

Community Innovation Statistics

Is Europe growing more innovative?

Statistics in focus

SCIENCE AND
TECHNOLOGY

61/2007

Author

Sergiu-Valentin PARVAN

Contents

European enterprises engaged
in innovation activity 1

Cooperation on innovation
most developed in Lithuania
and Slovenia 4

Innovation improves the quality
of goods and services 5

Innovation in organisation and
marketing 6



Manuscript completed on: 26.04.2007
Data extracted on: 26.01.2007
ISSN 1977-0316
Catalogue number: KS-SF-07-061-EN-N
© European Communities, 2007

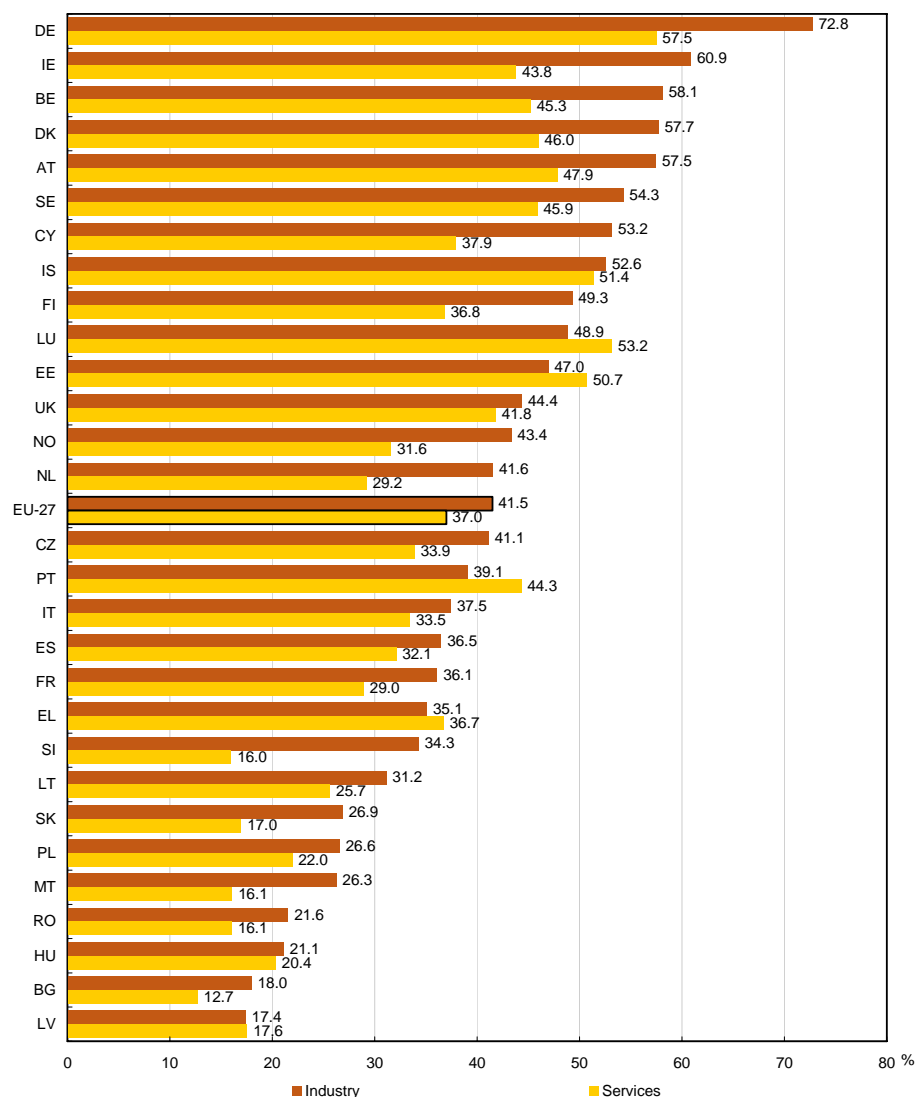
Innovation plays a key role in Europe. In 2004, more than 4 out of 10 EU-27 enterprises in industry were engaged in innovation activity. Germany was, among the EU Member States, the leader in innovation, both in industry and in services. In the European Union as a whole, more than one third (35.9%) of innovative enterprises introduced new or significantly improved products to the market.

European enterprises engaged in innovation activity

In 2004 the proportion of enterprises engaged in innovation activity varied from 72.8% in German industry to 12.7% in Bulgarian services (see Figure 1). The EU-27 totals were 41.5% in industry and 37.0% in services.

The proportion of enterprises engaged in innovation activity was generally higher in industry than in services. This was true for all Member States except Luxembourg, Estonia, Portugal and, to a lesser extent, Greece and Latvia.

Figure 1: Enterprises engaged in innovation activity as a percentage of all enterprises in industry and services, 2004



Source: Eurostat – Community Innovation Survey 2004

In seven Member States and Iceland more than half of all industrial enterprises were active in innovation. Germany (72.8%) ranked first followed by Ireland (60.9%) and Belgium (58.1%).

On the services side, only in three Member States and Iceland were more than half of the enterprises innovative. Germany again ranked first, with 57.5%, but this time was followed by Luxembourg (53.2%), Iceland (51.4%) and Estonia (50.7%).

Among the larger European countries, the United Kingdom, where 44.4% of enterprises in industry and 41.8% in services were innovative, came behind Germany's 72.8% and 57.5% respectively. In France, Italy and Spain the scores were even lower.

With the exceptions of Cyprus, Estonia and the Czech Republic, all the new Member States were at the bottom of the scale with shares generally lower than 30%.

Not all enterprises engaged in innovation activity introduced new or significantly improved products to the market (see Table 2). In fact, Bulgaria (56.4%), Sweden (52.4%) and Luxembourg (51.6%) were the only countries where more than 50% of all enterprises with innovation activity did so. In the

European Union as a whole, approximately one third of innovative enterprises (35.9%) introduced new or improved products to the market.

In 13 other EU Member States, this figure was between 40% and 50%. For example, in the United Kingdom 47.8% of enterprises with innovation activity introduced new or significantly improved products. France and Italy came behind with 38.6% and 31.1% respectively.

Cyprus and, to a lesser extent, Spain reported the lowest figures, with only 14.6% and 20.9% respectively of enterprises engaged in innovation activity introducing new or significantly improved products.

The proportion of enterprises engaged in innovation activity introducing new or improved products to the market was generally correlated with the enterprise's size. This correlation was true for EU-27 and for most individual countries. Exceptions are Latvia, where medium-sized enterprises achieved the highest score, and Bulgaria, Estonia, Luxembourg, Hungary, Austria and Sweden, where small enterprises introduced new or significantly improved products to the market more often than medium-sized enterprises.

Table 2: Enterprises which introduced new or improved products to the market as a percentage of enterprises engaged in innovation activity by sector and size class, 2004

	Total enterprises with innovation activity				Industry				Services			
	Total	10 to 49 employees	50 to 249 employees	More than 250 employees	Total	10 to 49 employees	50 to 249 employees	More than 250 employees	Total	10 to 49 employees	50 to 249 employees	More than 250 employees
EU-27	35.9	33.2	39.6	49.2	37.4	33.4	42.1	52.4	33.7	33.1	34.0	41.4
BE	40.7	38.5	44.0	53.1	41.0	38.1	43.2	59.0	40.3	39.0	45.4	40.8
BG	56.4	57.6	52.9	58.6	50.6	51.8	48.0	52.5	71.1	68.2	81.6	87.9
CZ	41.5	39.0	44.4	48.3	42.1	37.1	47.4	49.4	40.3	41.7	34.9	42.1
DK	47.7	46.2	49.3	58.0	46.9	41.6	56.2	61.2	48.6	51.4	36.4	52.0
DE	26.9	22.7	31.7	42.1	33.8	28.6	36.8	49.5	18.3	17.6	18.7	25.2
EE	41.9	43.7	35.4	44.7	37.2	39.2	32.6	39.1	47.2	47.3	44.1	68.8
IE	44.5	38.0	57.2	62.8	55.5	49.6	65.6	62.8	29.8	25.6	39.1	62.9
EL	44.4	43.3	47.6	54.2	44.3	43.6	46.1	48.3	44.5	42.9	50.4	63.6
ES	20.9	18.0	28.2	43.2	23.4	19.6	32.1	47.3	16.8	15.4	20.0	34.0
FR	38.6	34.1	43.3	57.9	42.6	36.7	47.2	63.2	33.6	31.3	36.6	48.2
IT	31.1	28.7	37.8	52.2	32.0	29.3	39.4	54.7	28.6	27.1	31.8	46.9
CY	14.6	11.6	21.7	40.9	16.0	13.8	25.8	18.2	12.3	7.7	16.3	63.6
LV	34.5	33.8	36.4	34.1	38.0	40.6	36.1	31.4	30.8	28.7	36.8	38.7
LT	34.5	30.9	38.4	43.8	39.9	36.7	42.5	43.9	27.6	25.6	30.7	41.9
LU	51.6	51.4	48.8	64.2	42.2	36.5	40.4	65.2	54.2	54.3	52.0	61.3
HU	36.3	36.5	33.9	40.7	37.1	35.5	39.3	38.6	35.0	37.8	18.3	50.0
MT	25.0	25.0	25.0	25.0	25.3	25.5	25.0	25.0	24.6	24.4	:	:
NL	48.3	47.5	48.3	56.8	49.5	46.9	51.8	59.1	47.2	47.9	42.5	52.2
AT	48.4	47.3	47.1	64.7	49.3	46.0	50.9	68.6	47.4	48.5	41.3	53.7
PL	46.4	44.8	47.6	50.4	44.1	41.0	45.9	49.7	50.5	49.5	52.6	53.5
PT	30.1	27.3	35.8	44.6	32.1	28.3	38.6	44.1	26.8	25.9	28.3	44.9
RO	27.9	25.1	29.2	36.2	29.2	25.6	30.9	35.5	25.1	24.5	23.3	40.7
SI	46.6	40.8	50.1	58.1	44.3	30.9	53.8	58.5	53.7	60.7	27.7	53.8
SK	41.6	39.7	42.6	45.1	39.4	34.6	42.7	43.7	47.0	47.5	43.0	58.1
FI	49.6	47.4	52.2	58.0	49.8	47.5	51.0	60.0	49.3	47.2	54.3	53.6
SE	52.4	52.8	49.9	56.5	47.5	47.3	44.3	58.4	57.8	57.9	58.4	52.6
UK	47.8	47.3	48.2	51.9	47.1	44.9	50.1	54.6	48.4	49.1	45.1	46.6
IS	77.6	82.4	59.6	89.5	69.5	82.4	37.7	80.0	85.9	82.3	90.9	100.0
NO	36.5	37.6	32.5	38.6	33.4	32.4	34.4	36.6	40.1	42.2	28.1	42.5

Source: Eurostat – Community Innovation Survey 2004

For the EU-27 as a whole and for 17 Member States, the proportion of enterprises engaged in innovation activity which introduced new or significantly improved products to the market was higher in industry than in services.

The highest score in industry was in Ireland (55.5%), which was also the only Member State where more than half of all enterprises engaged in innovation activity introduced new or improved products to the market.

This figure was higher than 50% in services in five Member States. Bulgaria led them with 71.1%, followed by Sweden (57.8%) and Luxembourg (54.2%).

In the EU-27, large enterprises accounted for the highest share of enterprises introducing new or improved products to the market, both in industry and in services. The same was also true in 22 Member States in the case of industry and 21 for services.

In industry, exceptions were found in Estonia, Ireland, Cyprus, Latvia and Hungary. In services, the exceptions were Belgium, Slovenia, Finland, Sweden and the United Kingdom.

Figure 3 shows the share of the total turnover of enterprises engaged in innovation activity generated by new or significantly improved products (new to the market). In the EU-27, this share stood at 8.6%. However, large differences were observed between individual countries.

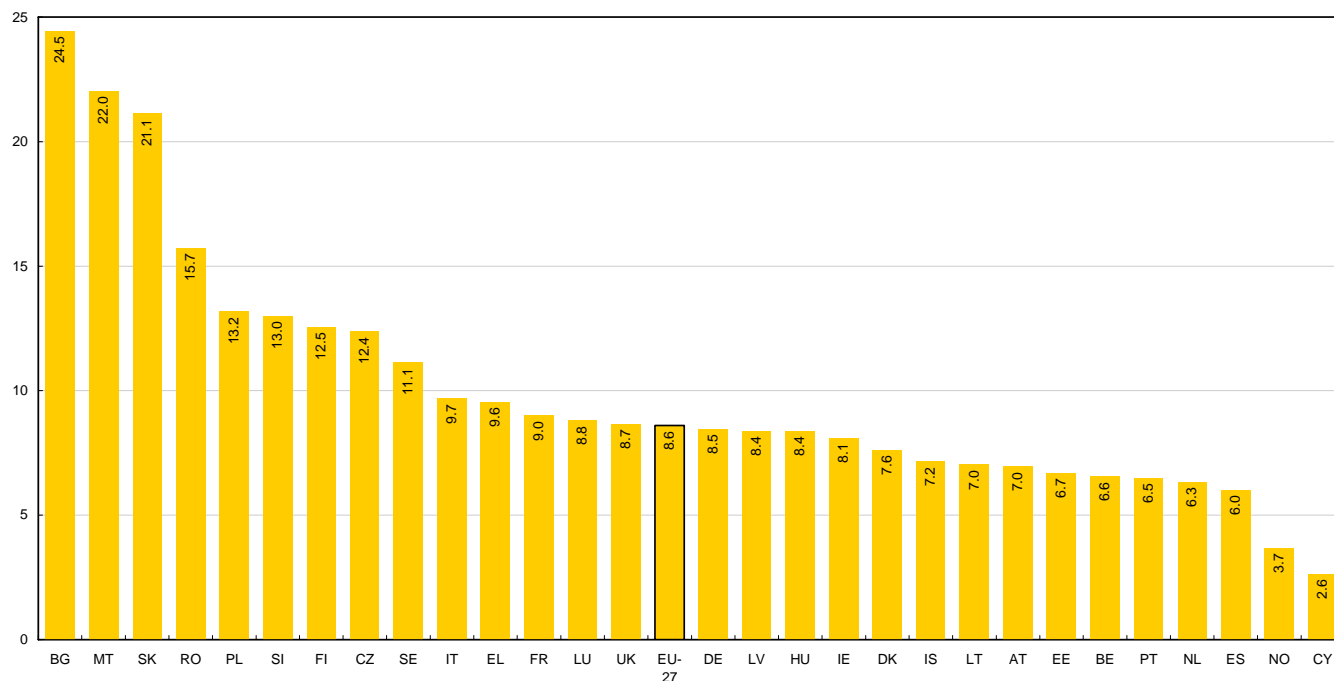
More specifically, the share of turnover was over 20% in three of the new Member States: Bulgaria (24.5%), Malta (22.0%) and Slovakia (21.1%). The proportion of enterprises with innovation activity introducing new or improved products was also quite high in Bulgaria and Slovakia (see Table 2). However, the proportion of enterprises engaged in innovation activity (see Figure 1) was low in these countries.

With 15.7% Romania ranked fourth in terms of share of turnover generated by new or significantly improved products. However, the proportions of enterprises engaged in innovation activity and, among them, introducing new or improved products were quite low.

The share of turnover generated by new or significantly improved products was over 10% in five other Member States: Poland, Slovenia, Finland, the Czech Republic and Sweden. For all other countries, it was lower, falling below 5% in Norway and Cyprus.

Although big differences were recorded between the largest EU Member States in terms of both the proportion of enterprises engaged in innovation activity (see Figure 1) and, among them, the proportion introducing new or improved products to the market (see Table 2), the shares of new or significantly improved products in their turnover (Figure 3) were less scattered. With the exception of Spain (6.0%), they ranged between 9.7% in Italy and 8.5% in Germany.

Figure 3: Percentage share of turnover from new or significantly improved products (new to the market) in total turnover of enterprises engaged in innovation activity, 2004



Source: Eurostat – Community Innovation Survey 2004

Cooperation on innovation most developed in Lithuania and Slovenia

The proportion of enterprises with innovation activity engaged in all types of cooperation on innovation varied widely across countries, ranging from 13.0% in Italy to 56.1% in Lithuania (see Table 4).

At the EU-27 level, one out of every four innovative enterprises (25.5%) was engaged in some type of cooperation on innovation.

Lithuania was the only country where more than half of all innovative enterprises were engaged in some form of cooperation. It was followed by Slovenia (47.2%) and by three Nordic countries: Finland (44.4%), Sweden (42.8%) and Denmark (42.8%). With the exception of Poland (42.2%), the figures in all other countries were lower than 40%.

Italy, Germany and Spain were at the other end of the scale with 13.0%, 16.0% and 18.2% respectively. By contrast, France and the United Kingdom recorded 39.5% and 30.6% respectively.

In general, more enterprises with innovation activity were engaged in national cooperation than in cooperation at European level or with other countries. This was true for EU-27 as a whole and for every individual country except small Member States such as Luxembourg and Malta, where more enterprises were engaged in cooperation at European level than at national level.

The figures for national cooperation on innovation showed a similar pattern to "total" cooperation. Lithuania (50.9%) ranked first, followed by Finland (44.0%) and Sweden (40.2%).

In the EU-27, nearly one tenth (10.5%) of innovative enterprises were engaged in European cooperation on innovation. The highest scores were again found in Lithuania (30.8%) and Finland (30.0%). Maltese (18.1%) and Latvian (17.5%) enterprises are strong on cooperation with all other countries. Cooperation with all other countries on innovation was insignificant in several countries, notably Italy (1.1%) and Spain (1.3%).

Table 4: Percentage share of enterprises with innovation activity engaged in some form of cooperation on innovation by location, 2004

	Total	National	Within Europe	All other countries
EU-27	25.5	22.6 s	10.5 s	4.5 s
BE	35.7	30.9	24.0	10.9
BG	22.0	17.9	12.0	6.3
CZ	38.4	34.1	24.5	6.2
DK	42.8	38.7	27.8	9.6
DE	16.0	15.3	4.7	2.6
EE	34.8	28.7	24.5	9.7
IE	32.3	:	:	:
EL	24.0	19.6	11.9	6.0
ES	18.2	17.2	4.3	1.3
FR	39.5	36.9	16.2	9.6
IT	13.0	12.4	2.5	1.1
CY	36.9	27.5	18.3	4.0
LV	38.8	36.0	22.7	17.5
LT	56.1	50.9	30.8	13.7
LU	30.4	22.0	27.3	10.5
HU	36.8	34.2	17.7	5.0
MT	31.9	16.0	22.9	18.1
NL	39.4	35.7	20.5	9.4
AT	17.4	15.2	9.9	3.0
PL	42.2	36.1	17.6	5.1
PT	19.4	17.9	10.6	3.6
RO	17.5	13.3	7.5	1.7
SI	47.2	:	:	:
SK	37.7	33.5	29.7	7.7
FI	44.4	44.0	30.0	13.7
SE	42.8	40.2	21.2	6.9
UK	30.6	:	:	:
IS	29.1	:	:	:
NO	33.2	30.9	19.3	9.7

Source: Eurostat – Community Innovation Survey 2004

EU-27: Eurostat estimate excluding missing countries (IE, SI and UK)

INNOBAROMETER 2006: Clusters facilitate innovation in Europe

One out of four companies within the European Union work in a cluster-like environment, characterised by a close cooperation with other businesses in the region and strong ties with the local business infrastructure. This is the result of the *InnoBarometer* survey 2006 which interviewed 3,500 companies across Europe. However, there are remarkable differences between the EU-15 and the new Member States, where only 9% of the enterprises benefit from the stimulating business environment created by clusters.

More than half of the enterprises interviewed confirm that belonging to a cluster facilitates business expansion. Companies active in a cluster are among the most innovative companies in Europe. Overall, over two-thirds of cluster-company managers agree that public authorities have an important if not fundamental role to play in support of clusters. EU cluster companies benefit the most from public support enhancing the reputation of the cluster/region, but funding specific cluster projects and facilitating networking with Universities and public authorities is also seen as important from a business point of view.

Source: CORDIS, European Commission, 2006

Innovation improves the quality of goods and services

The fourth Community Innovation Survey (CIS4) asked enterprises to classify the effects of their innovation (based on a qualitative assessment). Table 5 shows the effects of innovation perceived as highly important by enterprises.

They are divided into three categories: product-oriented, process-oriented and other effects.

In the EU-27 the most frequently cited effects of innovation were product-oriented, more specifically “improved quality in goods and services” as a result of innovation (37.8%).

This was the effect most commonly cited as highly important by enterprises in 17 Member States and also in Norway. Moreover, even where it was not cited as the most important effect, it still remained significant for every country except Portugal (9.5%).

The second most important effect of innovation, according to enterprises, was the “increased range of goods and services”. At the EU-27 level this was a highly important effect for approximately one third of all innovative enterprises (34.2%). Even more than that, it was the most important effect in seven Member States, for example in the Czech Republic (40.6%), Germany (38.0%) and Ireland (40.7%). The same was also true of Iceland (30.5%).

Latvia (77.3%) and France (58.6%) were the only countries where enterprises ranked “entered new markets or increased market share” as the top effect of innovation whereas at the EU-27 level this was perceived as highly important by under 30% of all enterprises.

Table 5: Percentage share of enterprises engaged in innovation activity that cited the following effects as highly important, 2004

	Product oriented effects			Process oriented effects				Other effects	
	Increased range of goods and services	Entered new markets or increased market share	Improved quality in goods or services	Improved flexibility of production or service provision	Increased capacity of production or service provision	Reduced labour costs per unit output	Reduced materials and energy per unit output	Reduced environmental impacts or improved health and safety	Met regulation requirements
EU-27	34.2	29.4	37.8	24.7	24.4	15.6	8.4	14.1	18.4
BE	34.8	33.3	46.6	24.7	25.8	16.6	8.8	13.3	14.4
BG	42.7	32.9	45.6	22.8	23.4	18.9	17.0	20.7	26.7
CZ	40.6	25.7	40.0	26.8	25.3	16.9	13.7	15.5	7.9
DK	25.1	19.7	26.7	21.9	18.4	14.5	6.7	8.7	12.6
DE	38.0	31.7	37.7	27.5	19.9	15.1	9.5	10.3	10.3
EE	35.2	33.2	34.2	22.2	22.8	15.2	12.3	9.2	15.6
IE	40.7	32.8	32.7	22.1	23.5	19.3	10.1	11.1	13.8
EL	36.6	29.7	58.8	43.0	40.0	13.7	9.3	21.2	18.6
ES	28.1	19.6	35.2	25.2	32.5	12.7	7.0	16.2	23.0
FR	52.6	58.6	49.5	30.9	32.3	34.9	15.9	19.1	29.1
IT	25.4	15.1	34.1	18.7	23.2	18.1	4.4	14.7	19.4
CY	26.6	17.1	29.8	64.7	56.9	27.0	8.2	29.8	46.8
LV	76.1	77.3	74.8	72.5	71.9	60.2	56.5	45.5	60.5
LT	24.1	20.8	27.9	19.6	21.1	9.3	5.9	8.8	20.8
LU	48.2	34.5	53.2	37.6	30.3	16.3	7.6	15.3	37.6
HU	31.5	19.6	35.1	20.9	21.9	4.1	6.2	13.2	19.4
MT	21.5	19.4	21.5	17.4	15.3	6.9	4.9	11.8	18.8
NL	38.8	33.1	46.9	33.9	30.5	20.9	12.8	12.3	14.2
AT	25.4	20.8	35.3	23.1	19.0	7.0	4.9	8.2	13.5
PL	33.4	26.7	35.1	21.1	23.2	15.0	12.0	19.2	25.4
PT	9.7	15.4	9.5	8.8	6.1	17.9	25.8	12.6	12.5
RO	17.1	29.1	37.1	28.6	32.3	15.5	0.0	17.7	14.9
SI	38.1	32.2	49.6	30.8	31.0	28.4	17.2	18.6	15.5
SK	34.1	25.3	34.8	27.1	24.5	6.8	8.8	12.2	13.7
FI	25.3	21.6	24.2	15.9	17.1	13.0	5.9	7.2	9.8
SE	31.2	19.8	29.3	16.3	21.6	17.9	7.1	9.7	12.9
UK	37.1	36.5	40.9	23.6	23.2	:	:	15.5	25.7
IS	30.5	19.3	23.4	16.0	15.3	13.8	5.7	2.9	7.2
NO	23.1	16.2	23.6	13.5	13.4	10.0	4.3	8.1	12.4

Source: Eurostat – Community Innovation Survey 2004

The process-oriented effects of innovation were cited as highly important by enterprises less often than the product-oriented effects. Other effects were considered even less important.

However, enterprises in Cyprus cited “improved flexibility of production or service provision” (64.7%) as most important, whereas Portugal put “reduced materials and energy per unit output” first (25.8%).

At the EU-27 level innovation seemed to have little effect on consumption of materials and energy since only 8.4% of enterprises cited this effect as highly important. Innovation played a greater role in reducing labour costs (15.6%).

Reduction of the environmental impact or improvement of health and safety were mentioned as major effects of innovation mainly in Cyprus (29.8%) and in Latvia (45.5%) and, to a less significant degree, in Greece (21.2%) and in Bulgaria (20.7%).

However, at the EU-27 level only 14.1% of innovative enterprises stated that innovation had an important effect on these issues. Moreover, the figure did not even reach 10% in six Member States nor in Iceland and Norway.

Innovation in organisation and marketing

Figure 6 shows the proportion of enterprises engaged in innovation activity that introduced innovations in organisation and/or marketing.

In the EU-27 approximately two thirds (67.3%) of all enterprises engaged in innovation activity also introduced innovations in organisation and/or marketing. What is more, this figure was over 50% in every country surveyed.

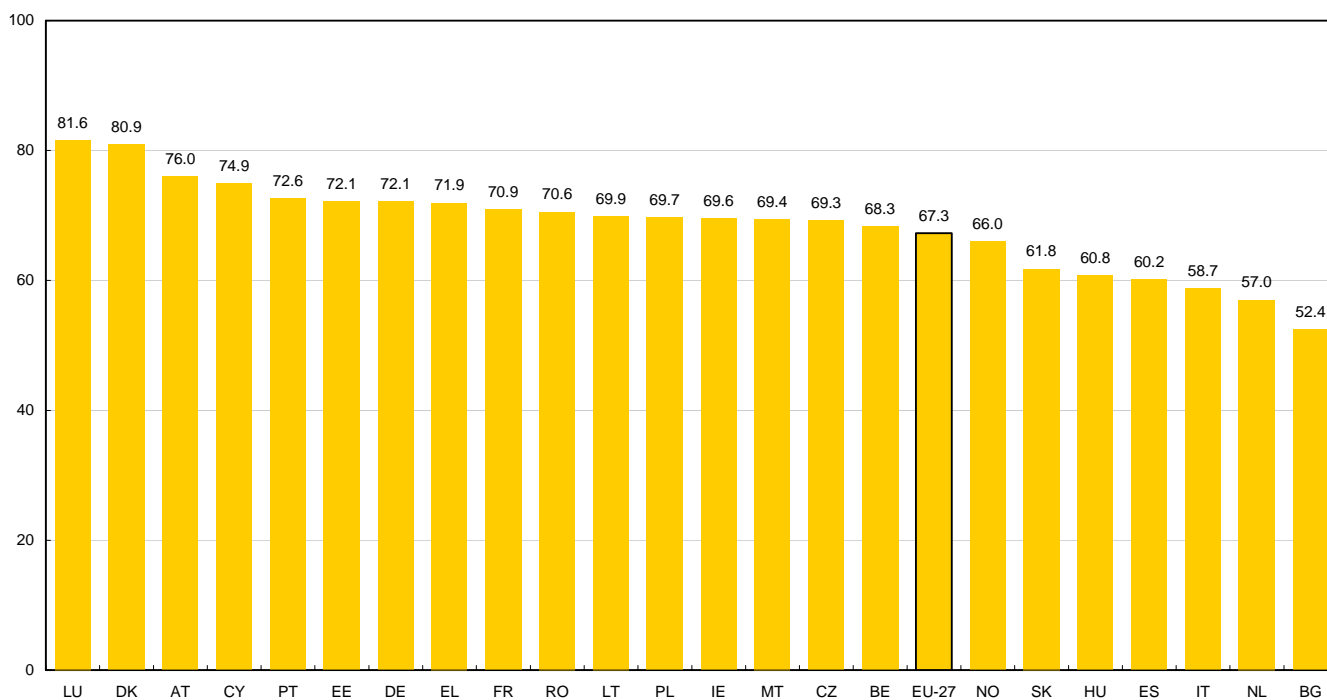
Luxembourg (81.6%) and Denmark (80.9%) led and were the only countries where more than 80% of all innovating enterprises introduced this kind of

innovation. They were followed by Austria (76.0%), Cyprus (74.9%) and Portugal (72.9%).

Among the larger European countries, the highest rates were scored by Germany and France with 72.1% and 70.9% respectively. Spain and Italy came at the other end of the scale with 60.2% and 58.7% of all enterprises engaged in innovation activity introducing organisational and/or marketing changes.

The Netherlands and Bulgaria came last with 57.0% and 52.4% respectively.

Figure 6: Percentage share of enterprises engaged in innovation activity that introduced innovations in organisation and/or marketing, 2004



Source: Eurostat – Community Innovation Survey 2004

EU-27: Eurostat estimate excluding missing countries (LV, SI, SE, FI and UK)

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The **Community Innovation Survey (CIS)** is a survey on innovation activity in enterprises covering EU Member States, candidate countries, Iceland and Norway.

The data are collected on a four-yearly basis. The third survey (CIS3) was implemented in 2000/2001 in most countries. The last survey (CIS4) was carried out in 25 Member States, candidate countries, Iceland and Norway in 2005.

In order to ensure comparability across countries, Eurostat, in close cooperation with the EU Member States, developed a standard core questionnaire for CIS4, with an accompanying set of definitions and methodological recommendations.

CIS4 is based on the *Oslo Manual* (2nd edition, 1997), which gives methodological guidelines and defines the concept of innovation, and on Commission Regulation No 1450/2004.

STATISTICAL UNITS

The main statistical unit for CIS4 was the **enterprise**.

The target population of CIS4 was the total population of enterprises with market activities (NACE activities C to K).

TYPE OF SURVEY

Most Member States and Norway carried out CIS4 by means of a **stratified sample survey**, while a number of countries used a census or a combination of both.

The size classes referred to in this publication are:

- **Small:** 10-49 employees;
- **Medium-sized:** 50-249 employees;
- **Large:** 250+ employees.

The economic activities presented in this publication are based on the NACE Rev. 1.1 classification. Each time several NACE codes are aggregated to produce two distinct sectors:

- **industry**, which includes mining and quarrying (NACE C), manufacturing (NACE D) and electricity, gas and water supply (NACE E); and
- **services**, which includes NACE I and J plus NACE divisions 51, 72, 74.2 and 74.3.

CIS4 data are organised in Eurostat's reference database following broadly the same structure as the questionnaire. The size classes and NACE classification allow extraction of very precise data.

REFERENCE PERIOD

For CIS4 the observation period covered was 2002-2004 inclusive, i.e. the three-year period from the beginning of 2002 to the end of 2004. The reference period for CIS4 was the year 2004.

All the countries covered collected data for this observation period; only the Czech Republic took 2003-2005 as the reference period.

DEFINITION

Innovation: a new or significantly improved product (good or service) introduced to the market or a new or significantly improved process introduced within an enterprise. Innovations are based on the results of new technological developments, new combinations of existing technology or utilisation of other knowledge acquired by the enterprise.

Enterprises engaged in innovation activity (propensity to innovate): enterprises that introduce new or significantly improved products (goods or services) to the market or enterprises that implement new or significantly improved processes. Innovations are based on the results of new technological developments, new combinations of existing technology or utilisation of other knowledge acquired by the enterprise. The term covers all types of innovator, i.e. product innovators, process innovators and enterprises with only ongoing and/or abandoned innovation activities.

Product innovation is introduction to the market of a new good or service or of a good or service with significantly improved capabilities, such as improved software, user-friendliness, components or sub-systems.

Process innovation is implementation of a new or significantly improved production process, distribution method or support activity for goods or services. Purely organisational innovations are excluded.

Organisational innovation is implementation of new or significant changes in a firm's structure or management methods that are intended to improve the firm's use of knowledge, the quality of its goods and services or the efficiency of its workflows.

Marketing innovation is implementation of new or significantly improved designs or sales methods to increase the appeal of goods and services or to enter new markets.

SYMBOLS AND ABBREVIATIONS


- c Confidential data
: Not available

Data presented in this publication reflect the data available in Eurostat's reference database on 26 January 2007.

Further information:

Data: [EUROSTAT Website/Home page/Science and technology/Data](#)

Science and technology

 [Community innovation survey](#)

 [Results of the fourth community innovation survey \(CIS4\)](#)

Journalists can contact the media support service:

Bech Building Office A4/125
L - 2920 Luxembourg

Tel. (352) 4301 33408
Fax (352) 4301 35349

E-mail: eurostat-mediasupport@ec.europa.eu

European Statistical Data Support:

Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

Their mission is to provide help and guidance to Internet users of European statistical data.

Contact details for this support network can be found on our Internet site: <http://ec.europa.eu/eurostat/>

A list of worldwide sales outlets is available at the:

Office for Official Publications of the European Communities.

2, rue Mercier
L - 2985 Luxembourg

URL: <http://publications.europa.eu>

E-mail: info-info-opoce@ec.europa.eu

This document was produced jointly with Sammy Sioen.