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High Technology Indicators Year 2008. *Provisional results*

Expenditure of High Technology companies on R&D activities increases 5.4% in 2008

The High Technology sectors account for 6.6% of the total persons employed in the Spanish economy

Turnover of High and Medium-High Technology manufacturing companies stood at 180,674 million euros in the year 2008, generating an added value of 39,755 million euros.

Within the High Technology manufacturing sectors, worth noting was the *Manufacture of pharmaceutical products*, which reached a turnover greater than 15,211 million euros, accounting for 51.0% of the turnover generated by the High Technology manufacturing sector. In turn, turnover of *Manufacture of electrical material and equipment; machinery; motor vehicles, trailers and semi-trailers* exceeded 106,000 million in invoicing, 70.3% of the total of the Medium-High Technology manufacturing sectors.

Turnover and Added Value in the High Technology sectors

Year 2008

(Economic data in thousands of euros)

CNAE 2009	Sectors	Turnover	Added Value
	High and Medium-High Technology manufacturing sectors	180,674,994	39,755,685
	High Technology manufacturing sectors	29,808,744	7,803,260
21	Manufacture of pharmaceutical products	15,211,813	4,356,975
26	Manufacture of computer, electronic and optical products	8,886,925	2,310,953
30.3	Manufacture of aircraft and spacecraft and machinery thereof	5,710,006	1,135,333
	Medium-High Technology manufacturing sectors	150,866,250	31,952,425
20	Chemical industry	37,718,237	7,806,282
25.4	Manufacture of weapons and ammunition	337,906	115,061
27 to 29	Manufacture of electrical material and equipment; Manufacture of machinery and equipment n.e.c.; Manufacture of motor vehicles, trailers and semi-trailers	106,078,889	21,812,745
30- 30.1 - 30.3	Manufacture of other transport equipment, except: naval construction; aircraft and spacecraft construction and machinery thereof.	5,259,928	1,562,245
32.5	Manufacture of medical and dental instruments and supplies	1,471,290	656,092
	High Technology or state-of-the-art services	(*)	(*)
59 to 63	Motion picture, video and television programme activities, sound recording and music publishing; Radio and television programming and broadcasting activities; Telecommunications; Programming, consultancy and other activities related to IT; Information services	(*)	(*)
72	Research and development	(*)	(*)
	Total High and Medium-High Technology sectors	(*)	(*)

Source: Industrial Companies Survey and Annual Services Survey

(*) Data not available

Employment in the High Technology sectors

The High Technology sectors employed 1,342,500 persons during the year 2008, accounting for 6.6% of the total persons employed in the Spanish economy. **28.4% of the total persons employed in High Technology sectors were women.**

The number of persons employed in the High Technology manufacturing sectors reached 139,400, whereas the Medium-High Technology manufacturing sectors employed 668,600 persons. High Technology services employed 534,600 persons.

The Autonomous Communities with the highest number of employed persons were Cataluña (with 356,500), Comunidad de Madrid (319,900) and País Vasco (115,000).

In turn, the Communities that presented the highest percentage of employment in these sectors as compared with the total employed persons were País Vasco (11.6%), Comunidad de Madrid (10.4%) and Cataluña (10.2%).

Persons employed in the High and Medium-High Technology sectors, by Autonomous Community

Year 2008

(thousands of persons)

Autonomous Community	High and Medium-High Technology sectors				
	Total	High Technology manufacturing sectors	Medium-High Technology manufacturing sectors	High Technology services	% of total employed persons
TOTAL	1,342.5	139.4	668.6	534.6	6.6
Andalucía	98.5	12.9	33.8	51.9	3.1
Aragón	57.8	2.9	42.6	12.3	9.5
Asturias (Principado de)	21.4	1.7	9.9	9.8	4.7
Balears (Illes)	14.1	0.7	3.7	9.6	2.8
Canarias	17.0	0.9	3.9	12.3	2.0
Cantabria	16.4	0.6	12.2	3.6	6.3
Castilla y León	64.7	3.0	39.6	22.1	6.1
Castilla-La Mancha	31.4	4.9	16.1	10.5	3.7
Cataluña	356.5	41.8	228.2	86.6	10.2
Valencia	106.7	7.7	63.8	35.2	4.8
Extremadura	10.0	0.5	4.2	5.3	2.4
Galicia	61.3	5.4	33.9	22.0	5.1
Madrid (Comunidad de)	319.9	44.2	63.9	211.8	10.4
Murcia (Región de)	16.9	1.3	10.1	5.6	2.7
Navarra (Comunidad Foral de)	28.4	1.5	23.6	3.3	9.8
País Vasco	115.0	9.1	74.9	30.9	11.6
La Rioja	6.1	0.3	4.2	1.6	4.2
Ceuta and Melilla	0.3	0.0	0.0	0.3	0.6

Source: Economically Active Population Survey (annual averages)

Investment in R&D

High Technology companies invested a total of 4,937.9 million euros in R&D during the year 2008, that is, **5.4% more** than the previous year. This figure accounted for 61.2% of total expenditure of the business sector on R&D activities.

The number of persons employed on a full-time equivalent, dedicated to R&D tasks in the High Technology sector, reached 53,974.3.

The branches of the High Technology sector accounted for 56.7% of the total personnel dedicated to R&D in the business sector, and 60.1% of researchers.

Main R&D indicators in the High Technology sectors

Year 2008

	Internal expenditure ¹		Personnel in R&D ²			
	Total	%	Total		Researchers	
			Total	%	Total	%
High and Medium-High Technology manufacturing sectors	2,377,134	29.4	25,300.5	26.6	12,282.5	26.5
High Technology manufacturing sectors	1,200,285	14.9	10,864.6	11.4	6,224.3	13.4
Medium-High Technology manufacturing sectors	1,176,849	14.6	14,435.8	15.2	6,058.1	13.1
High Technology or state-of-the-art services	2,560,829	31.7	28,673.8	30.1	15,572.7	33.6
Total High and Medium-High Technology sectors	4,937,963	61.2	53,974.3	56.7	27,855.2	60.1
Total business sector	8,073,521	100.0	95,207.4	100.0	46,375.2	100.0

Source: Statistics on Scientific Research and Technological Development activities

1 Units: thousands of euros

2 On a Full-Time Equivalent (FTE)

49.5% of High and Medium-High Technology manufacturing sector companies were innovative in the 2006-2008 period. In this sense, worth noting were the branches of *Manufacture of weapons and ammunition* (with 77.3%), the *Pharmaceutical industry* (with 67.1%) and the *Manufacture of transport equipment, except naval construction* (64.1%).

In the case of High Technology services, 75.75% of the companies belonging to the branch of R&D activities were innovative.

Value of the production of goods

According to the Industrial Products Survey, the value of the production of High Technology goods reached 9,581.8 million euros in the year 2008.

Value of the production of High Technology goods, by group of products (Thousands of euros)

Groups of products	2008
1. Manufacture of aircraft and spacecraft	560,631.4
2. Office machinery and computers	219,897.5
3. Electronic material; radio, television and communications equipment and apparatus	2,709,403.5
4. Pharmaceutical products	1,792,362.2
5. Scientific instruments	944,603.5
6. Electrical machinery and material	228,281.3
7. Chemical products	1,425,465.4
8. Mechanical machinery and equipment	970,317.7
9. Weapons and ammunition	730,864.0
Total High Technology products	9,581,826.5
Total Industrial Production	431,191,083.0

Source: Industrial Products Survey

Foreign trade of High Technology products

In 2008, **exports** of High Technology products **decreased 2.3%**, as compared with the previous year, arriving at a total of 7,841.8 million euros.

In turn, **imports registered a 0.9% increase**, reaching 27,851.9 million euros.

Foreign trade of High Technology products, by type of product

Year 2008	(Thousands of euros)		
Groups of products	Value of exports	Value of imports	Trade Balance
1. Manufacture of aircraft and spacecraft	1,359,219	2,114,737	-755,518
2. Office machinery and computers	596,386	4,698,470	-4,102,084
3. Electronic material; radio, television and communications equipment and apparatus	1,677,516	13,002,002	-11,324,486
4. Pharmaceutical products	1,367,391	3,163,253	-1,795,862
5. Scientific instruments	649,691	1,959,981	-1,310,291
6. Electrical machinery and material	166,106	724,942	-558,835
7. Chemical products	1,022,326	1,358,175	-335,849
8. Mechanical machinery and equipment	850,805	667,504	183,301
9. Weapons and ammunition	152,446	162,921	-10,475
Total	7,841,886	27,851,985	-20,010,099

Source: INE compilation with data from the Foreign Trade Statistics of the State Tax Administration Agency

Methodological annex

Considering technology as the knowledge base necessary for producing new products and processes, High Technology is characterised by a fast renewal of knowledge, much greater than other technologies, and due to its degree of complexity, it demands a continuous effort in research and a solid technological base.

For statistical purposes, the definition of High Technology is performed by an exhaustive listing of the branches of activity (**sector approach**) and of products (**product approach**) that are considered, at a given moment in time, of high technological content.

In order to determine the list of High Technology activities and products, we have started with the methodological tasks performed by the OECD in this matter, as well as with adaptations thereof to the European scope performed by Eurostat. Specifically, it is worth noting that, in this year's publication with data referring to the year 2008, an adaptation has been made of the list of High Technology products of the SITC Rev.3 classification (Standard International Trade Classifications) to SITC Rev.4.

Adaptation to National Classification of Economic Activities 2009

Today, the National Statistics Institute (INE) is publishing the High Technology Indicators, referring to the year 2008, using the new **National Classification of Economic Activities of 2009 (CNAE-09)**, passed by Royal Decree 475/2007, of 13 April.

The data published up to the year 2008 (data referring to years 2000 to 2007) used the National Classification of Economic Activities of 1993 (CNAE-93).

The most important changes between CNAE-93 and CNAE-09, in terms of the manufacturing industry, are the following: the creation of new divisions to represent industrial activities that are important or that have experienced an increase in economic relevance; the disappearance of the *Publishing* activity, which has been moved to another section outside of the industrial scope; and lastly, *Repair and installation of machinery and equipment*, which was previously classified with the manufacture of the corresponding elements, and is now independent, and jointly within a single division.

On the INE website (http://www.ine.es/en/welcome_en.htm), the 2000-2007 series is published with CNAE-93, while the series as of 2008 is published with CNAE-09.

High and Medium-High Technology sectors.

CNAE 2009	SECTORS
High Technology manufacturing sectors	
21	Manufacture of pharmaceutical products
26	Manufacture of computer, electronic and optical products
30.3	Manufacture of aircraft and spacecraft and machinery thereof
Medium-High Technology manufacturing sectors	
20	Chemical industry
25.4	Manufacture of weapons and ammunition
27 to 29	Manufacture of electrical material and equipment; Manufacture of machinery and equipment n.e.c.; Manufacture of motor vehicles, trailers and semi-trailers
30- 30.1 - 30.3	Manufacture of other transport equipment, except: naval construction; aircraft and spacecraft construction and machinery thereof.
32.5	Manufacture of medical and dental instruments and supplies
High Technology or state-of-the-art services	
59 to 63	Motion picture, video and television programme activities, sound recording and music publishing; Radio and television programming and broadcasting activities; Telecommunications; Programming, consultancy and other activities related to IT; Information services.
72	Research and development

The study of High Technology from the product perspective is based on the construction of indicators that reflect the technological content of the goods produced and exported by a country or industrial sector.

List of High Technology products.

Group	Sector	SITC Rev.4 Code
1	Aerospace	[(714 - 714.89 - 714.99) + 792.1 + 792.2 + 792.3 + 792.4 + 792.5 + 792.91 + 792.93 + 874.11]
2	Office machines and computers	[751.94 + 751.95 + 752 + 759.97]
3	Electronics-communications	[763.31 + 763.8 + (764 - 764.93 - 764.99) + 772.2 + 772.61 + 773.18 + 776.25 + 776.27 + 776.3 + 776.4 + 776.8 + 898.44 + 898.46]
4	Pharmaceutical industry	[541.3 + 541.5 + 541.6 + 542.1 + 542.2]
5	Scientific instruments	[774 + 871 + 872.11 + (874 - 874.11 - 874.2) + 881.11 + 881.21 + 884.11 + 884.19 + (899.6 - 899.65 - 899.69)]
6	Electrical machinery	[(778.6 - 778.61 - 778.66 - 778.69) + 778.7 + 778.84]
7	Chemistry	[52222 + 52223 + 52229 + 52269 + 525 + 531 + 57433 + 591]
8	Mechanical machinery and equipment	[714.89 + 714.99 + 718.7 + 728.47 + 731.1 + 731.31 + 731.35 + 731.42 + 731.44 + 731.51 + 731.53 + 731.61 + 731.63 + 731.65 + 733.12 + 733.14 + 733.16 + 735.9 + 737.33 + 737.35]
9	Armaments	[891]

The tables shown in this statistical operation are compiled with the results of the following operations:

- Industrial Companies Survey (INE)
- Annual Services Survey (INE)
- Statistics on Scientific Research and Technological Development (R&D) (INE)
- Technological Innovation in Companies Survey (INE)
- Economically Active Population Survey (INE)
- Quarterly Labour Cost Survey (INE)
- Industrial Products Survey (INE)
- Foreign Trade Statistics (INE compilation with AEAT data)
- Survey on the Use of Information and Communication Technologies and Electronic Commerce in Companies (INE)

For further information see **INEbase**-www.ine.es/en/welcome_en.htm All press releases at: www.ine.es/en/prensa/prensa_en.htm

Press office: Telephone: 91 583 93 63 / 94 08 – Fax: 91 583 90 87 - gprensa@ine.es

Information area: Telephone: 91 583 91 00 – Fax: 91 583 91 58 – www.ine.es/infoine
