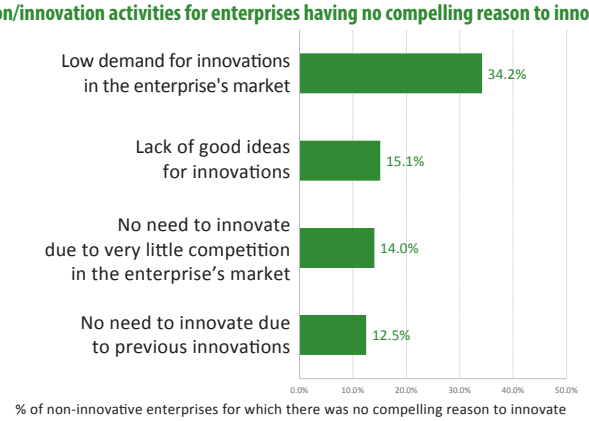
On examining why Greek enterprises had no innovation activities by size class of the enterprise, having no compelling reason was the main reason cited in all size classes. What is interesting, however, is that 33.1% of enterprises with 50-249 employees stated that the lack of innovation activity was owing to the barriers being too large (Figure 53).

Figure 53. Reasons for no innovation/innovation activities by size class, based on number of employees, 2012-2014 (% of non-innovative enterprises in each size class)



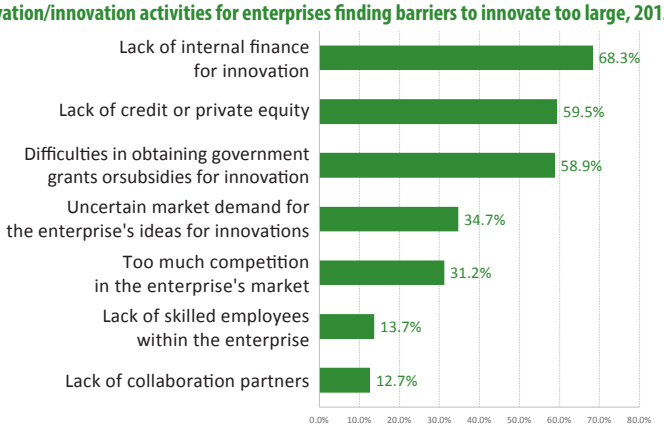
For those enterprises reporting that there was no compelling reason to proceed with any innovation/innovation activity, low market demand for innovations was the main factor (34.2%). Next came lack of good ideas (15.1%), followed by lack of need due to low market competition (14%) and due to existence of previous innovations (12.5%) (Figure 54).

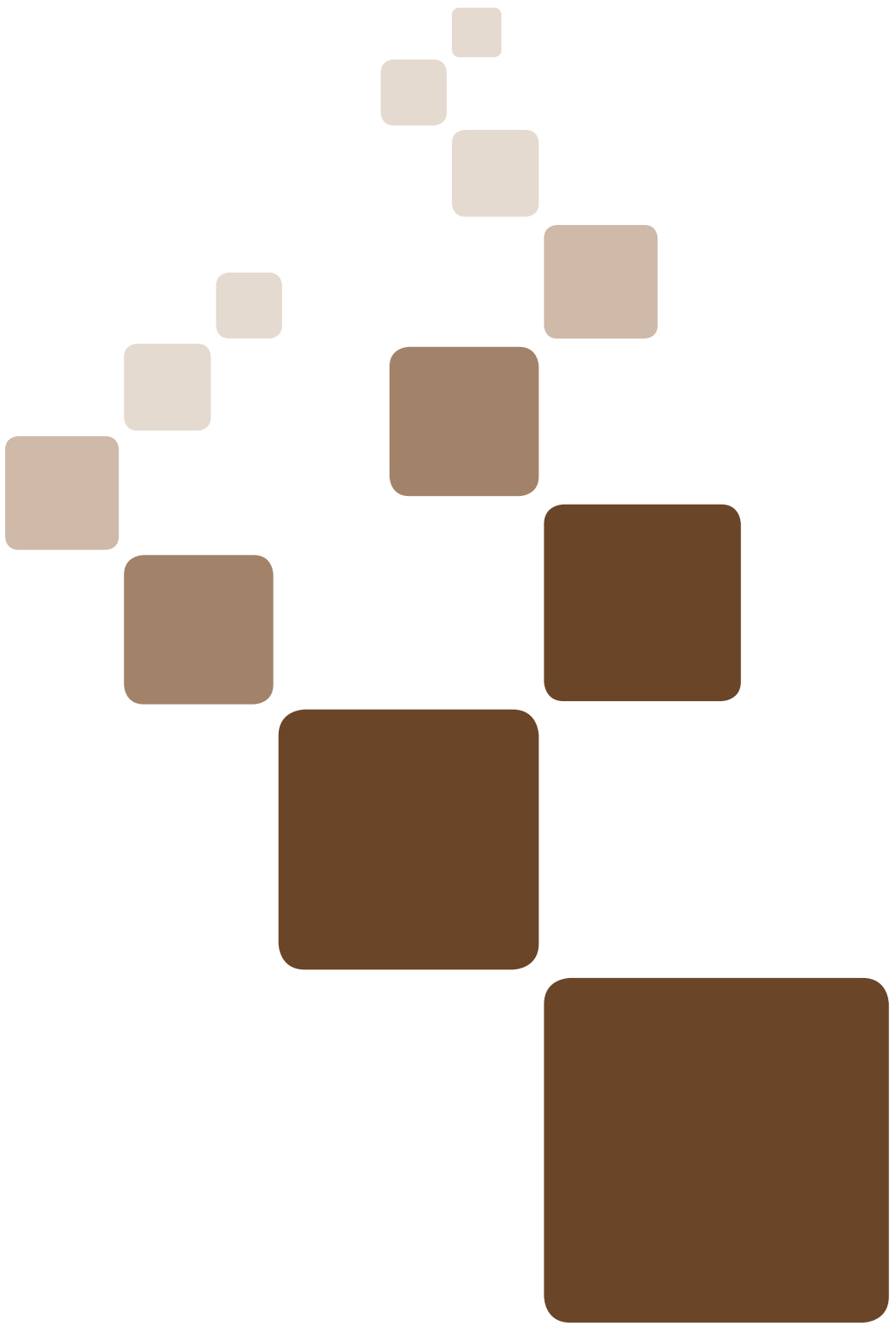
Figure 54. Reasons for no innovation/innovation activities for enterprises having no compelling reason to innovate, 2012-2014



Of those enterprises stating that while they considered introducing innovation the barriers to implementing it were too large, 68.3% cited lack of internal finance for innovation as the main obstacle. Other barriers included lack of credit or private equity (59.5%), difficulties securing government grants or subsidies for innovation (58.9%), uncertain market demand (34.7%) and strong competition (31.2%) (Figure 55).

Figure 55. Reasons for no innovation/innovation activities for enterprises finding barriers to innovate too large, 2012-2014





Chapter 5

Participation of Greek enterprises in global value chains

Measuring the extent of involvement of Greek enterprises and their place in global value chains is a means by which to evaluate their development and innovation capacity at an international level due to the direct link with responsiveness to international competition. In addition, it is indicative of outward-looking activities because the successful insertion and integration of an economy/sector/enterprise into global value chains is based on the ability to successfully convert inputs into production outputs (goods/services) attractive to the international market.

Participation in global value chains, in particular the position within this (international) production process is directly linked to the place of an economy/sector/enterprise in the international division of labour, while reflecting the comparative advantages, as well as the obstacles/distortions which probably exist. An understanding of the level of participation and the role of Greek enterprises in global value chains helps identify production sectors/industries which have comparative advantages, the further development of which is instrumental to a country's economic growth.

The value chain is the set of interconnected activities of an enterprise to produce a good or service. These activities include capture, research and development, design, production, marketing, distribution and support to the final consumer. These value chain activities can be implemented within an enterprise or shared among many enterprises. In the context of globalisation, activities are being implemented by global business networks, resulting in relevant references to Global Value Chains.

In this production process, enterprises either produce the final good/service and contract out to other enterprises the implementation of one or more intermediate stages of the production of the good/service, or they are involved in one or several intermediate stages, producing, for example, part of the final product produced/developed on behalf of another enterprise, like for instance as a subcontractor.

In this way, enterprises concentrate on the part of the production process in which there is a competitive advantage and look for intermediary goods/services from the market.*

The chapter presents the relevant findings of the Community Innovation Survey EKT conducted for the 2012-2014 period with regard to the participation and role of Greek enterprises in global value chains.

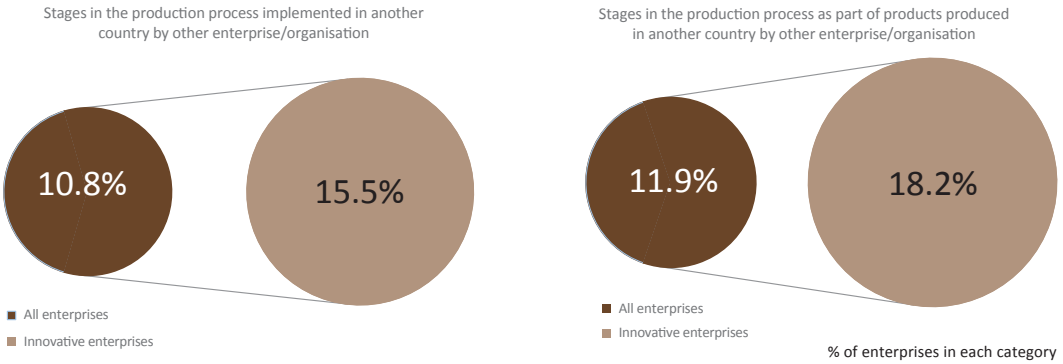
5.1 Participation in global value chains

The following two figures illustrate the degree of participation of the enterprises of the survey in global value chains, for both the total population and innovative enterprises. It can be seen that innovative enterprises participating in these chains was higher than that of the total number of enterprises. This applied not only to production of the end good/service by the same enterprise, but also to enterprises producing a part of the end good/service of a third party in another country.

Figure 56 shows that 15.5% of innovative enterprises stated that certain stages of the production of a good or service were implemented by a third party in another country, while the corresponding percentage for the total population was 10.8%. 18.2% of innovative enterprises reported that they were contracted by a third party in another country to produce a part of the good or service. The equivalent amount for the total population was 11.9%.

* See Gereffi, G., Fernandez-Stark, K., (2016), Global Value Chain Analysis: A Primer, Duke Center on Globalization, Governance and Competitiveness, 2nd edition & Amador, J., Di Mauro, F., (2015), The Age of Global Value Chains. Maps and Policy Issues, Centre for Economic Policy Research.

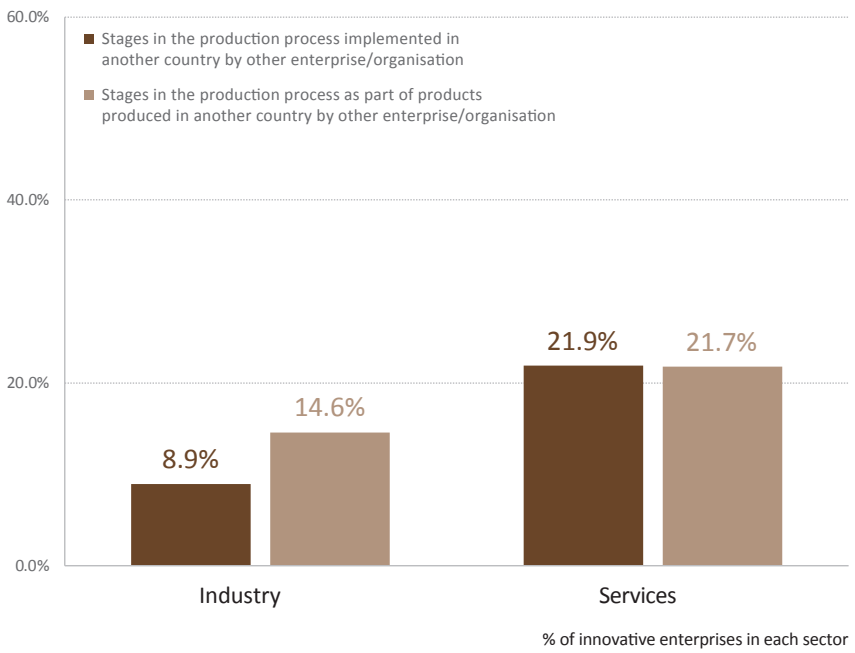
Figure 56. Participation of Greek enterprises in global value chains, 2012-2014



A more analytical examination of the participation of innovative enterprises in global value chains is the subject of Figure 57. Data is presented for the two main sectors of economic activity (Industry and Services).

8.9% of innovative enterprises in the Industry sector contracted out stages of their production to a third party in another country, while 14.6% were responsible for part of the (end) product produced by a third party in another country. In the case of the Services sector, 21.9% of innovative enterprises contracted out stages of the production of their services to a third party in another country, while 21.7% produced part of the end product of a third party in another country.

Figure 57. Participation of innovative Greek enterprises in global value chains by main sector of economic activity, 2012-2014

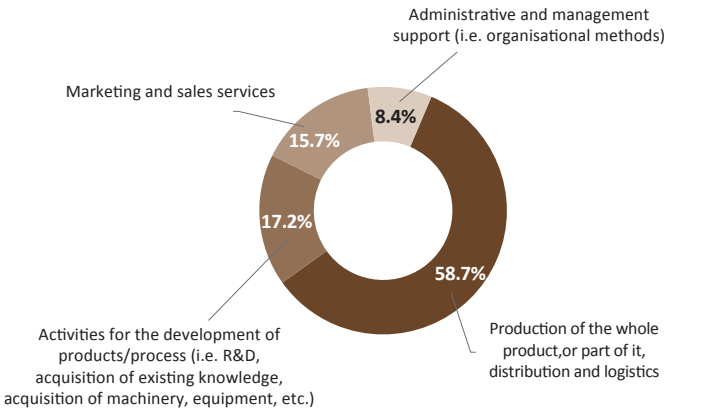


5.2 Stages in the production process implemented in another country by others

In the case of innovative enterprises which contracted certain stages of production of a good or service out to a third party in another country, Figure 58 gives a breakdown of these production stages. 58.7% of

enterprises reported that they had contracted out to a third party in another country the production of a product or part of this and/or the delivery of raw materials and products (logistics). Outsourcing of activities for product/process development (e.g. R&D, acquiring existing knowledge, acquiring machinery/equipment) was second but with a significantly lower share (17.2%). This was followed by activities for marketing and sales of products (15.7%).

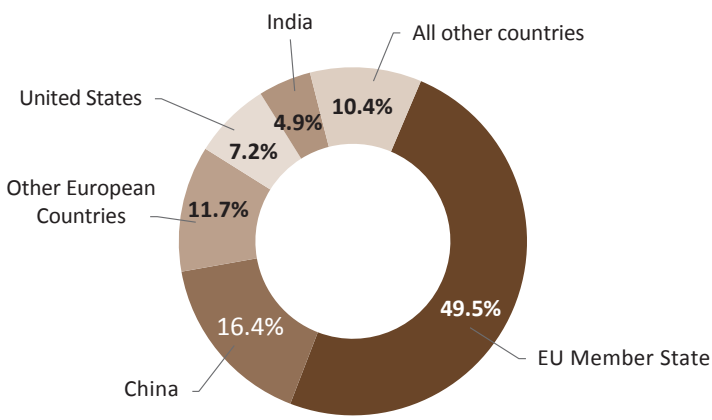
Figure 58. Distribution (%) of production stages contracted out by innovative enterprises to a third party in another country, 2012-2014



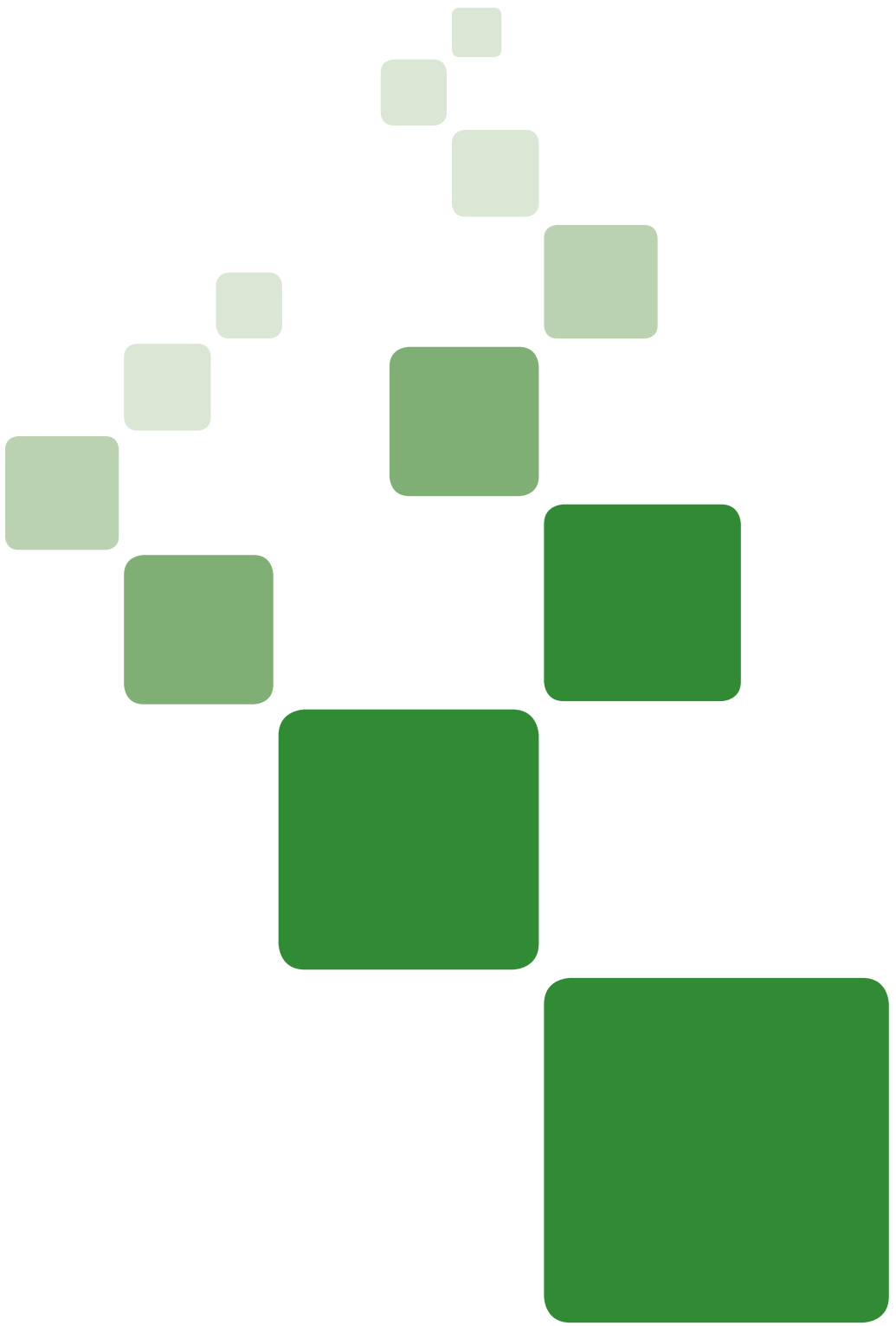
% all responses from innovative enterprises that contracted out stages of their production process to a third party in another country

The geographical distribution of third parties outsourced by innovative enterprises to implement a certain stage of production of their good or service is presented in Figure 59. Countries within the European Union ranked first (49.5%). They were followed by China (16.4%), while other European countries outside the EU were in third place (11.7%). The United States was in fourth place (7.2%). It should be noted though that a 10.4% of innovative enterprises, stated that they contracted out certain stages of production of their good or service to countries other than the aforementioned.

Figure 59. Distribution (%) of third part countries contracted to be responsible for a production stage on behalf of innovative enterprises, 2012-2014



% all responses from innovative enterprises that contracted out stages of their production process to a third party in another country



Chapter 6

Methodological notes

Objective of the survey

The Community Innovation Survey is the official statistical survey for measuring innovation in the European Union. It is carried out every two years in all EU member states using a common model questionnaire and in accordance with the European legislation, the methodological guidelines of the Oslo Manual and the recommendations of Eurostat. As a result, indicators of high quality which are comparable with other countries in the European Union are ensured.

The survey provides data concerning four types of innovation, innovation activities, the introduction of new products to the enterprise and to the market, the role of the public sector in supporting innovation through procurement contracts, co-operations, strategies and obstacles met by enterprises in developing innovations.

All statistics are published analytically via EKT's website (http://metrics.ekt.gr) and Eurostat's dedicated database by sector of economic activity and size class (number of employees) of the enterprises.

This particular publication presents the results of the survey on innovations and innovation activities of Greek enterprises for the three-year period 2012 to 2014.

Basic concepts

Measurement of innovation is made in accordance with the concepts and terms of the Oslo Manual, developed jointly by the OECD and Eurostat.

According to the Manual:

An innovation is the introduction of a new or significantly improved product (good or service), process, organisational method, or marketing method by an enterprise.

An innovation must have characteristics or intended uses that are new or which provide a significant improvement over what was previously used or sold by the enterprise.

An innovation need only be new or significantly improved for the enterprise itself. This condition covers: an innovation for an enterprise, the production or implementation of a process / method which has been originally developed by other enterprises or organisations, as long as it is used for the first time by that enterprise.

The following are the four recognised types of innovation (an enterprise can develop more than one type):

Product innovation: the introduction to the market of a product, the characteristics or the intended uses of which are significantly improved. The term 'product' refers to either a good or a service.

Process innovation: the implementation of a new or significantly improved production process, delivery method or supporting activity for the processes of the enterprise.

Organisational innovation: the implementation of a new organisational method in the enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by the enterprise.

Marketing innovation: the implementation of a new marketing concept or strategy that differs significantly from the enterprise's existing marketing methods and which has not been used before. Such an innovation

3 Oslo Manual "Guidelines for Collecting and Interpreting Innovation Data", 3rd ed., 2005, Joint Publication of OECD and Eurostat (http://metrics.ekt.gr/sites/emetrics/files/Manuals/OSLO-EN_2005.pdf)

would show significant changes in product design or packaging, product placement, product promotion or pricing.

A common characteristic of an innovation is that it must have been implemented. A new or significantly improved product is implemented when it is introduced to the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the enterprise's operations.

Innovation activities include all scientific, technological, organisational, financial and commercial actions which actually, or are intended to, lead to the implementation of product and/or process innovations.

Innovation activities include all types of R&D activities, as well as the acquisition of machinery, equipment, buildings, software and licences.

Engineering and development work, design, training and marketing are also included when they are specifically undertaken to develop and/or implement a product and/or process innovation..

Legal framework

Data collection for the Community Innovation Survey is carried out in compliance with the Decision 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on science and technology,[4] and the Commission Implementing Regulation (EU) 995/2012.[5]

The Implementing Regulation defines the data to be collected, the activities and sectors to be covered by the survey as well as the frequency of data collection, the deadlines for the data submission to Eurostat and the survey reference period.

The official Greek statistics for Innovation and Research & Development are produced by the National Documentation Centre (EKT) / National Hellenic Research Foundation (NHRF) following the decision of the General Secretariat for Research and Technology (Government Gazette 1359/vol. B/25.04.2012).[6]

EKT conducted the survey in collaboration with the Hellenic Statistical Authority, according to the relevant Memoranda of Understanding[7] signed between the two bodies.

Survey population

The target population of the CIS survey for the three-year period 2012-2014 was the total population of enterprises with 10 or more employees in any of the following sectors of economic activity:

4 http://metrics.ekt.gr/sites/emetrics/files/Regulation/1608_2003_el.pdf

5 http://metrics.ekt.gr/sites/metrics/files/Implementing_Regulation_No_995_2012_EL.pdf

6 http://metrics.ekt.gr/sites/emetrics/files/700_07.05.2012.pdf

7 http://metrics.ekt.gr/sites/metrics/files/mnimonio_synergasias_ELSTAT_EKT.PDF and http://www.statistics.gr/documents/20181/306935/memorandum_EKT.pdf/27845bf6-50a1-4ca0-8ebc-ab7f7d57a2d1

Sector of economic activity (NACE rev2)	
Industry	**B (05-09)**: Mining and Quarring **C (10-33)**: Manufacturing **D (35)**: Electricity, gas, steam and air conditioning supply **E (36-39)**: Water supply: Sewerage, waste management and remediation activities
Services	**G (46)**: Wholesale trade, except for motor vechiles and motorcycles **H (49-53)**: Transportation and storage **J (58-63)**: Information and communication **K (64-66)**: Financial and insurance activities **M (71-73)**: Professional, scientific and technical activities (Architectural and engineering activities: technical testing and analysis / Scientific research and development / Advertising and market research

According to the national statistical business register, which is maintained by the Hellenic Statistical Authority, the population of the survey was 13,843 enterprises. The following table lists them in the two main sectors of economic activity (Industry & Services) and the three size classes of enterprise based on the number of employees (10-49, 50-249 and 250 or more).

	10 to 49 employees	50 to 249 employees	250 employees or more	Total
Industry	5,276	949	127	6,352
Services	6,566	838	87	7,491
Total	11,842	1,787	214	13,843

Survey method

Data for the Community Innovation Survey was collected by using a combination of census and sample survey. The statistical unit was the enterprise.

Enterprises with 500 or more employees and, in addition, known R&D performers (based on the results from the statistical survey on R&D carried out by EKT with reference to the year 2013) were surveyed by census.

Remaining enterprises of the target population were surveyed using a sample drawn from the statistical business register that is maintained by the Hellenic Statistical Authority.

A one-stage stratified sampling was applied with the following stratification criteria for the enterprises:

- Regions (NUTS-2 level): total 13 regions
- Two-digit sector of economic activity: total 11 clusters (as presented in the above table)
- Size class of the enterprise: 10-49, 50-249, 250 or more employees

The size of the sample of enterprises was calculated according to the specifications and the precision levels recommended by Eurostat in the survey methodological guidelines.

In all, 5,496 enterprises from the population participated in the survey with 295 being covered by census and 5,201 comprising the survey sample.

Data collection

EKT conducted the Community Innovation Survey in Greece in co-operation with the Hellenic Statistical Authority (ELSTAT).

Data collection was carried out using electronic questionnaires via a specially designed online platform, developed by EKT, which is based on open-source technologies. Automatic procedures for monitoring the progress of the survey in real time and validating the collected data, based on predefined quality indicators, were implemented on a daily basis.

More than 200 interviewers were drawn from the ELSTAT register of interviewers and were assigned to collect the data for the needs of CIS. The established network of co-operation with the interviewers as well as with the regional statistical offices of ELSTAT ensured the quality of the data collection and the optimisation of the fieldwork period.

Using the data collected from more than 3,300 enterprises, EKT proceeded with the processing and analysis of the data, the calculation of the survey indicators and the production of data files for submission to Eurostat.

ELSTAT provided methodological assistance to EKT in calculating survey estimates and sampling errors.

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