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Innovation

in Greek enterprises 2010-2012

Innovation in Greek enterprises
2010-2012

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Realisation of the publication

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Prologue

Innovation, as a basis for policy makers, businesses, researchers and academia, is now frequently and intensely used. The reasons are manifold and are connected as much with the global nature of the economy, which demands the improvement of competitiveness, as with the need to deal with the societal challenges which the economic crisis has created.

It is not by chance that international and supranational organisations, such as the OECD and the EU, are talking about balanced, sustainable and inclusive development. Such a developmental model cannot be based on reduced labour costs. It must seek new, 'smart' and sustainable methods which aim to increase the effectiveness of production processes and the use of productive resources.

Innovation plays a central role in the process of redesigning the production model. As with international best practices and policies, innovation is a collective process which strongly favours organisational co-operation: public sector, bodies active in research and the private sector collaborate with each other, creating the famous triple helix, which not only produces innovation, but also puts it into a wider economic, social and productive context. Playing a central role in this, are research infrastructures and networks, as well as the public sector which is more and more recognised internationally as a central factor in the innovation process.

The survey presented in this publication, as part of the 'Community Innovation Survey' which is carried out by all EU member states, is the first official statistical survey on enterprise innovation in Greece since 2006. It was conducted by EKT, which, since the 2012 decision of the General Secretariat for Research and Technology, has been the organisation responsible for the collection & production of official Research & Development and Innovation statistics for Greece. The survey was conducted in collaboration with the Hellenic Statistical Authority.

By providing data for the 2010-2012 period and almost 15,000 enterprises with 10 or more employees in the Industry and Services sectors, the survey is a basic means of understanding innovation activities in our country and the importance it can have in its productive reconstruction. Data are presented on types of innovation, the innovation activities of enterprises, the introduction of new products to enterprises and markets, the role of the public sector in supporting innovation via procurement contracts, the co-operations, strategies and obstacles met by enterprises in developing innovations.

A number of interesting conclusions can be arrived at from this survey. Greece continues to innovate despite the difficulties it is going through and is 11th out of the 28 EU countries as far as innovative enterprises is concerned. A total of 1.9 billion euros is invested in innovation activities. Although large city centres continue to attract innovation activity, regional performance in that context is worth noting. Regions, such as Kriti or Sterea Ellada, represent points in Greece which are central to innovation.

By collecting data on innovation in Greece and by actively following policy developments on European and worldwide levels, EKT contributes to the understanding of innovation activity and provides policy makers with essential tools to allow the creation and implementation of documented and evidence-based policies. At the same time, it highlights the innovative Greece which creates jobs for highly-qualified and specialised personnel. EKT serves its institutional role and participates in the efforts being made for the overall improvement of national innovation and production. More than anything else, it demonstrates key factors and aspects of the innovation and invites us all to work towards a better understanding and exploitation of the data which has been diligently collected from a great number of enterprises, which we gratefully thank.

Dr Evi Sachini
Director EKT

Contents

Greece
in 11th place
of innovative
enterprises
in EU-28

1.9 billion Euros
expenditures for
innovation
activities

19.5%
Product innovation

25.6 %
Process innovation

30.2%
Organisational innovation

36.8%
Marketing innovation

52.3%
innovative enterprises

34.3%
innovation in
product/process

45.4%
innovation in
organisation/marketing

Innovations
new to the market

46.3%
New products

20.3%
New processes

Kriti
ranked as the most
innovative region (65.2%)
followed by
Sterea Ellada (56%)
& Attiki (54.3%)

38.2%
product/process
innovators
co-operating
with others

Chapter 1

Innovation indicators

This chapter presents the main innovation indicators for Greek enterprises, for the period 2010 -2012, 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 Oslo Manual defines Innovation as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

On the basis of the above definition, an enterprise is considered innovative if it implements one or more of the following types of innovation: a Product Innovation (good or service), a Process Innovation, an Organisational Innovation or a Marketing Innovation.

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses.

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

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 which has not been previously used by the enterprise.

A marketing innovation is the implementation of a new marketing method involving significant changes in the enterprise's existing marketing methods and which has not been used before.

In what follows, the main indicators for innovation in Greek enterprises are presented, the basic characteristics of innovative enterprises are noted and the four different types of innovation are analysed. Maps showing the extent of regional innovation are presented while comparative charts show Greece's position in relation to other EU countries.

[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

During the period 2010-2012, following the results of the CIS survey carried out by EKT, 52.3% of Greek enterprises, included in the survey population[2], were innovative in one or more types of innovation.

This share, which is above the EU-28 average (48.9%), puts Greece in 11th place amongst the EU-28 member states.

Figure 1. Innovative and non-innovative enterprises, 2010-2012 (% of all enterprises).

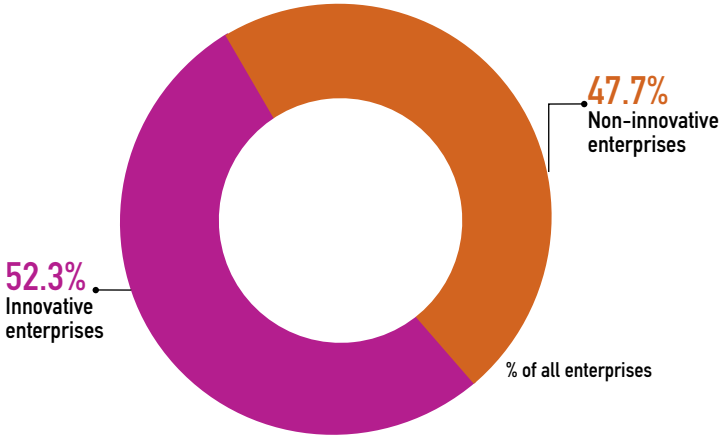
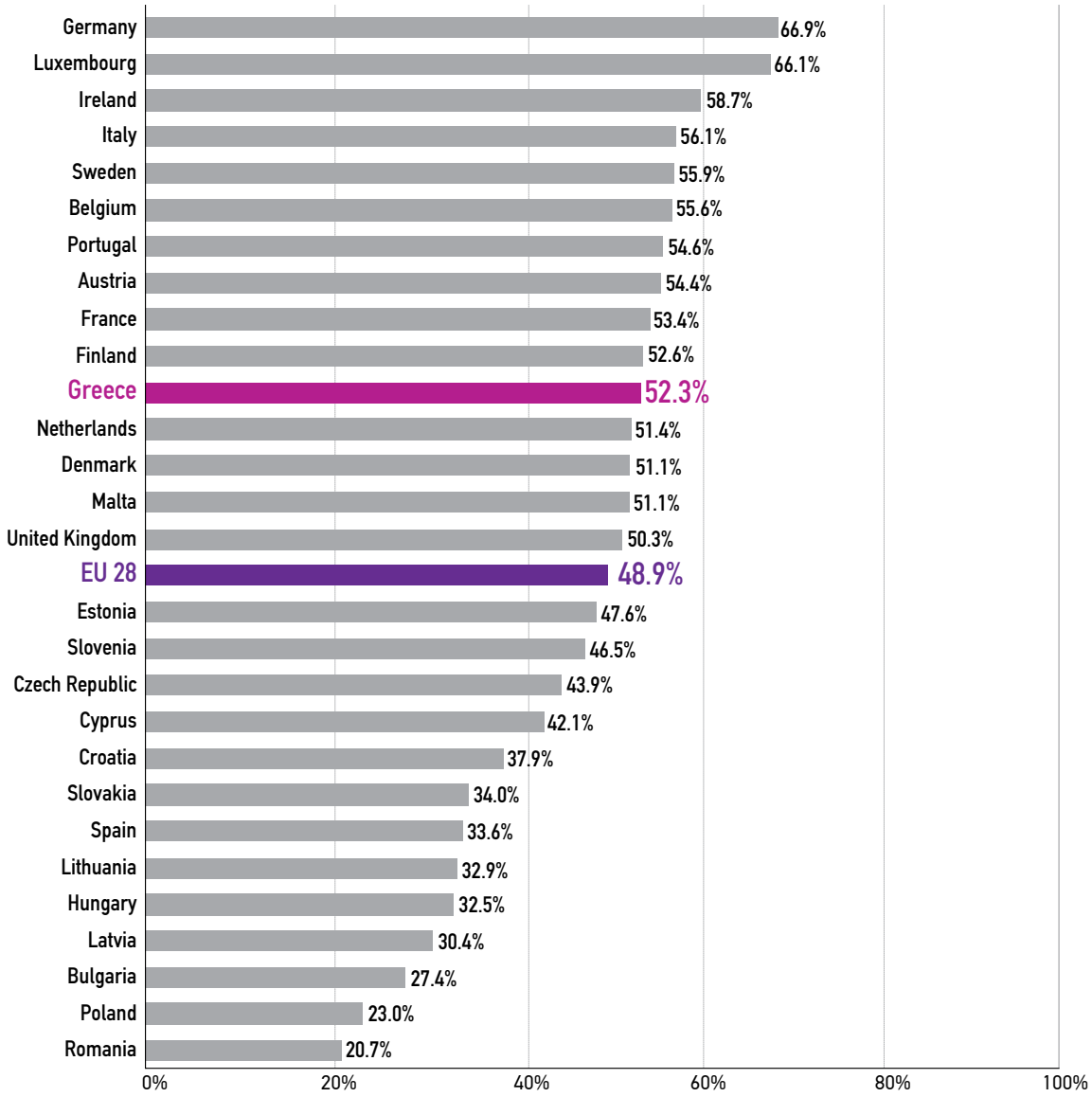


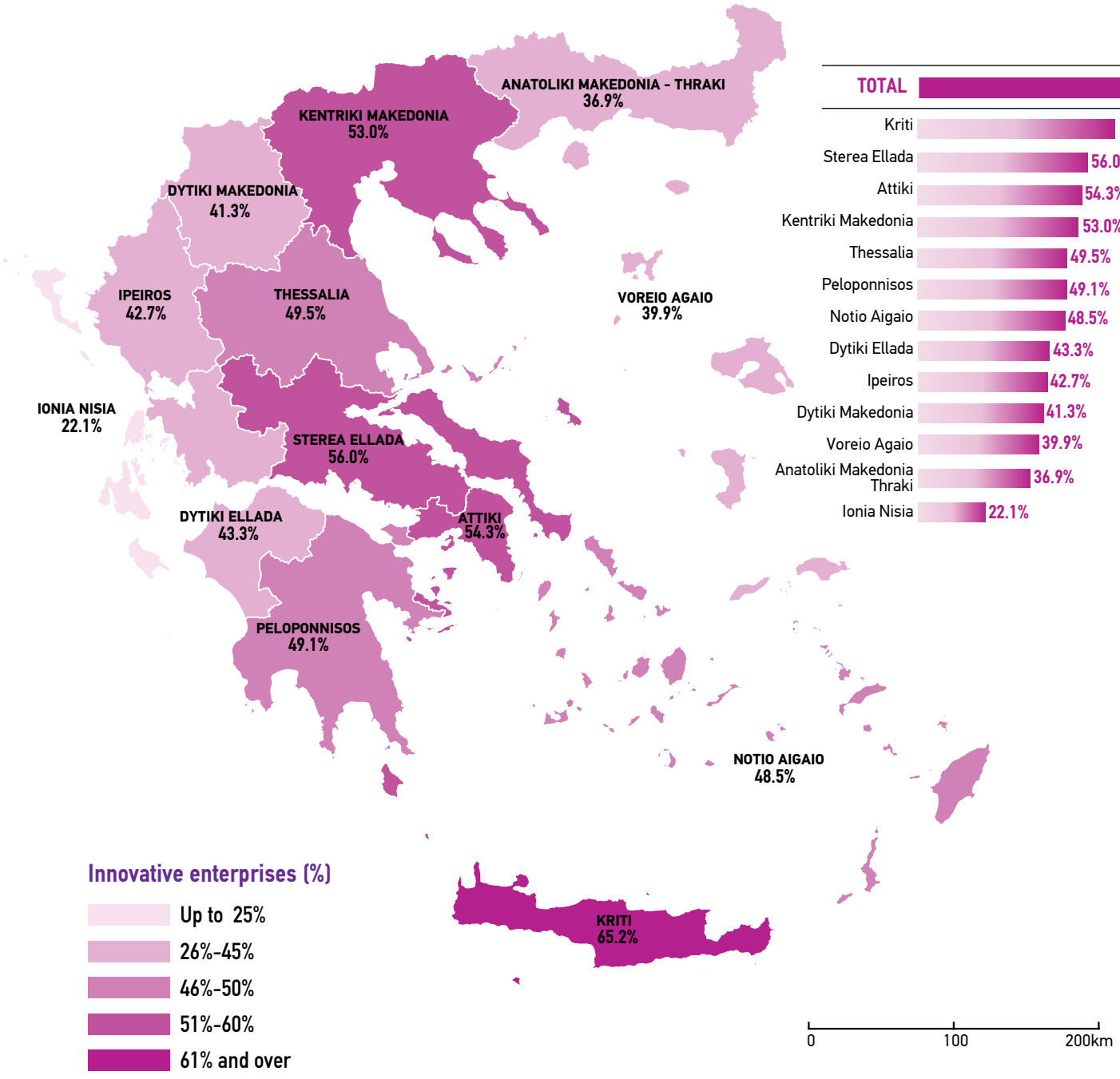
Figure 2. Innovative enterprises in the EU-28 member states, 2010-2012 (% of all enterprises).



[2] 14.987 Greek enterprises with 10 or more employees in the sectors of economic activity (NACE rev2) referred to in Chapter 4: 'Methodological notes'.

At the Greek regional level, the largest share of innovative enterprises was found at the region of Kriti (65.2%). This was followed by Sterea Ellada with 56%, Attiki with 54.3% and Kentriki Makedonia with 53%.

Map 1. Innovative enterprises by NUTS2 region, 2010-2012 (% of all enterprises in each region).



Grouping of regions was made by using the method Jenks Natural Breaks

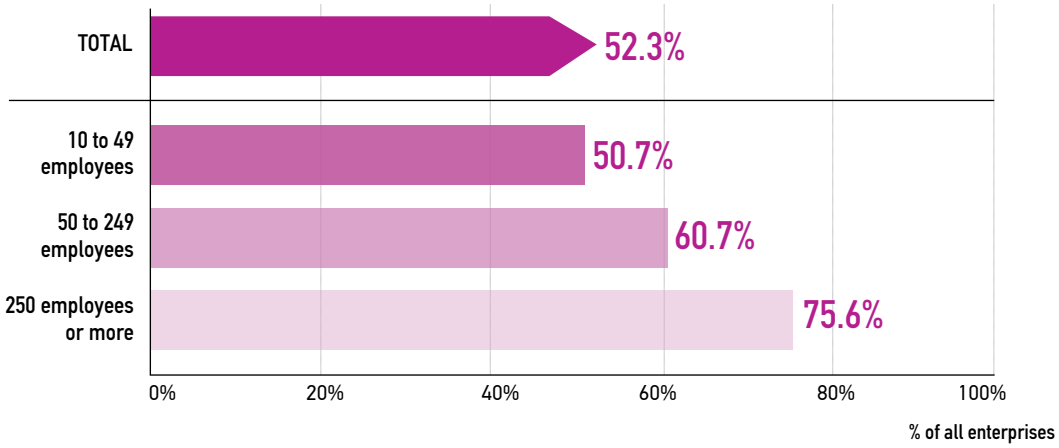
1.2 Characteristics of innovative enterprises

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

It also examines the 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.

Both SMEs and large enterprises were in their majority innovative. The share of innovation progressively increased with the size. In particular, innovative enterprises accounted for 50.7% in enterprises with 10-49 employees, 60.7% in those with 50-249 employees and 75.6% in those with 250 or more employees.

Figure 3. Innovative enterprises by size class, 2010-2012 (% of all enterprises in each size class).



The share of innovative enterprises by sectors of economic activity (according to NACE rev2 classification) is presented in Figure 4. The two main sectors, Industry and Services, are as follows:

The Industry sector includes the following economic activity codes:

- B (05-09): Mining and Quarrying
- C (10-33): Manufacturing
- D (35): Electricity, gas, steam and air conditioning supply
- E (36-39): Water supply; Sewerage, waste management and remediation activities

The Services sector includes the following economic activity codes:

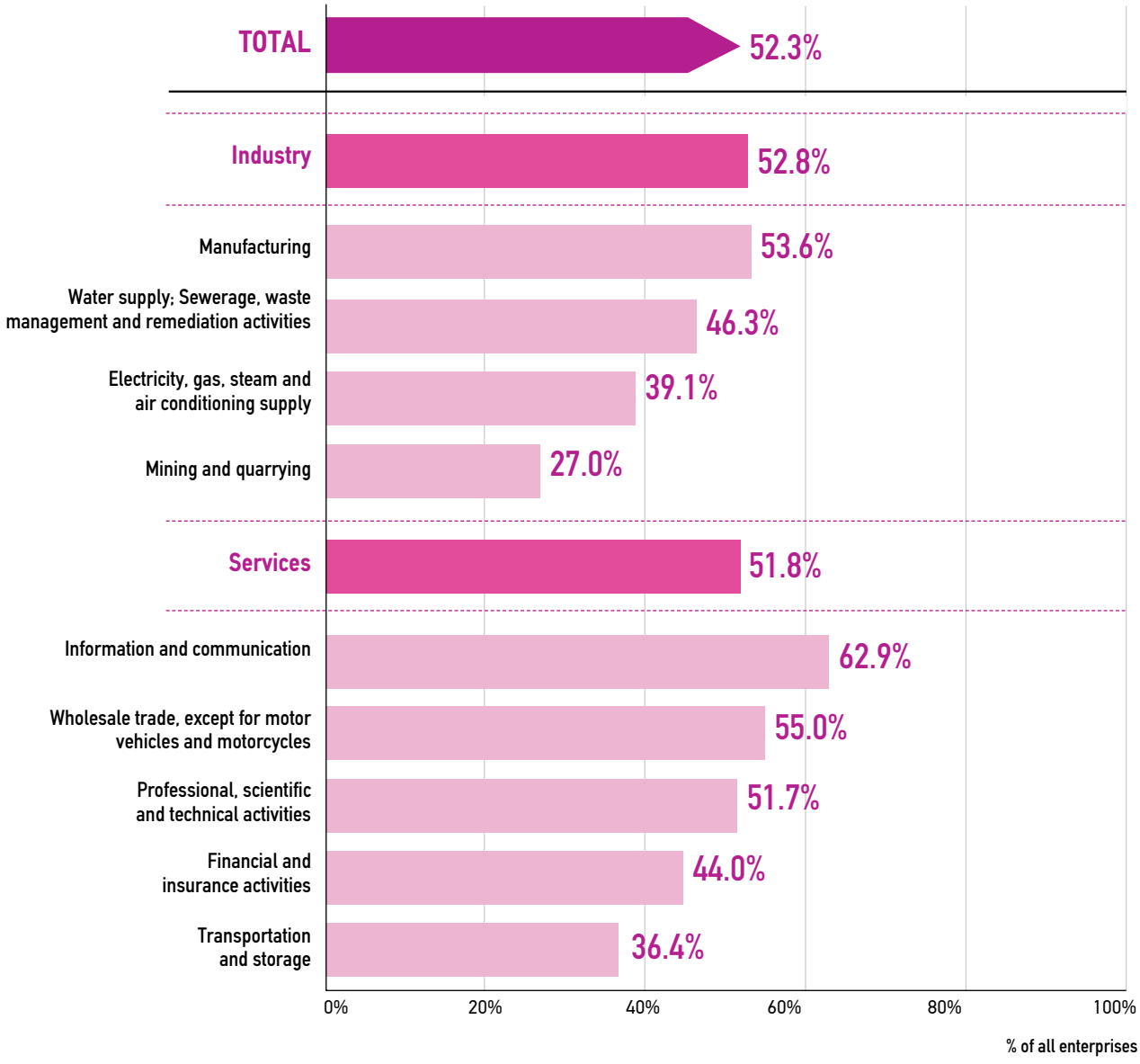
- G (46): Wholesale trade, except for motor vehicles and motorcycles
- H (49-53): Transportation and storage
- J (58-63): Information and communication
- K (64-66): Financial and insurance activities
- M (71-73): Professional, scientific and technical activities (Architectural and engineering activities; technical testing and analysis / Scientific research and development / Advertising and market research)

Over 50% of enterprises in both the Industry and Services sectors were innovative.

In the Industry sector, the highest share (53.6%) of innovative enterprises was reported in the *'Manufacturing'* sector. Outstanding in this sector were *'Manufacture of basic pharmaceutical products and pharmaceutical preparations'* with 79.7%, '*Manufacture of computer, electronic and optical products'* with 76.7% and *'Manufacture of electrical equipment'* with 73.0%.

In the Services sector, the largest share (62.9%) of innovative enterprises was reported in the sector of *'Information and Communication'* in which *'Computer programming, consultancy and related activities'* was the leading category with 78.4% followed by *'Publishing activities'* (software, books, journals) with 75.6% and *'Telecommunications'* with 60.3%.

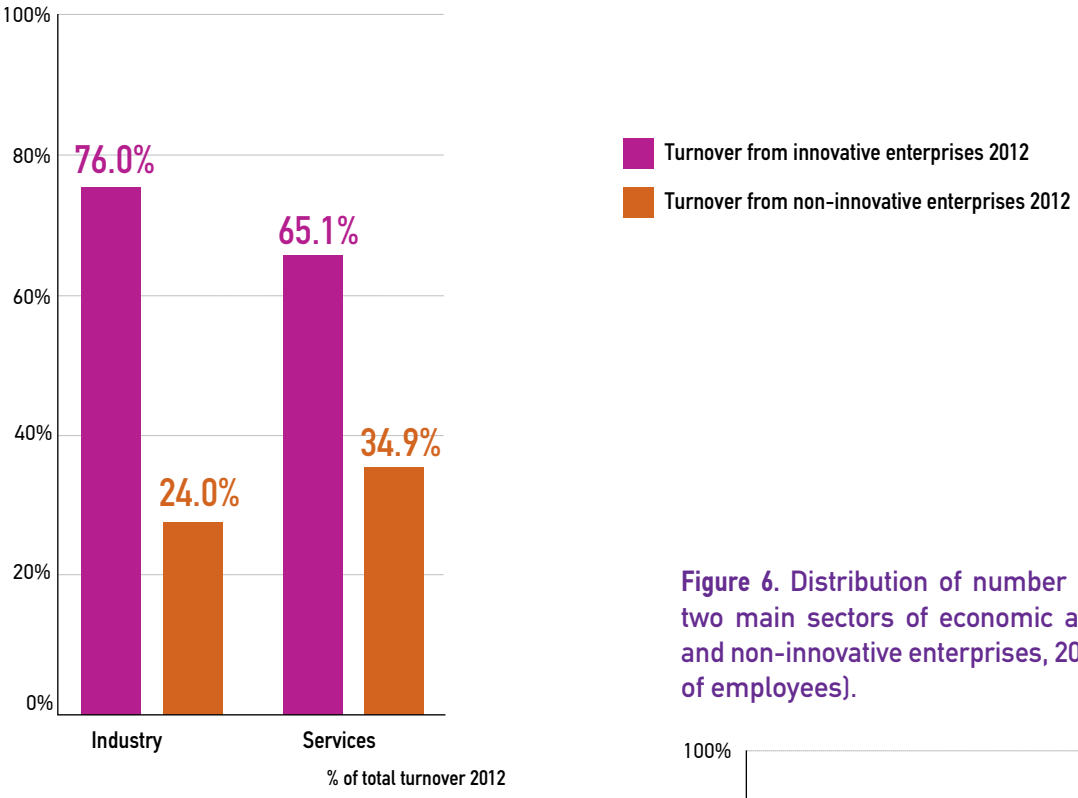
Figure 4. Innovative enterprises by primary sector of economic activity, 2010-2012 (% of all enterprises in each sector).



Innovative enterprises showed a better performance in terms of their turnover compared to non-innovative. Figure 5 presents the contribution of innovative and non-innovative enterprises to the total turnover of the Industry and Services sectors.

In the Industry sector 76% of turnover came from innovative enterprises. In the Services sector this corresponded to 65.1%.

Figure 5. Distribution of turnover in the two main sectors of economic activity for innovative and non-innovative enterprises, 2012 (% of total turnover in each sector).



Innovative enterprises dominated also in terms of employment. As can be seen from Figure 6, in 2012, the largest share of employees in both the Industry and Services sectors were employed by innovative enterprises (67.6% and 72.3% respectively).

Figure 6. Distribution of number of employees in the two main sectors of economic activity for innovative and non-innovative enterprises, 2012 (% of total number of employees).

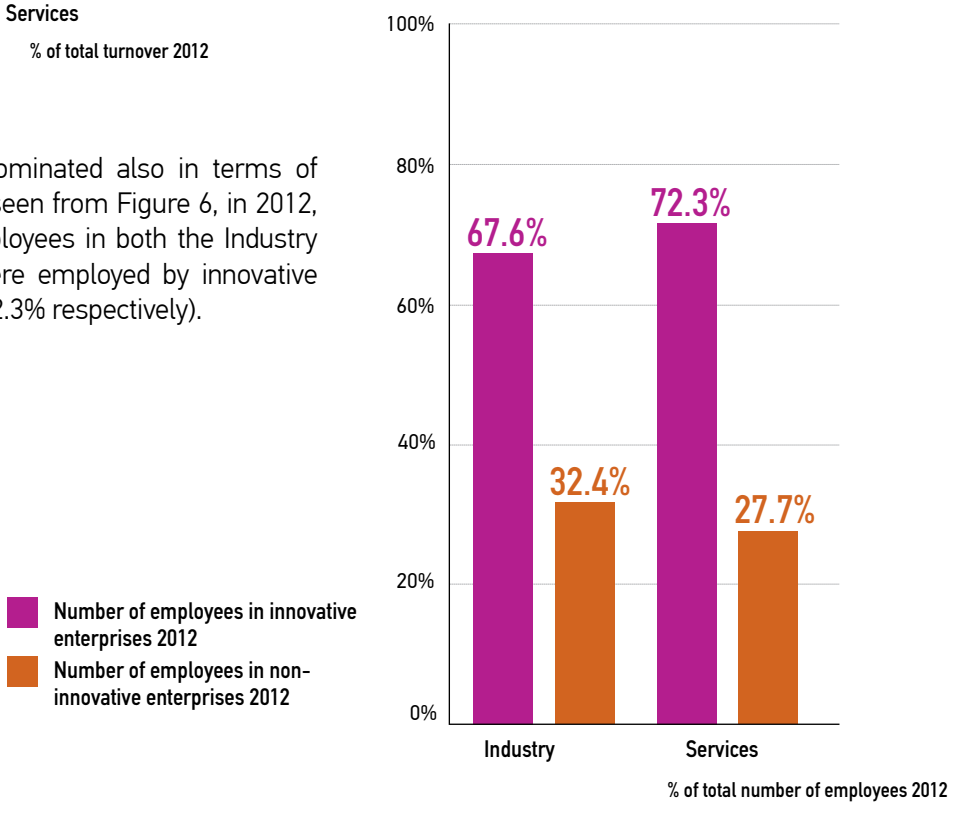


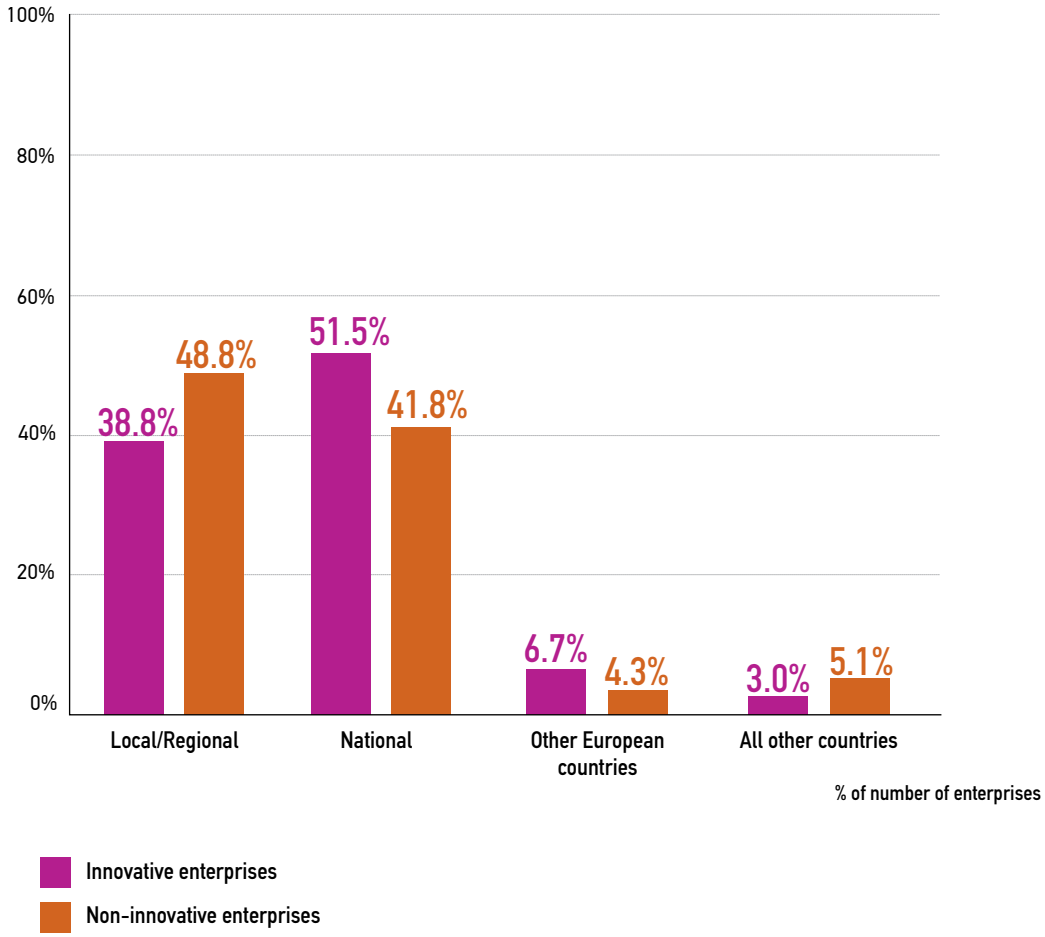
Figure 7 shows the most significant market for innovative and non-innovative Greek enterprises, in terms of turnover, during the period 2010-2012.

The national market was the biggest market for 51.5% of innovative enterprises and was followed by the local / regional market which was the most significant for 38.8% of innovative enterprises.

The picture was reversed for the non-innovative enterprises, where the local / regional market was of more significance for 48.8% while the national market corresponded to 41.8%.

The foreign market, whether within or outside Europe, was 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, 2010-2012 (% of all enterprises in each market).

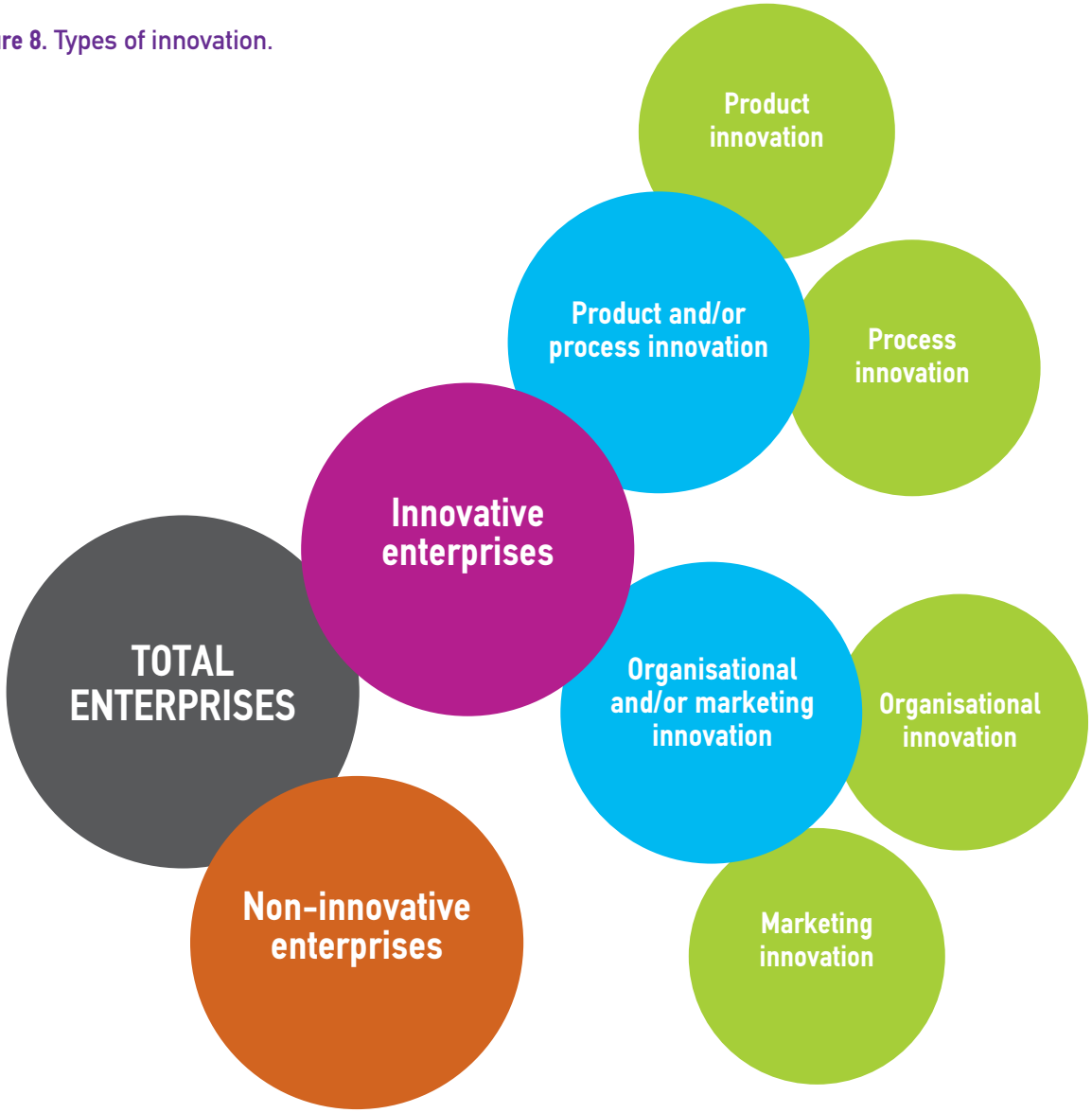


1.3 Product and/or process innovation

Product and/or process innovation includes enterprises innovative in products (good or service) and/or processes, regardless of whether they implement organisational and/or marketing innovations. Also included in this category are enterprises that during 2010-2012 carried out activities to introduce product/process innovations, which were still on-going or had been abandoned/suspended before completion at the end of 2012.

Organisational and/or marketing innovation includes enterprises with organisational and/or marketing innovations, regardless of whether they implement product and/or process innovations.

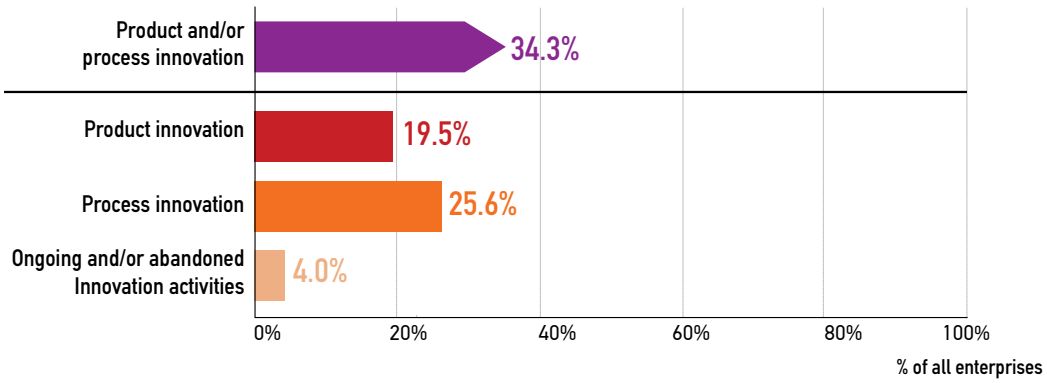
Figure 8. Types of innovation.



During the period 2010-2012, 34.3% of the enterprises included in the survey population were innovative in product and/or process. Product innovation accounted for 19.5% and process innovation for 25.6% of all enterprises (Figure 9).

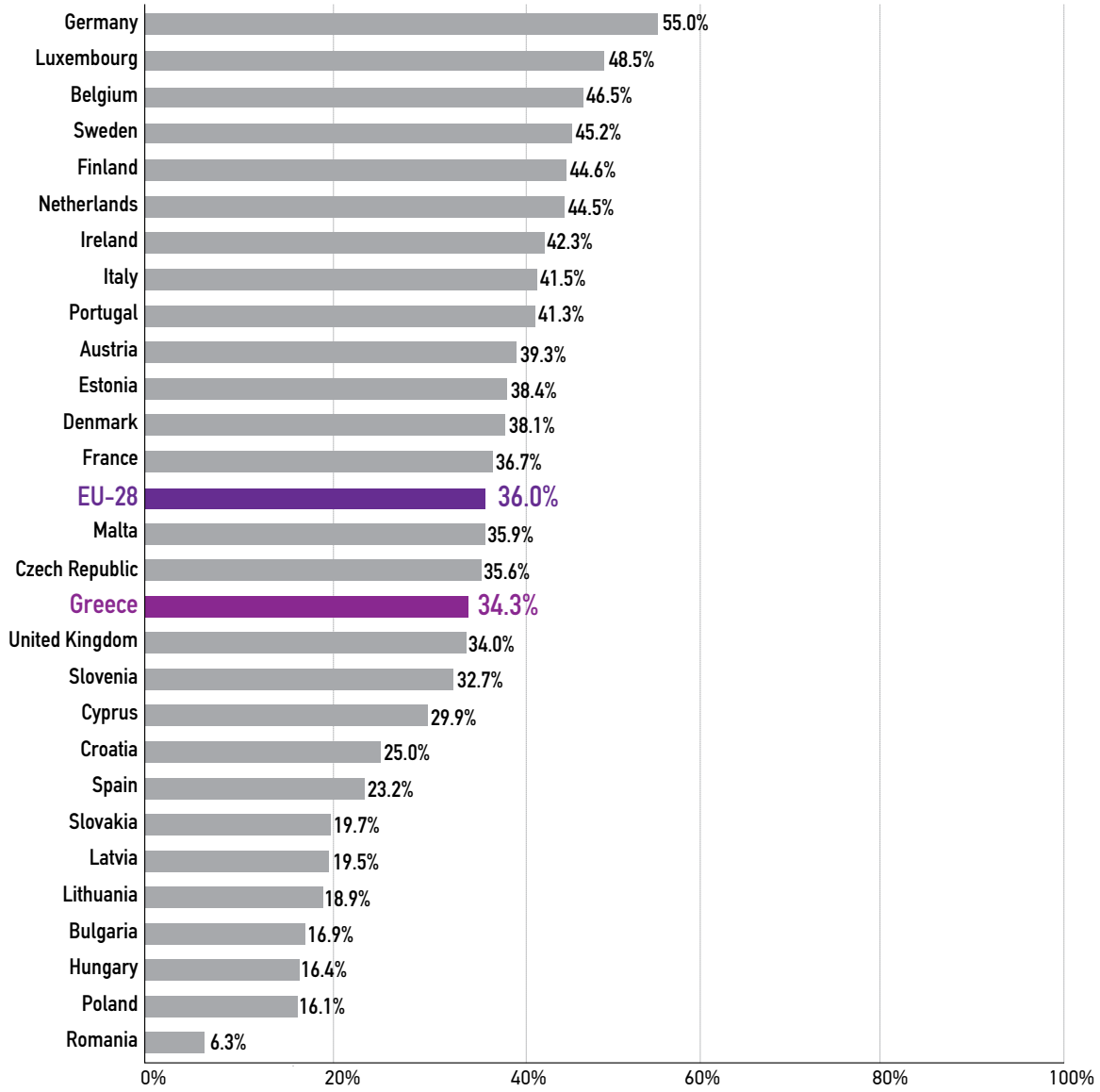
4% of enterprises engaged in innovation activities for the introduction of product and/or process innovations that were still on-going or abandoned/suspended before completion at the end of 2012.

Figure 9. Product and/or process innovative enterprises by type of innovation, 2010-2012 (% of all enterprises).



Greece, with 34.3% of enterprises with product and/or process innovation, ranks 16th amongst the EU-28 member states. The EU-28 average is 36%.

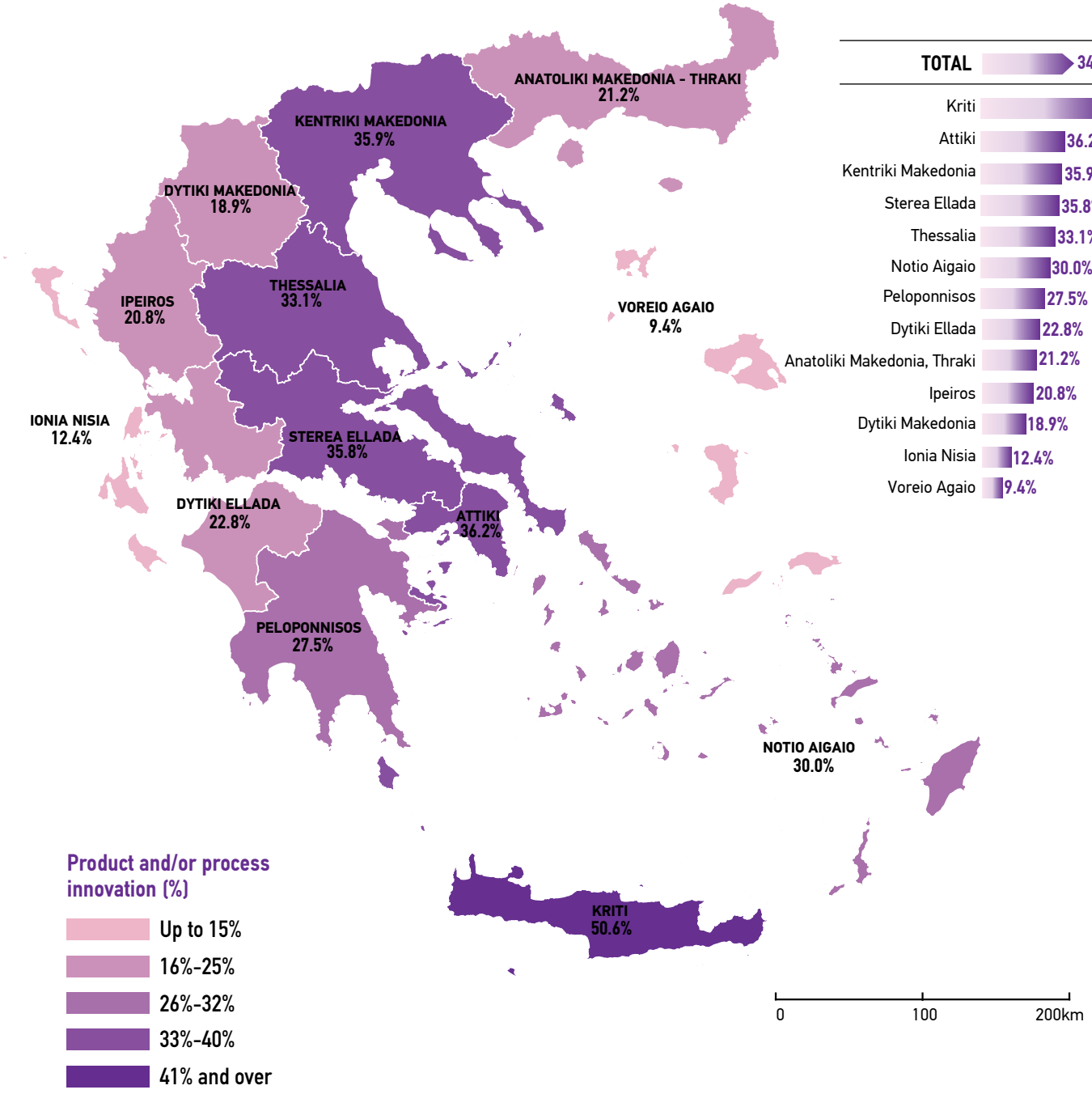
Figure 10. Product and/or process innovative enterprises in the EU-28 member states, 2010-2012 (% of all enterprises).



Map 2 illustrates product and/or process innovative enterprises by Greek regions.

The Kriti region led the way with 50.6% product and/or process innovative enteprises. Attiki ranked second (36.2%) followed by Kentriki Makedonia (35.9%).

Map 2. Product and/or process innovative enterprises by NUTS2 region, 2010-2012 (% of all enterprises in each region).



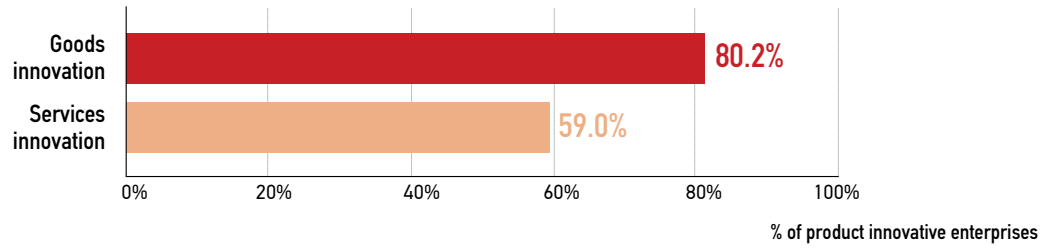
Grouping of regions was made by using the method Jenks Natural Breaks

1.3.1 Product innovation

Product innovative enterprises can be further refined to 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 2010-2012, 80.2% of Greek product innovative enterprises introduced goods innovation while services innovation was introduced by 59.0%.

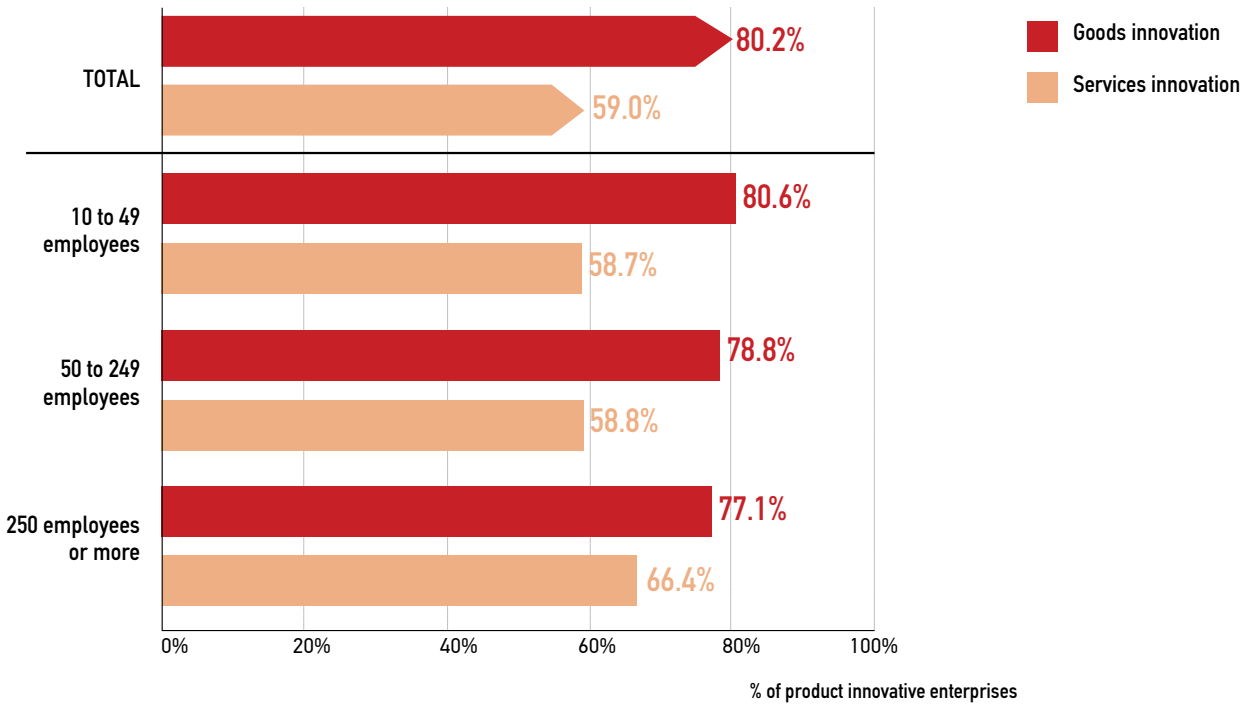
Figure 11. Product innovative enterprises by specific type of innovation, 2010-2012 (% of product innovative enterprises).



Figures 12 & 13 present the share of enterprises with goods and services innovation, by size class and by main sector of economic activity respectively.

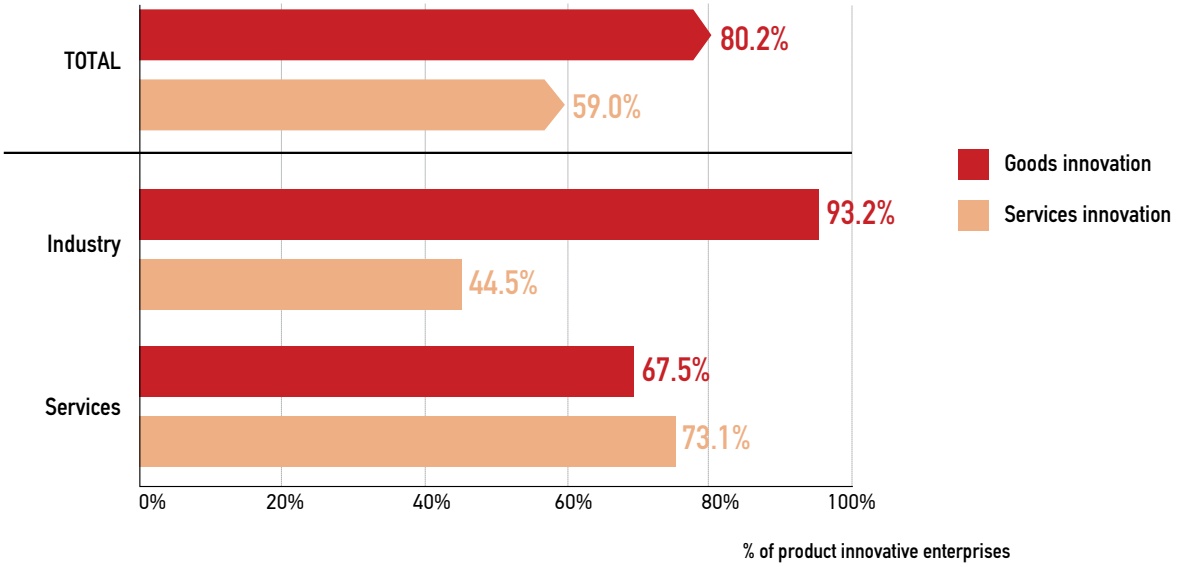
Enterprises with 10-49 and 50-249 employees reported similar share of goods/services innovation as the total number of enterprises. Enterprises with 250 and more employees showed an increase in services innovation (66.4%) in relation to the total figure (59%).

Figure 12. Product innovative enterprises by specific type of innovation and by size class, 2010-2012 (% of product innovative enterprises in each size class).



Goods innovation dominated the Industry sector as 93.2% of product innovative enterprises introduced goods innovation, while services innovation was introduced by 44.5% of these enterprises. In the Services sector, services innovation (73.1%) was slightly higher than goods innovation (67.5%).

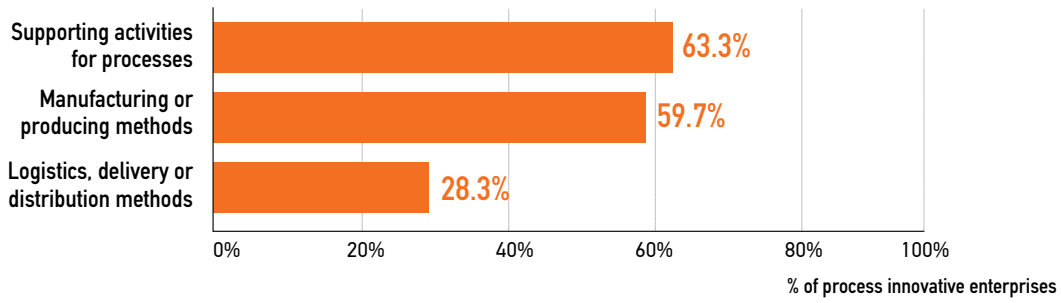
Figure 13. Product innovative enterprises by specific type of innovation and by main sector of economic activity, 2010-2012 (% of product innovative enterprises in each sector).



1.3.2 Process innovation

In process innovation, implementation of a new or significantly improved process is examined in three areas: the production process, delivery methods, supporting activities. Most process innovative enterprises introduced innovations for the support of their processes (63.3%) and secondly for the methods of manufacturing / producing goods / services (59.7%). Less than one third of process innovative enterprises innovated in delivery / distribution methods for their products (28.3%).

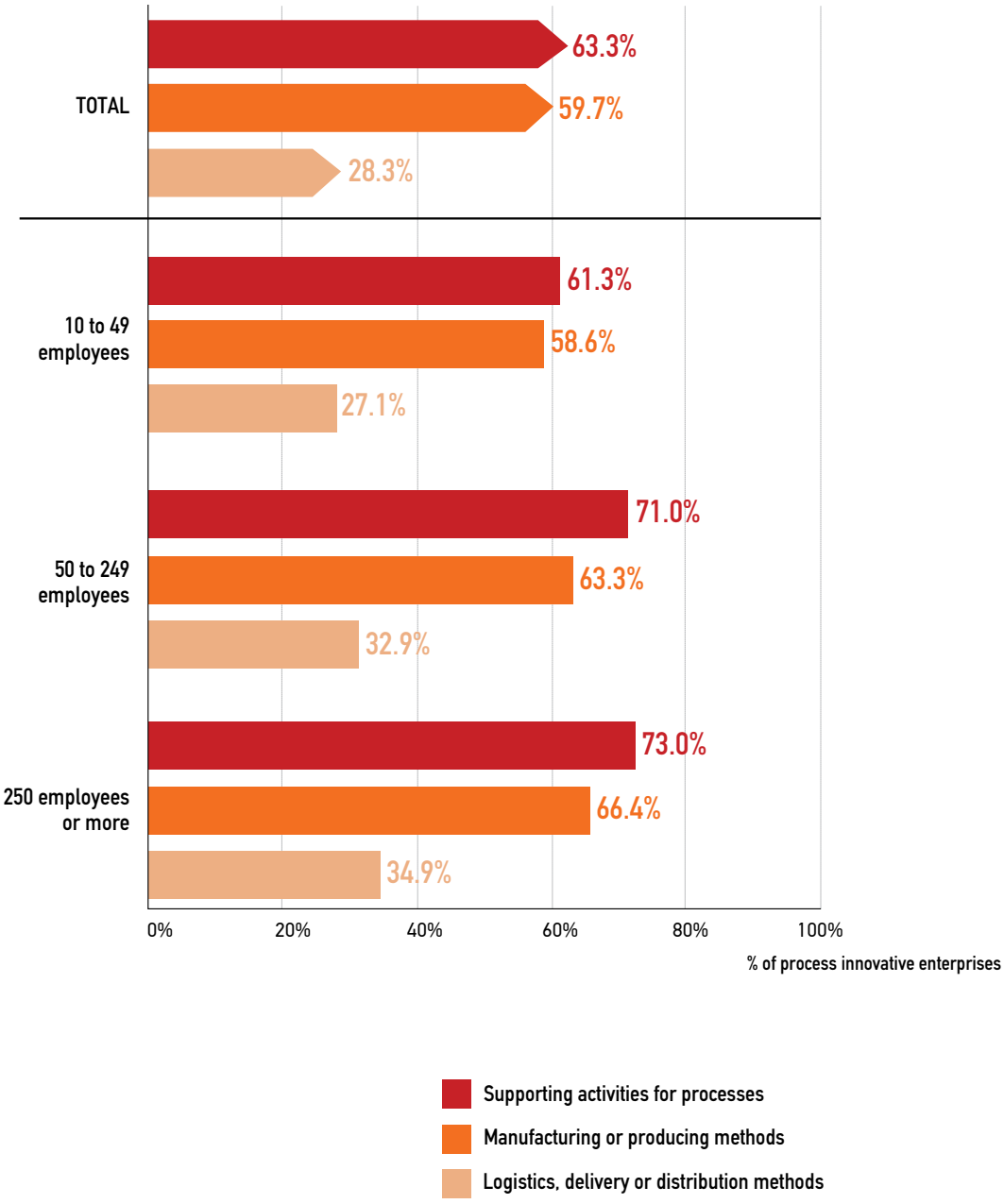
Figure 14. Process innovative enterprises by specific type of innovation, 2010-2012 (% of process innovative enterprises).



The extent of innovation in the three specific types of process innovation was similar in all three size classes. Supporting activities for processes came first, methods of manufacturing / producing products second and third the delivery / distribution methods for products.

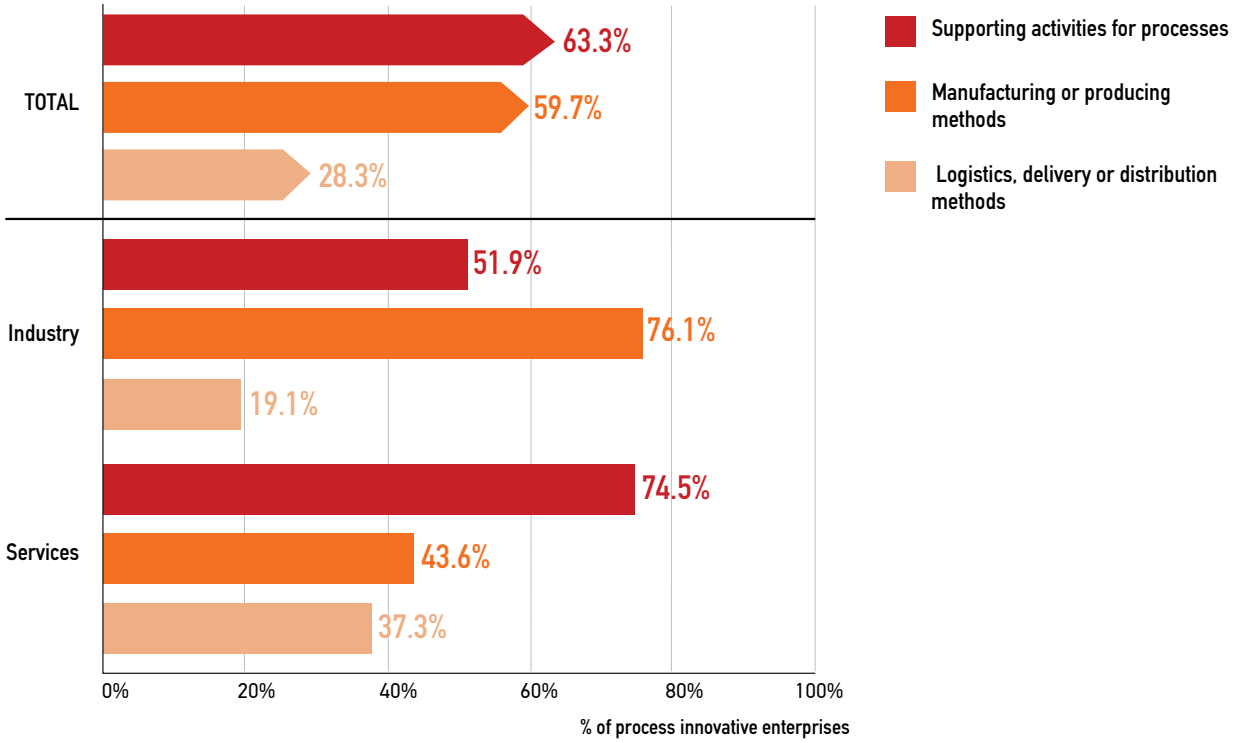
The share of innovation in each type increased with the enterprise size.

Figure 15. Process innovative enterprises by specific type of innovation and by size class, 2010-2012 (% of process innovative enterprises in each size class).



In terms of sectors of economic activity, the extent of innovation in the three specific types differed. The Industry sector was dominated by enterprises with innovation in methods of manufacturing / producing products with 76.1%, while in the Services sector the highest share of enterprises (74.5%) innovated in supporting activities for processes.

Figure 16. Process innovative enterprises by specific type of innovation and by main sector of economic activity, 2010-2012 (% of process innovative enterprises in each sector).



1.3.3 Introduction of product and/or process innovation to the market

During the period 2010-2012, 46.3% of product and/or process innovative enterprises introduced new to the market products. Process innovations new to the market accounted for 20.3% of product and/or process innovative enterprises.

Figure 17. Product and/or process innovative enterprises new to the market, 2010-2012 (% of product and/or process innovative enterprises).

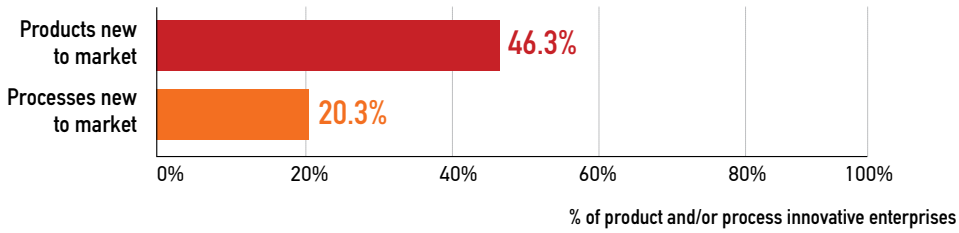
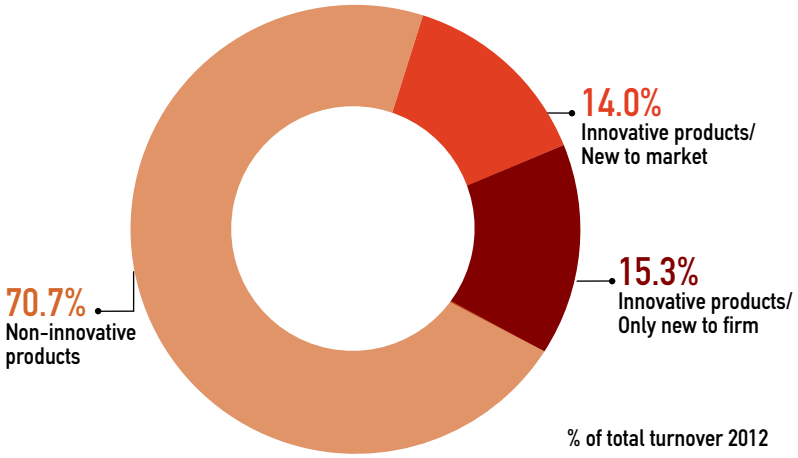


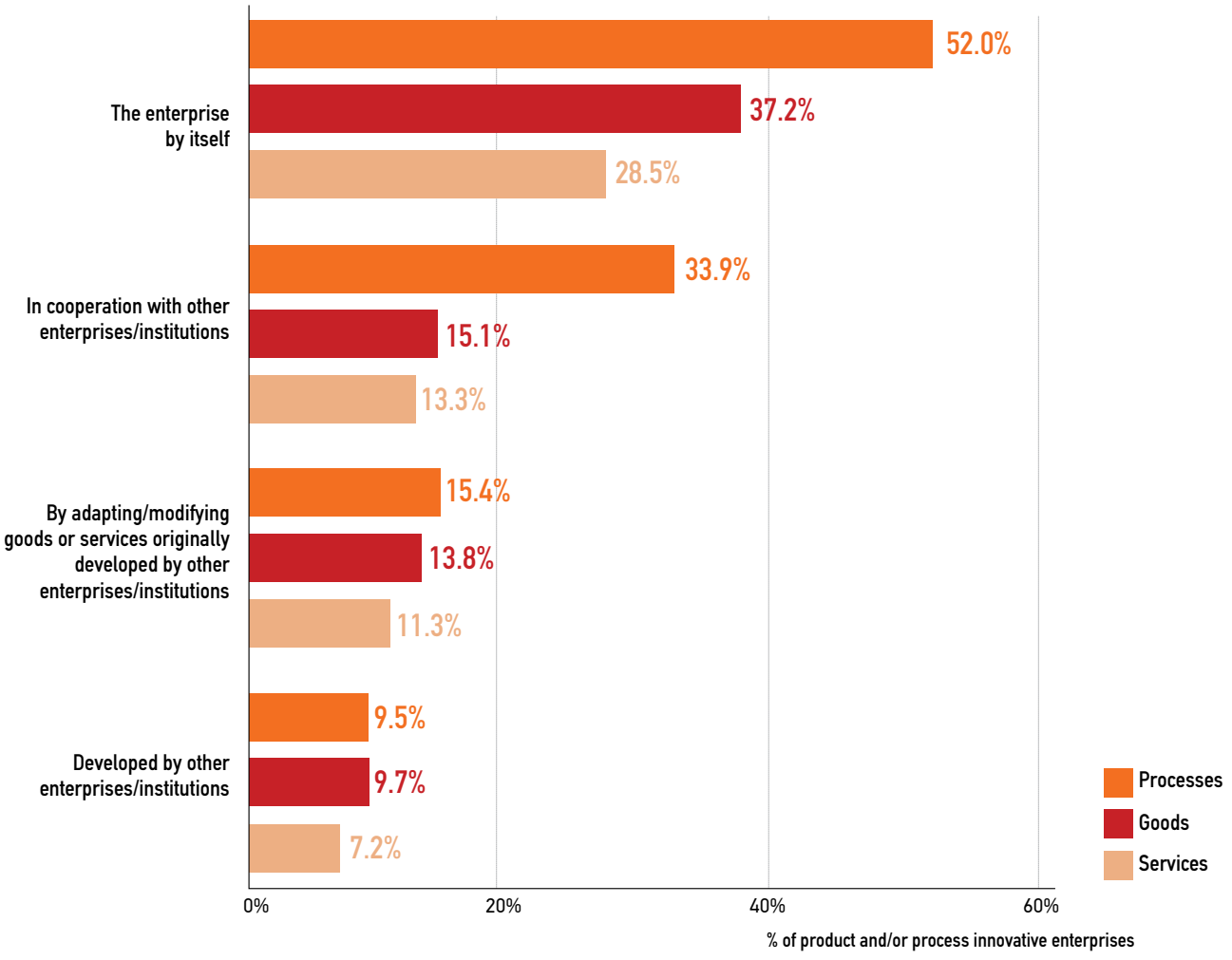
Figure 18. Distribution of turnover from innovative / non-innovative products, 2012 (% of total turnover 2012).

The contribution of product innovations to the total turnover of product innovative enterprises reached 29.3% in 2012. 14.0% resulted from products new to the market and 15.3% from products only new to the enterprise.



Most enterprises developed product and/or process innovations by themselves, exceeding 50% in process innovations. This was followed by enterprises which developed innovations in co-operation with other enterprises or institutions. Few enterprises developed innovations by adapting or modifying products and processes originally developed by other enterprises or institutions both in goods / services and in process innovations. The development of innovations only by other enterprises or institutions was limited in all cases.

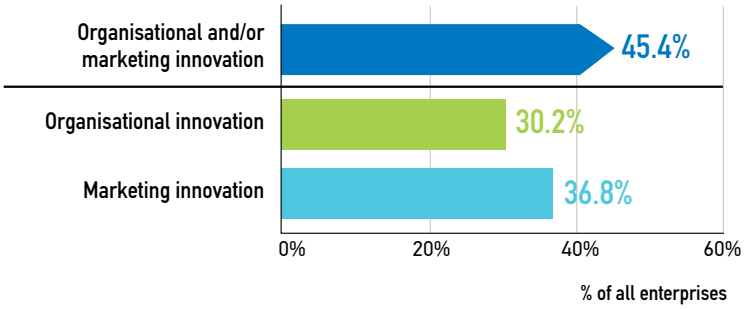
Figure 19. Development of product and/or process innovations, 2010-2012 (% of product and/or process innovative enterprises).



1.4. Organisational and/or marketing innovation

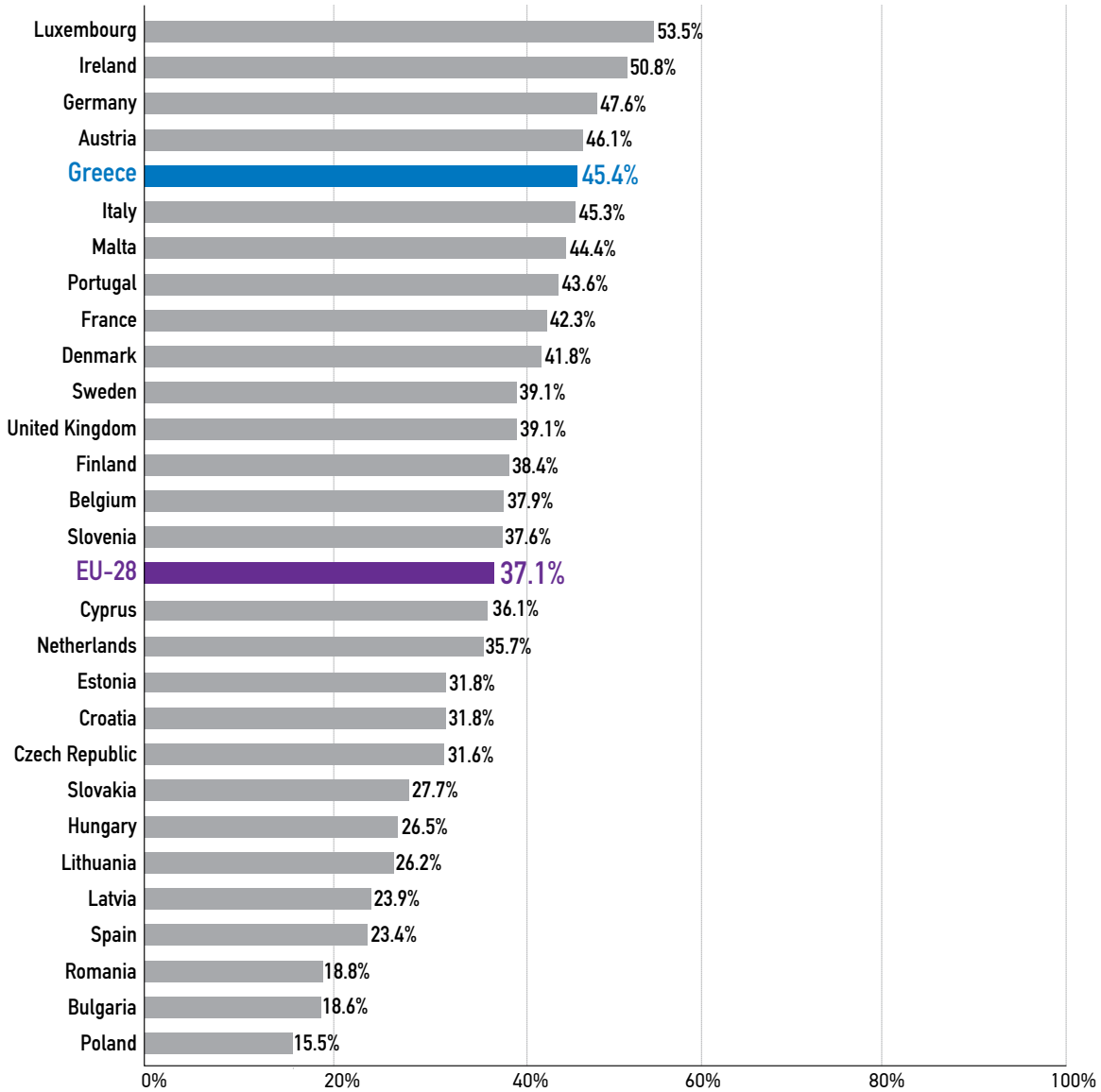
Organisation and/or marketing innovative enterprises represented 45.4% of all enterprises in the survey population, prevailing over product and/or process innovation (34.3%). Organisational innovation was reported by 30.2% and marketing innovation by 36.8% of all enterprises.

Figure 20. Organisation and/or marketing innovative enterprises by type of innovation, 2010-2012 (% of all enterprises).



Greece ranks 5th in organisational and/or marketing innovation with 45.4%, while the EU-28 average is 37.1%.

Figure 21. Organisation and/or marketing innovative enterprises in the EU-28 member states, 2010–2012 (% of all enterprises).

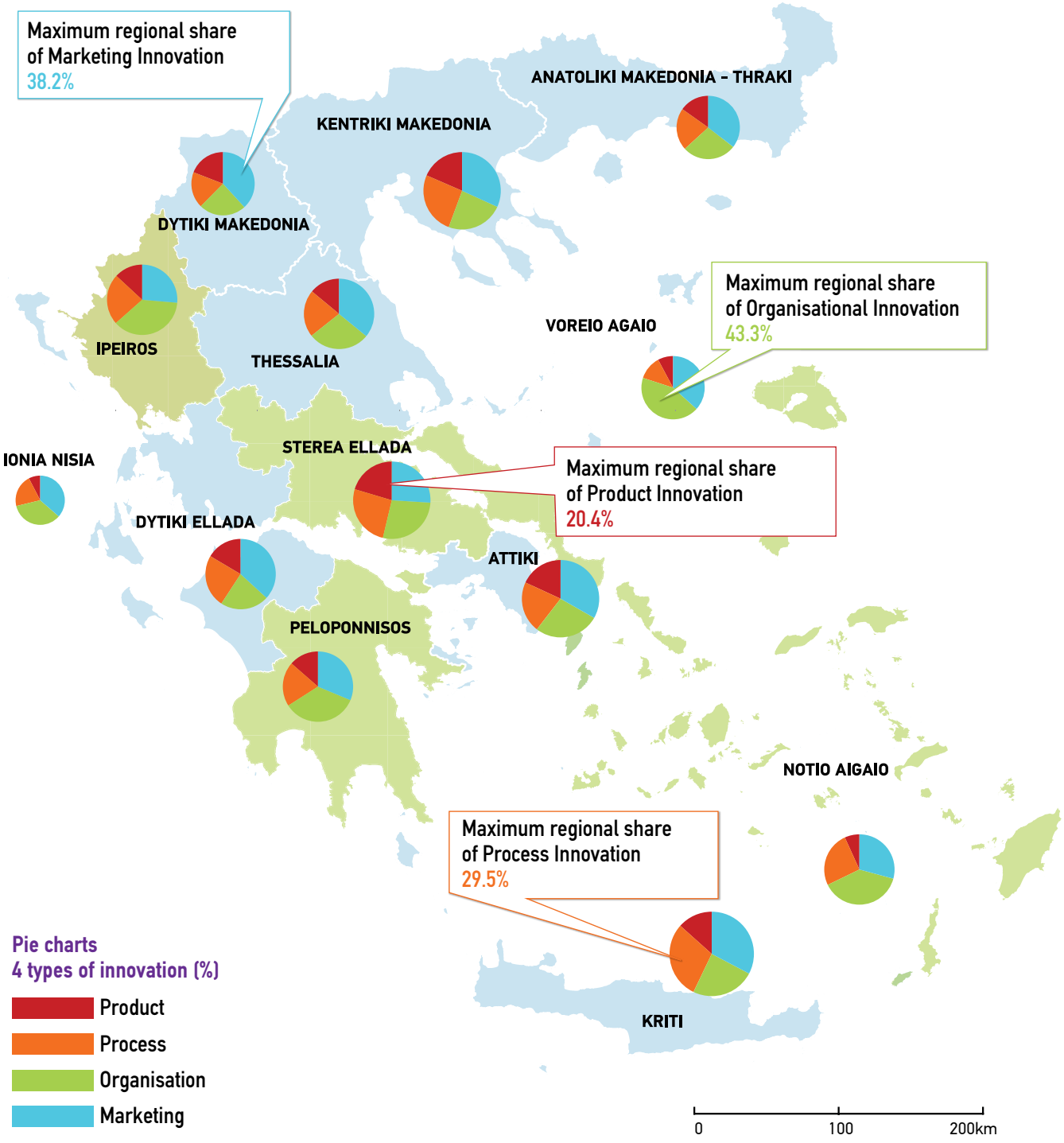


Map 3 illustrates the distribution of the four types of innovation in Greek regions.

A pie chart showing the distribution of the four types of innovation has been allocated to each region and its size corresponds to the total share of innovation therein.

Organisational and marketing innovation were dominant in Greek enterprises in all regions. More specifically, marketing innovation came first in 8 regions (marked blue on the map) and organisational innovation (marked green on the map) led in 5 regions. It should be noted though that in all regions, all four types of innovation existed, as shown by the pie charts.

Map 3. Distribution of types of innovation by region, 2010-2012 (% of sum of all types of innovation in each region).



1.4.1 Organisational innovation

Organisational innovation refers to the first-time implementation of a new or significantly improved organisational method in three individual areas: business practices for organising procedures (e.g. supply chain management, quality management, etc.), organising work responsibilities and decision making (e.g. new system of employee responsibilities, team work, etc.) and organising external relations (e.g. first use of outsourcing or sub-contracting, etc.). It is important to note that an enterprise can introduce innovations in more than one of the above areas.

The majority (71.3%) of organisation innovative enterprises implemented new methods of organising work and decision making. This was followed by enterprises with innovation in business practices for organising procedures with 66.3%, and lastly, 45.2% innovated in methods of organising their external relations.

Figure 23. Organisation innovative enterprises by specific type of innovation, 2010-2012 (% of organisation innovative enterprises).

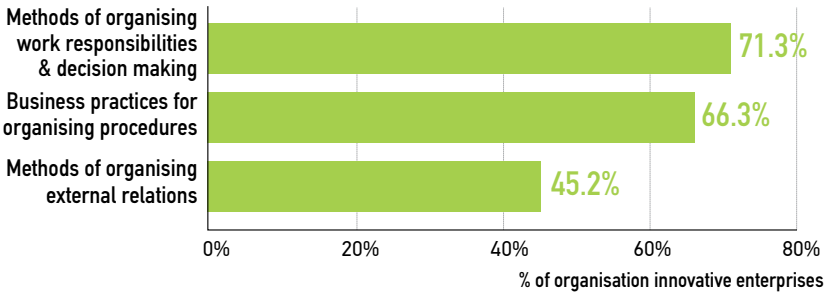
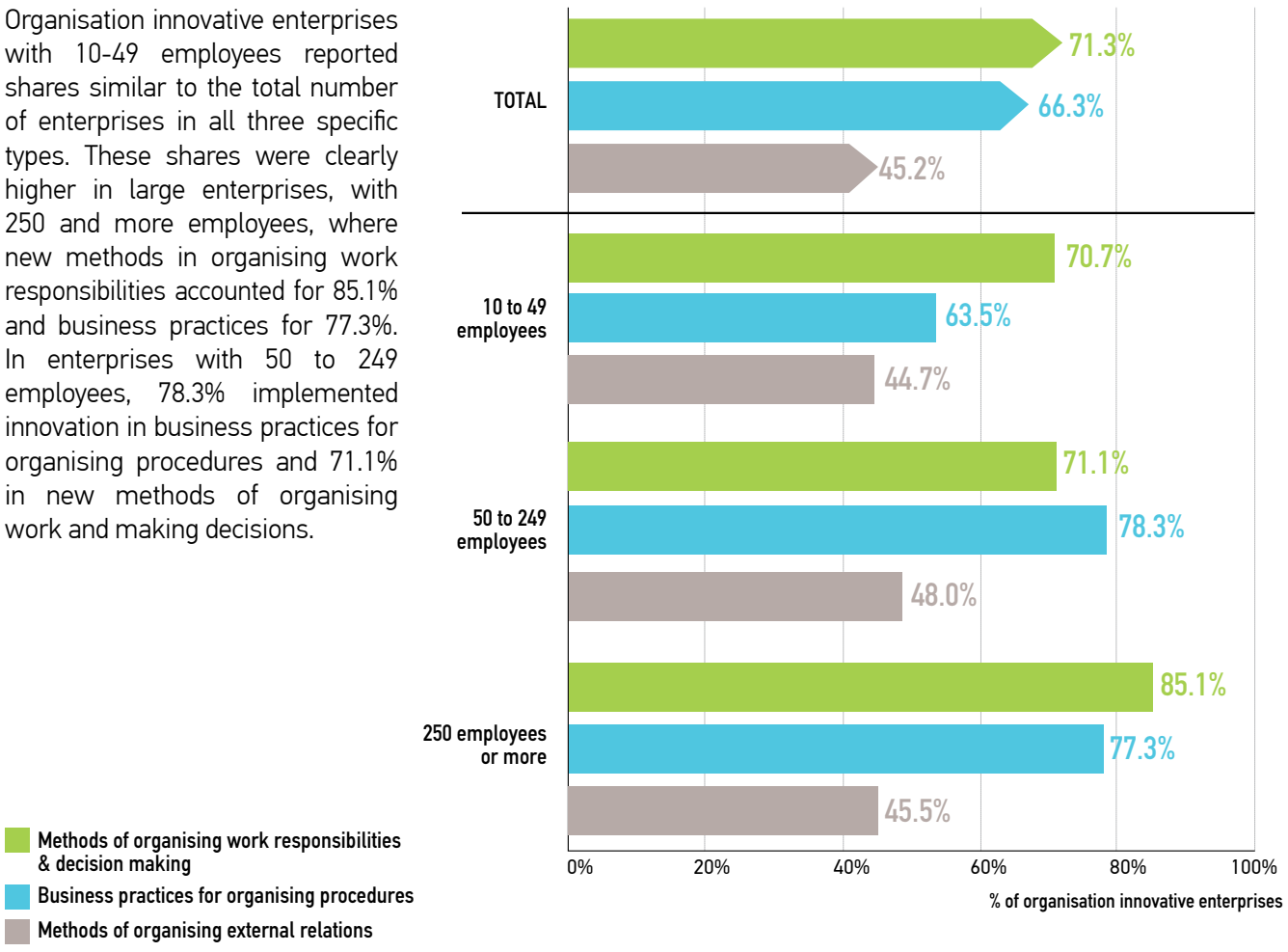


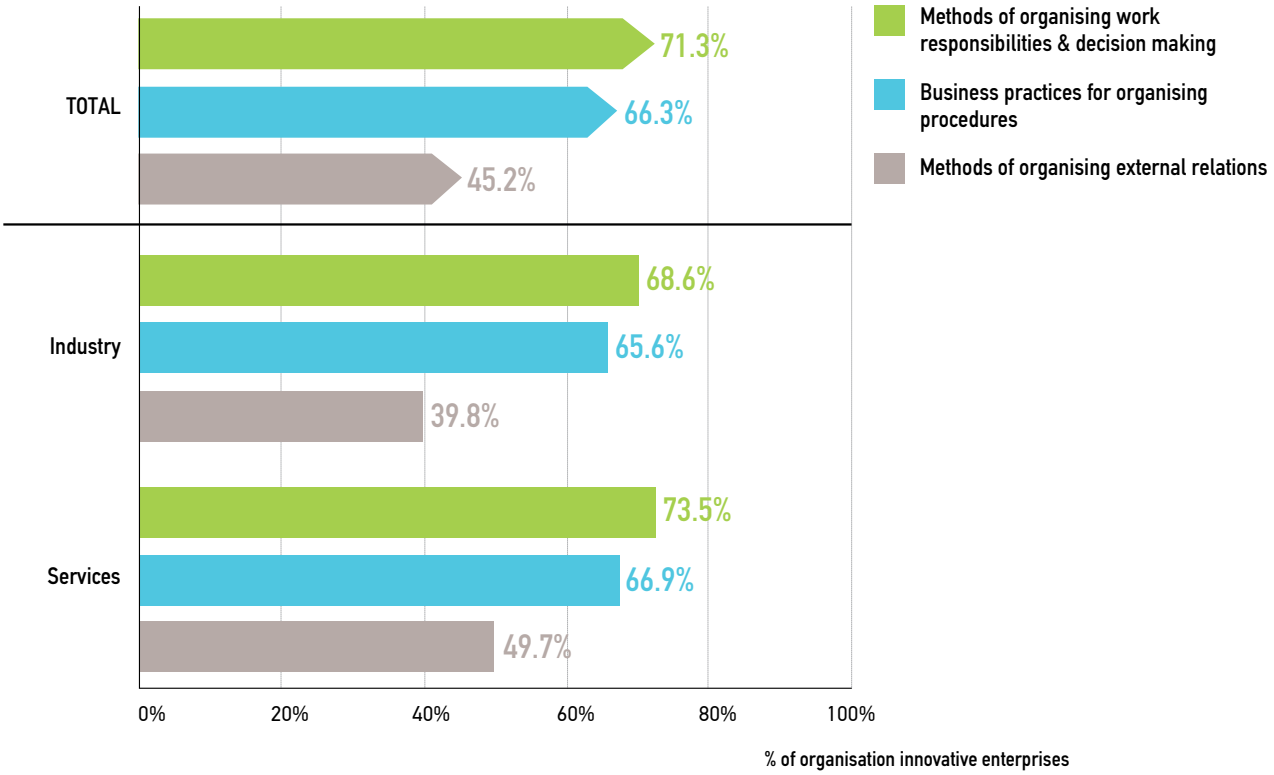
Figure 24. Organisation innovative enterprises by specific type of innovation and by size class, 2010-2012 (% of organisation innovative enterprises in each size class).

Organisation innovative enterprises with 10-49 employees reported shares similar to the total number of enterprises in all three specific types. These shares were clearly higher in large enterprises, with 250 and more employees, where new methods in organising work responsibilities accounted for 85.1% and business practices for 77.3%. In enterprises with 50 to 249 employees, 78.3% implemented innovation in business practices for organising procedures and 71.1% in new methods of organising work and making decisions.



In comparison with the total number of enterprises, the extent of innovation in all three specific types was slightly lower in the Industry sector but higher in the Services sector. Methods of organising external relations of the enterprises presented the highest difference in their share of organisation innovative enterprises between Industry and Services. In particular, 39.8% of organisation innovative enterprises in the Industry sector innovated in that type while the respective share in the Services sector reached 49.7%.

Figure 25. Organisation innovative enterprises by specific type of innovation and by main sector of economic activity, 2010-2012 (% of organisation innovative enterprises in each sector).



1.4.2 Marketing innovation

Marketing innovation involves the implementation of a new marketing strategy, which differs significantly from the existing marketing methods of the enterprise and has not been used before, in four areas: aesthetic design / packaging, placement, promotion and/or pricing of the product. Excluded from this are seasonal, regular and other routine changes in marketing methods.

As can be seen in Figure 26, the majority of marketing innovative enterprises introduced new methods of promoting their products (60.6%). More than half of the enterprises carried out marketing innovations in the aesthetic design or packaging of the product (54.8%). Fewer enterprises implemented innovative methods of pricing products (39.6%) as well as new methods of product placement / sales (30.1%).

Figure 26. Marketing innovative enterprises by specific type of innovation, 2010-2012 (% of marketing innovative enterprises).

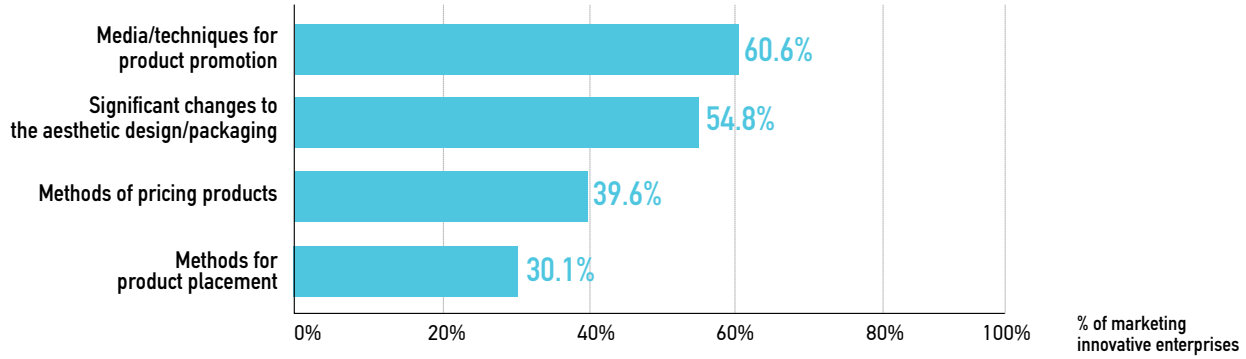
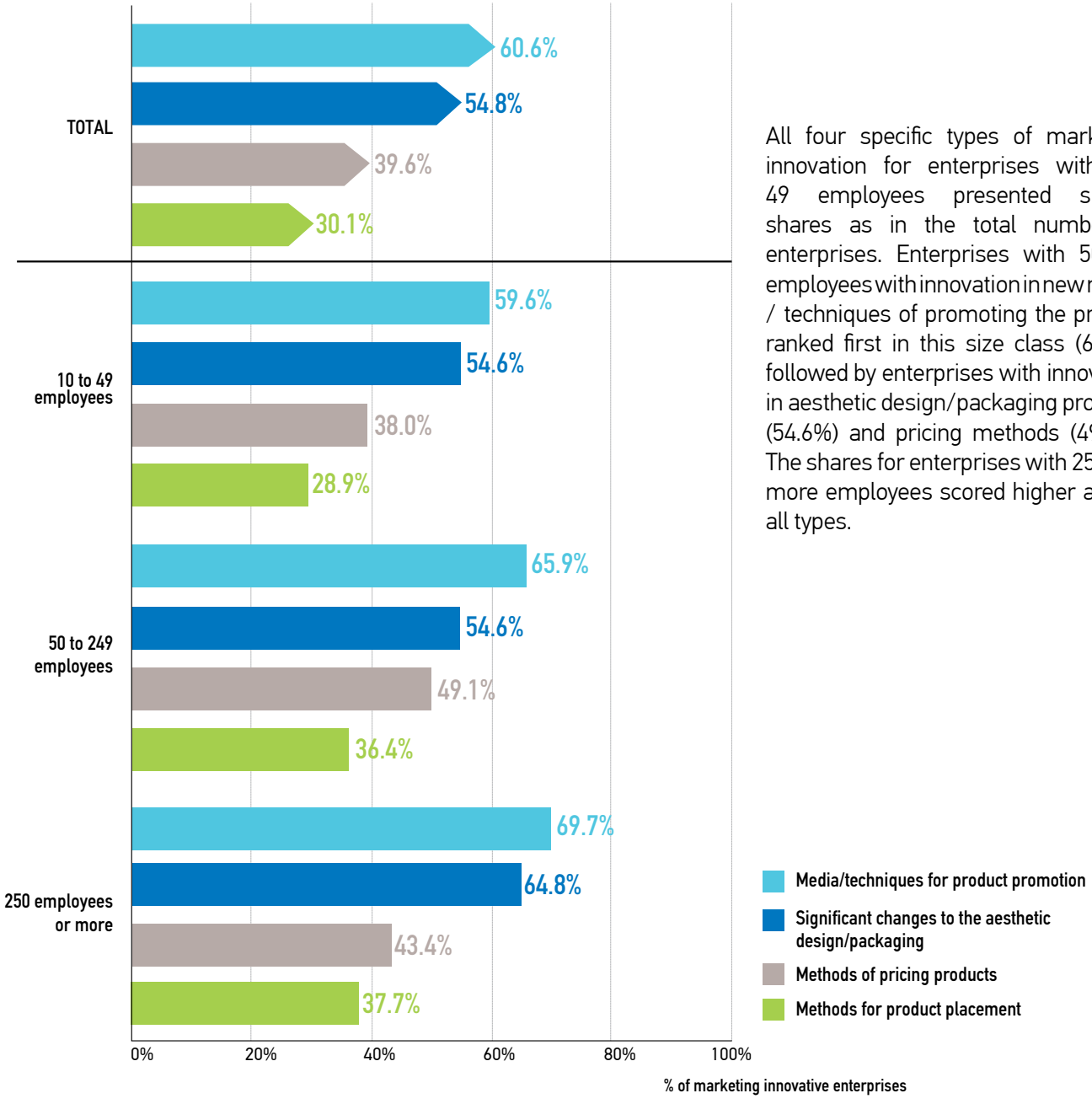


Figure 27. Marketing innovative enterprises by specific type of innovation and by size class, 2010-2012 (% of marketing innovative enterprises).

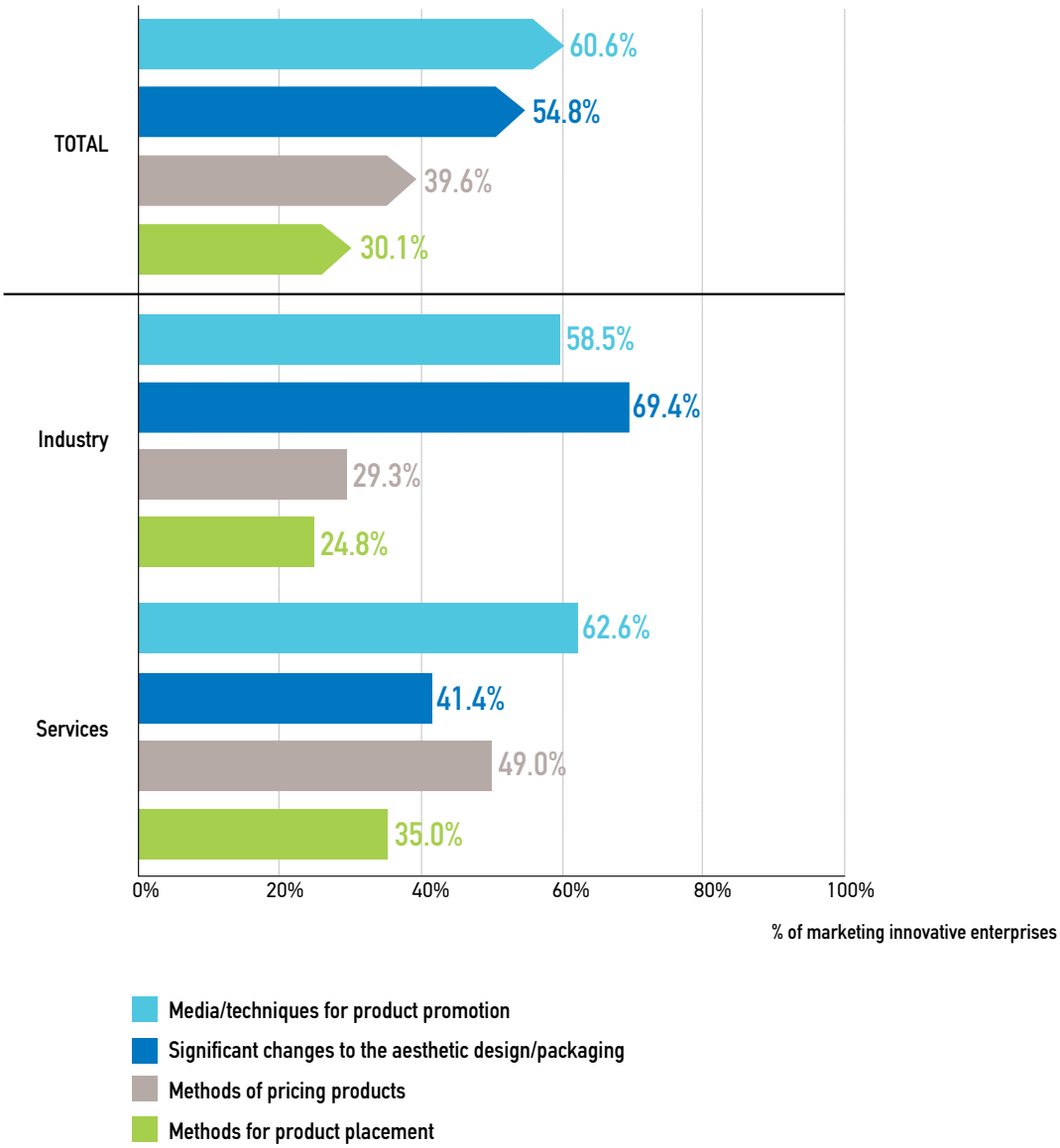


All four specific types of marketing innovation for enterprises with 10-49 employees presented similar shares as in the total number of enterprises. Enterprises with 50-249 employees with innovation in new media / techniques of promoting the product ranked first in this size class (65.9%) followed by enterprises with innovation in aesthetic design/packaging products (54.6%) and pricing methods (49.1%). The shares for enterprises with 250 and more employees scored higher across all types.

In the Industry sector, marketing innovative enterprises mainly implemented innovations in aesthetic design / packaging of the products (69.4%) and in media / techniques of promoting products (58.5%). The respective shares of new methods of pricing (29.3%) and placement / sales of products (24.8%) were appreciably lower.

In the Services sector, innovation in media / techniques of promoting products was the leading type of marketing innovation (62.6%). It was followed by innovation in methods of pricing (49%), aesthetic design / packaging of products (41.4%) and lastly, innovation in the methods of placement /sales of products (35%).

Figure 28. Marketing innovative enterprises by specific type of innovation and by main sector of economic activity, 2010-2012 (% of marketing innovative enterprises in each sector).



Chapter 2

Innovation-relevant activities and factors

The chapter analyses the activities and factors which favour the development of product and/or process innovations.

Firstly, it presents the innovation activities and expenditures for product and/or process innovative enterprises.

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. More analytically, innovation activities include all types of Research and Development (R&D), 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.

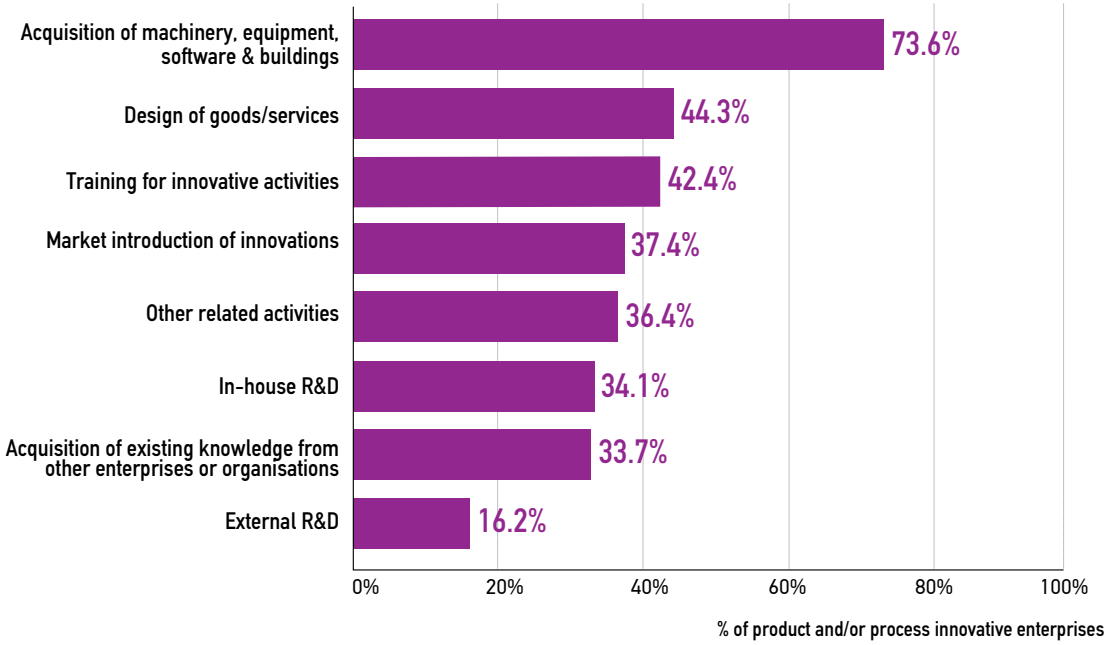
Secondly, key factors influencing the development and the competitiveness of product and/or process innovations are analysed, such as information sources, co-operations with other organisations for the development of product and/or process innovations and methods for improving the competitiveness of these innovations.

Finally, the contribution of the Greek public sector in developing innovation through procurement contracts with enterprises is assessed.

2.1 Expenditures for innovation activities

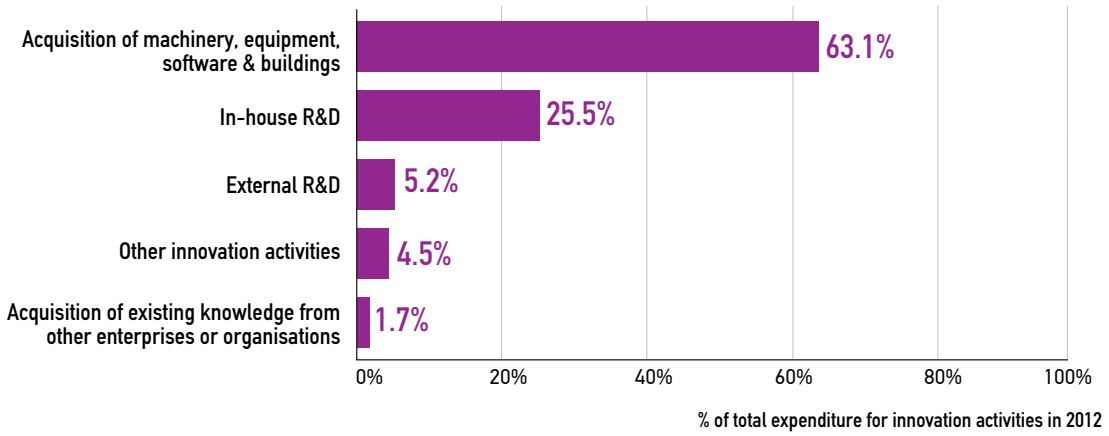
Most product and/or process innovative enterprises engaged in the acquisition of machinery, equipment, software and buildings for the implementation of their innovations (73.6%). Others invested in design (44.3%), training of personnel for innovation activities (42.4%) as well as in actions for promoting / introducing innovations to the market (37.4%). 34.1% of product and/or process innovative enterprises engaged in Research and Development and/or chose to acquire existing knowledge from other enterprises or organisations (33.7%). Those enterprises which engaged in external R&D contracted out to third parties had a far lower share (16.2%).

Figure 29. Innovation activities, 2010-2012 (% of product and/or process innovative enterprises engaged in each one).



Total expenditure for innovation activities in 2012 reached **1.9 billion euros**. This mainly involved the acquisition of machinery, equipment, software and buildings (63.1% of total expenditure). It was followed by expenditures for in-house R&D, accounting for 25.5%, while expenditures for all other innovation activities was far lower.

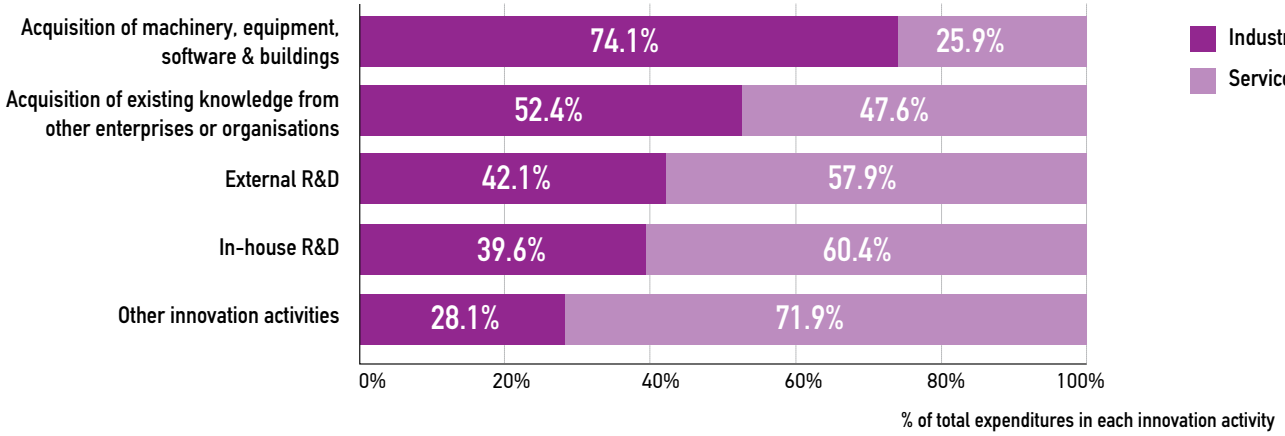
Figure 30. Distribution of expenditures for innovation activities, 2012 (% of total expenditure for innovation activities).



Note. Other innovation activities include training, market introduction of innovations, design of goods/services and other related activities.

Figure 31 shows the distribution of expenditures for each innovation activity in the two main sectors of economic activity – Industry and Services. The largest share of expenditures for external and internal R&D was spent by the Services sector (57.9% and 60.4% respectively), while the Industry sector focused in the acquisition of machinery, etc. (74.1% of the expenditure for this activity).

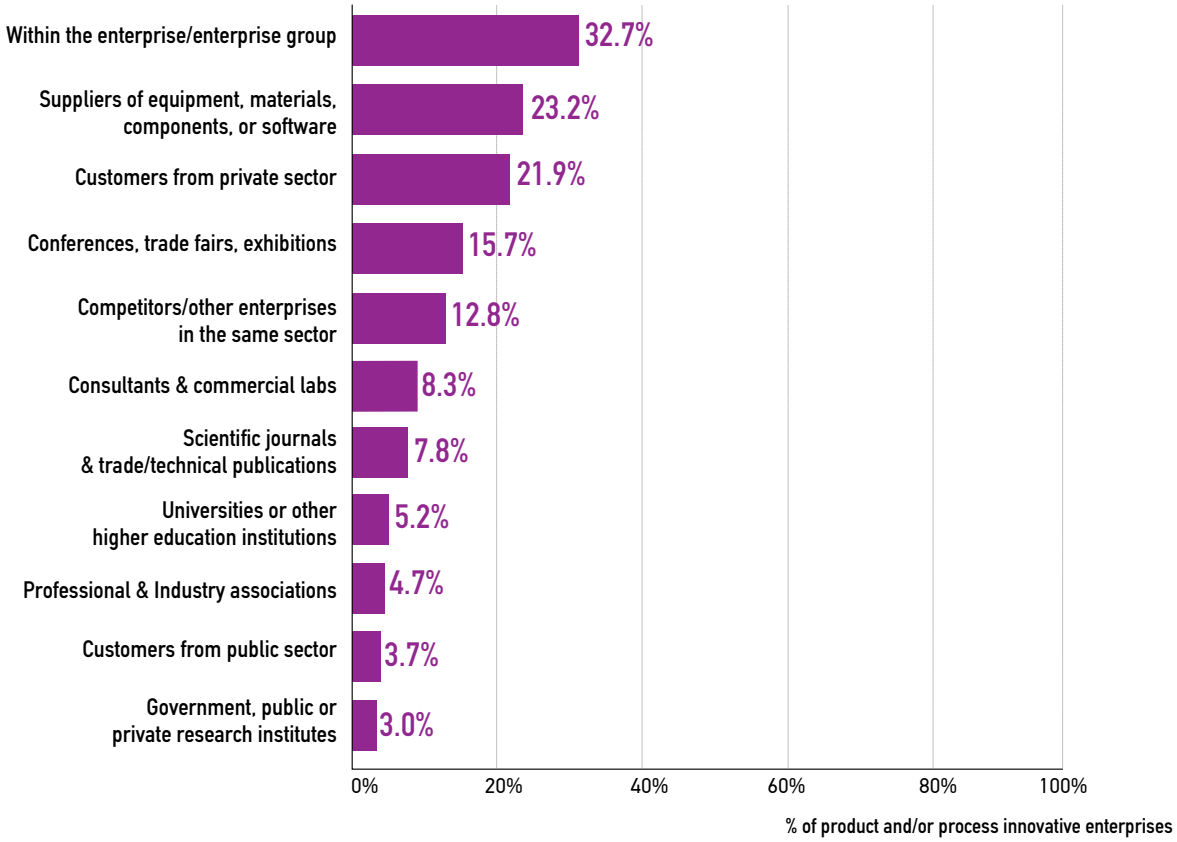
Figure 31. Distribution of expenditures for innovation activities by main sector of economic activity, 2012 (% of total expenditures in each activity).



2.2 Sources of information and co-operations

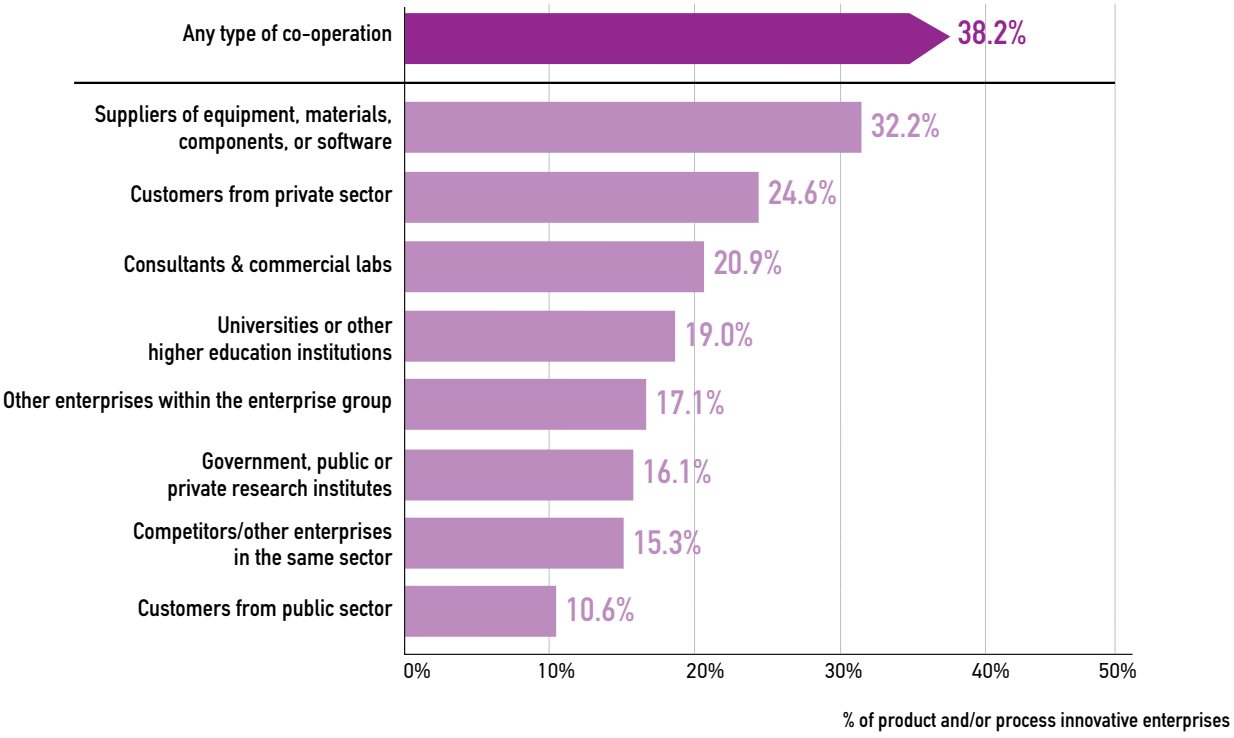
Product and/or process innovative enterprises mainly chose sources of information from within the enterprise itself or the enterprise group (32.7%) for the development of their innovations. Suppliers of equipment, materials, components, or software came second with 23.2% followed by customers from the private sector (21.9%) and conferences, trade fairs and other exhibitions (15.7%).

Figure 32. Sources of information as highly important, 2010-2012 (% of product and/or process innovative enterprises).



Co-operation in innovation means an enterprise actively participates with other enterprises or organisations in innovation activities, without it being necessary for both or all of the co-operating partners to have commercial benefits. For 38.2% of product and/or process innovative enterprises, development of innovations resulted from co-operation with other enterprises or organisations. The main co-operation partners were the suppliers of equipment, materials, components, or software, with 32.2%, customers from the private sector, with 24.6%, consultants and commercial labs (20.9%) and universities or other higher education institutions (19%).

Figure 33. Product and/or process innovative enterprises engaged in co-operation by type of co-operation, 2010-2012 (% of product and/or process innovative enterprises).



In terms of the main sectors of economic activity, product and/or process innovative enterprises engaged in any type of co-operation reached 43.7% in the Services sector and 32.3% in the Industry sector.

Figure 34. Product and/or process innovative enterprises engaged in any type of co-operation by main sector of economic activity, 2010-2012 (% of product and/or process innovative enterprises).

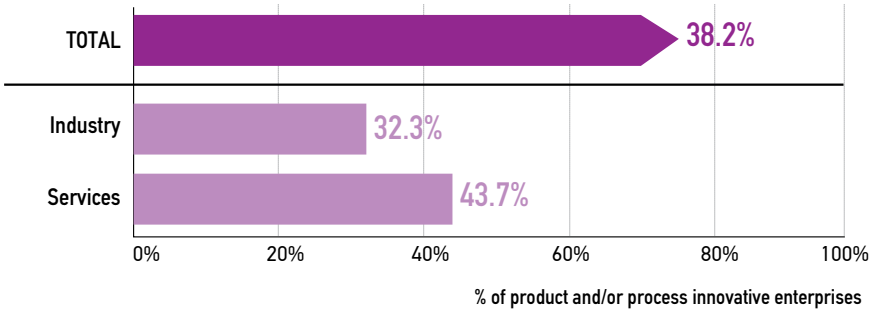
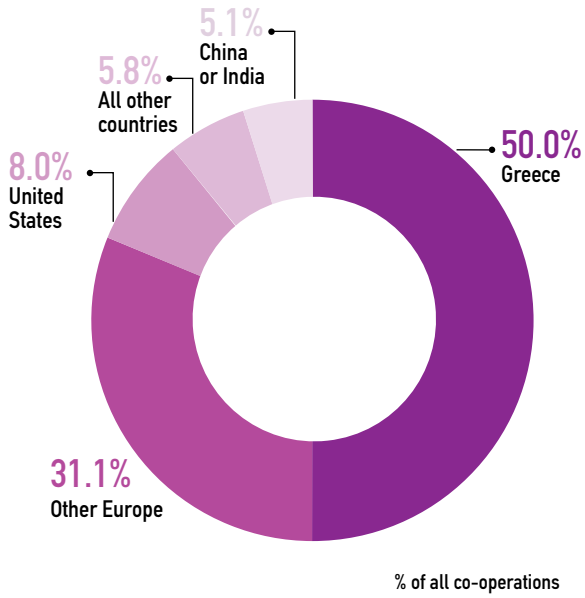


Figure 35. Distribution of product and/or process innovative enterprises engaged in co-operation by location of partners, 2010-2012 (% of all co-operations).



Concerning the location of co-operation partners, 50% were located in Greece, followed by partners located in other European countries (31.1%). Fewer co-operations were reported with partners in the US (8%), in other countries (5.8%) and in China / India (5.1%).

2.3. Methods for improving competitiveness of innovations

Product and/or process innovative enterprises rated lead time advantages, with 22.5%, and complexity of goods or services, with 22.1%, as the most effective means of improving competitiveness of their innovations.

Less importance was given to secrecy (including non-disclosure agreements) (12.6%) and to trademarks (12.1%). Few product and/or process innovative enterprises considered copyright and patents as highly effective (5.9% and 5.8% respectively).

Figure 36. Highly important methods for maintaining or increasing competitiveness in product and/or process innovative enterprises (% of product and/or process innovative enterprises).

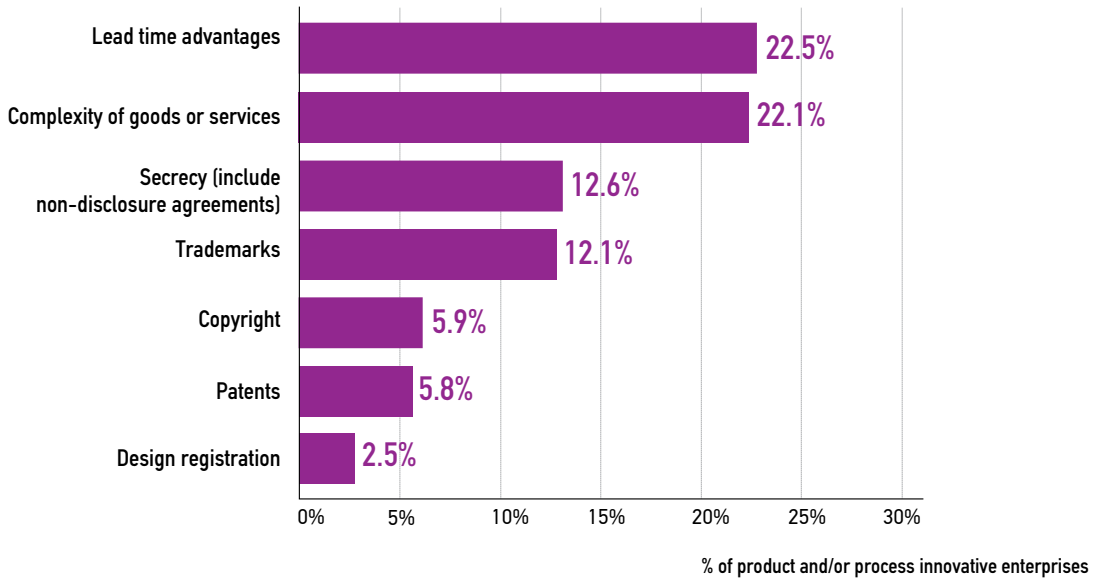
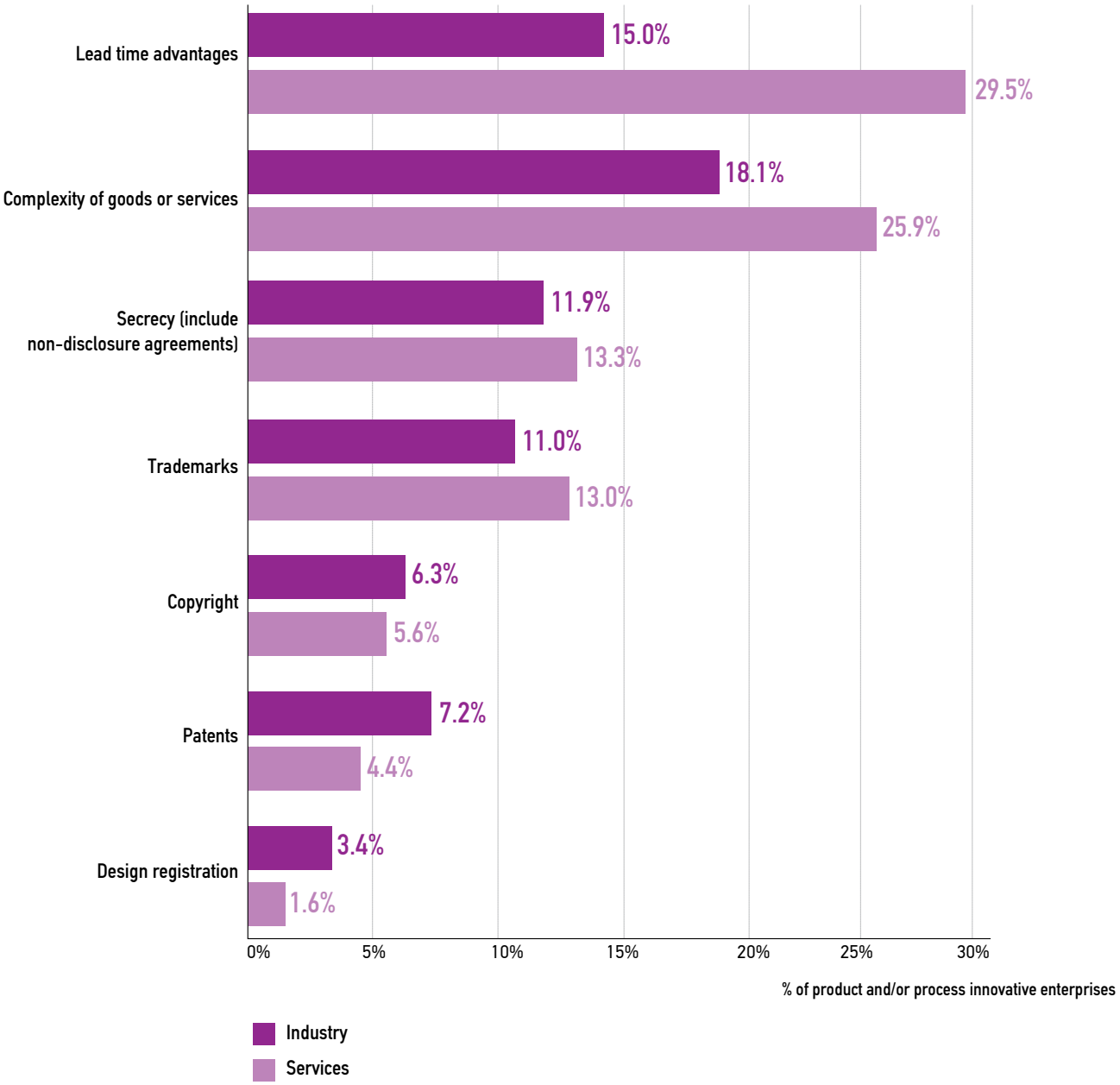


Figure 37 compares the effectiveness of these methods within the two main sectors of economic activity. For the Services sector, as with all product and/or process innovative enterprises, lead time advantages and complexity of goods or services (29.5% and 25.9% respectively) were the most effective methods. The corresponding figures for the Industry sector were far lower (15% and 18.1% respectively). Conversely, the share of product and/or process innovative enterprises which considered patents and copyright to be effective for their competitiveness reached 7.2% and 6.3% respectively in Industry, higher than in the Services sector.

Figure 37. Highly important methods for maintaining or increasing competitiveness in product and/or process innovative enterprises by main sector of economic activity, 2010-2012 (% of product and/or process innovative enterprises in each sector).

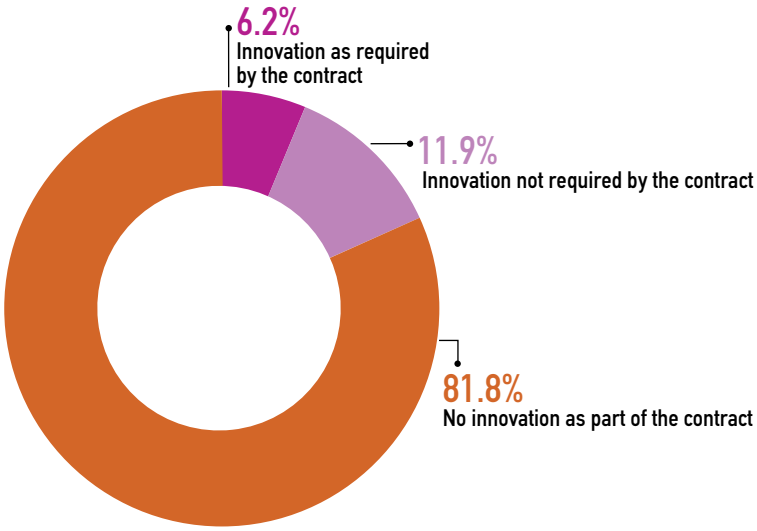


2.4. Innovation in public procurement contracts

The role of the public sector, through the procurement contracts with enterprises for the provision of goods or services, is acknowledged internationally as particularly significant in leveraging innovation.

When asked, 6.2% of enterprises which had procurement contracts with the Greek public sector reported that they undertook innovation as a requirement of the procurement contract. 11.9% of them carried out innovation without this being required by the procurement contract. The highest share of enterprises with procurement contracts with the Greek public sector did not produce any innovation at all (81.8%).

Figure 38. Innovations in procurement contracts with Greek public sector, 2010-2012 (% of all enterprises having contracts with Greek public sector).



The percentage of Greek enterprises which carried out innovation under procurement contracts with organisations from the foreign public sector was higher. In particular, 14.7% did so as a requirement of the procurement contract while 27.4% without it being required by the contract.

Chapter 3

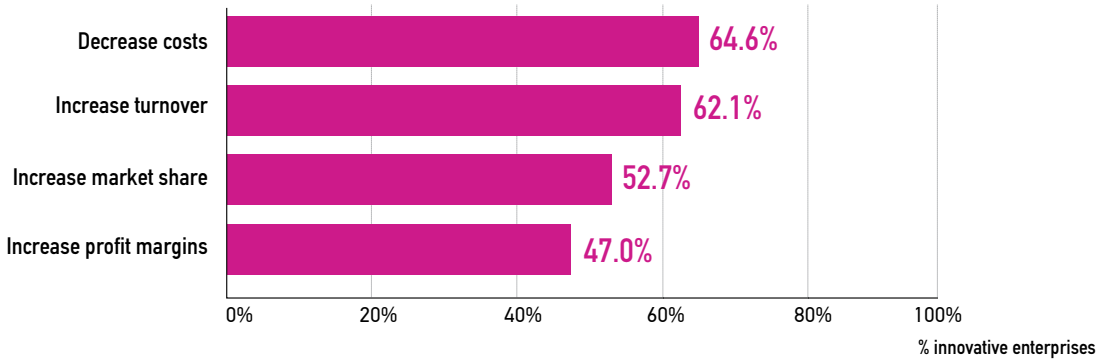
Growth of innovation

The chapter presents the goals, strategies and obstacles that innovative enterprises reported as influencing their growth during the period 2010- 2012.

3.1 Goals of innovative enterprises

The main goals of innovative enterprises were the decrease of costs (64.6%) and the increase of turnover (62.1%). These were followed by the increase of market share (52.7%) and the increase of profit margins (47%).

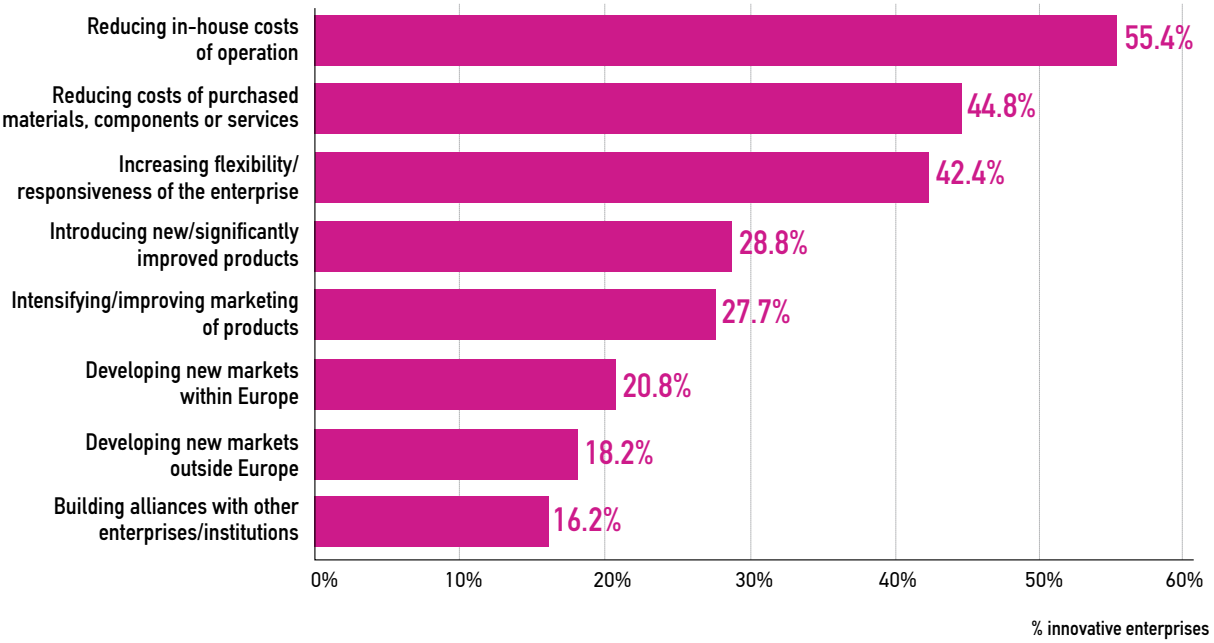
Figure 39. Highly important goals in innovative enterprises, 2010-2012 (% of all innovative enterprises).



3.2 Strategies of innovative enterprises

The reduction of costs for in-house operations and/or for purchased materials, components or services were the most important strategies in innovative enterprises with percentages of 55.4% and 44.8% respectively. Next came increasing flexibility / responsiveness, at 42.4%, while other strategies accounted for lower shares. Only 16.2% of innovative enterprises considered strategies of building alliances with other enterprises or institutions as highly important.

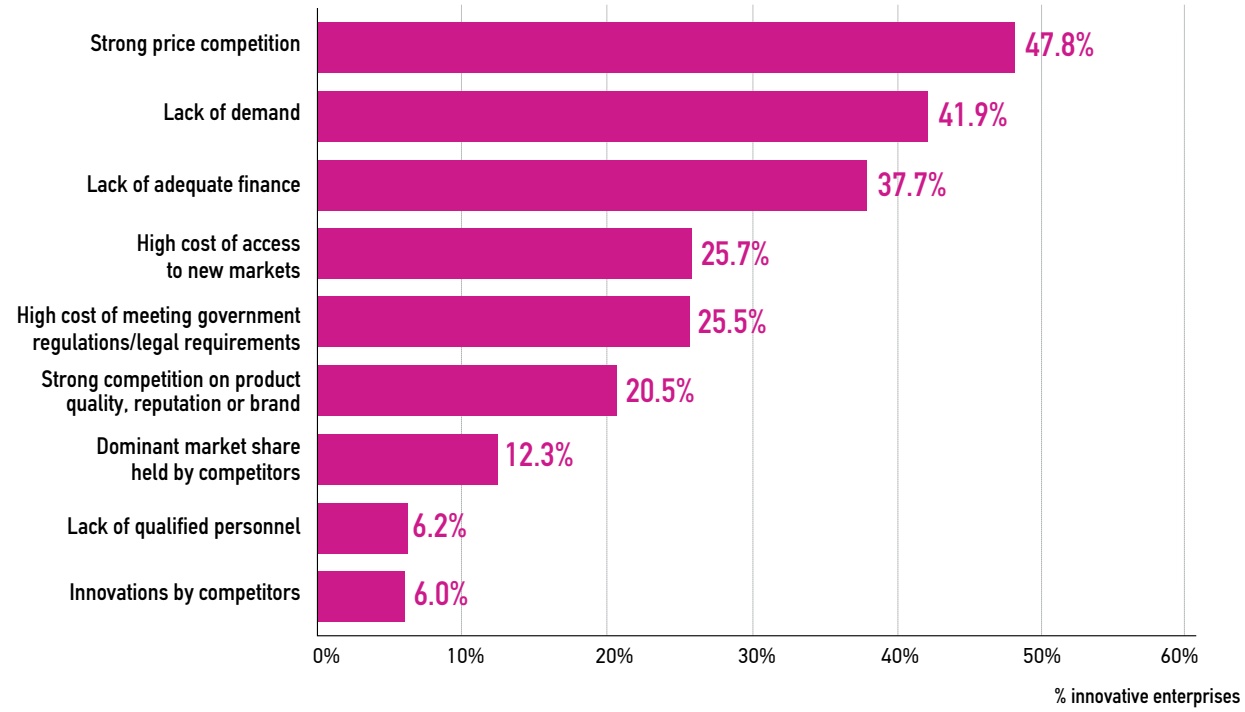
Figure 40. Highly important strategies in innovative enterprises, 2010-2012 (% of all innovative enterprises).



3.3 Obstacles for innovative enterprises

The main obstacles for innovative enterprises were strong price competition (47.8%) and lack of demand (41.9%). These were followed by lack of adequate finance (37.7%), the high cost of accessing new markets (25.7%) and the high cost of meeting government regulations or legal requirements (25.5%).

Figure 41. Highly important obstacles in innovative enterprises, 2010-2012 (% of all innovative enterprises).



Chapter 4

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[3] 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, 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 **2010 to 2012**.

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.

[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)

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 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. Product innovation is implemented when the product 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 licenses. 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, with which a Memorandum of Understanding[7] was signed with the objective of implementing the surveys for Innovation and for Research & Development in enterprises.

[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://www.statistics.gr/portal/page/portal/ESYE/BUCKET/General/NWS_memorandum_EKT.pdf

Survey population

The target population of the CIS survey for the three-year period 2010-2012 was the total population of enterprises with 10 or more employees in any of the following sectors of economic activity:

Sector of economic activity (NACE rev2)

Industry	B (05-09): Mining and Quarrying 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 vehicles 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 14,987 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	6,092	790	150	7,032
Services	6,924	911	120	7,955
TOTAL	13,016	1,701	270	14,987

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 2011) 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 and 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, 4,212 enterprises from the population participated in the survey with 214 being covered by census and 3,998 comprising the survey sample.

Data collection

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

The data collection was carried out using electronic questionnaires via a specially designed online platform, developed by EKT, that 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.

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 2,000 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.

metrics.ekt.gr

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