Instituto Nacional de Estadística

Press Release

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Statistics on Biotechnology Use
Year 2021. Final results

Spending on internal R&D activities in Biotechnology was 2,270 million euros, which represented 13.2% of total spending on internal R&D activities

In 2021, the full-time equivalent personnel dedicated to internal R&D activities in biotechnology was 32,901.7, or 13.2% of the total personnel in internal R&D activities

For the first time in this Statistic, INE has implemented the statistical concept of Enterprise

Due to the coordination of this operation with the Statistics on Research and Development Activities (R&D) and the change produced in the latter in the business sector[1], the new statistical concept of enterprise[2] has been implemented for this sector. Under this modification, the statistical enterprise can coincide with the legal unit, the business group or part of a group of companies (the last two cases represent around 3% of the total). The results of the operation in said sector and their distribution by activities, company sizes and autonomous communities of the registered offices are affected

Due to the methodological change, the indicators for the business sector are not comparable with those of previous years. However, the methodological annex offers a comparative analysis under the assumption of considering Legal Units as an operational approach to enterprises.

Expenditure in Internal R&D activities related to biotechnology

Expenditure on Biotechnology-related R&D activities reached 2,270 million euros in 2021. This expenditure represented 13.2% of total internal expenditure on R&D activities.

By execution sectors, *Public Administration* increased by 5.6% and the *Higher Education* sector by 4.8%.

[1]See press release of the Statistics on R&D Activities at https://www.ine.es/prensa/imasd_2021.pdf

[2] The reasons why the INE has adapted the definition of enterprise, from a statistical perspective, were communicated in press release published on December 17, 2019.
https://www.ine.es/prensa/nueva_definicion_empresa.pdf

Regarding the total expenditure on internal R&D activities in Biotechnology, *Companies* showed the highest percentage (45.8% of the total). Following this were *Public Administration* (31.6%), *Higher Education* (22.1%) and *Private Non-Profit Institutions* (IPSFL), with 0.6%.

Expenditure on internal R&D in Biotechnology by execution sector
Year 2021. Thousand euros

Sector	Total	%	% over total R&D
TOTAL	2,269,946	100.0	13.2
Enterprises	1,038,582	45.8	10.7
Government	716,877	31.6	24.6
Higher Education	500,703	22.1	10.9
Private non-profit	13,783	0.6	24.6

Financing of Internal R&D

Internal R&D activities related to Biotechnology were financed in 2021, mainly by the *Public Administration* (42.8% of the total) and the *Business* sector (42.3%). Funds from the *Rest of the world* (8.6%), *Higher Education* (4.1%) and Private Non-Profit Institutions (2.3%), financed the rest.

Expenditure on internal R&D in Biotechnology by execution sector and financing
Year 2021. Thousand euros

Sector	Total	Sources of funds (%)				
		Government	Higher Education	Enterprises	Private non-profit	Rest of the world
TOTAL	2,269,946	42.8	4.1	42.3	2.3	8.6
Government	716,877	72.4	0.2	13.7	3.7	10.0
Higher Education	500,703	68.3	18.1	5.0	1.5	7.1
Enterprises	1,038,582	10.3	0.0	80.2	1.0	8.4
Private non-profit	13,783	17.4	0.4	23.9	45.8	12.5

Employment in Internal R&D activities related to biotechnology

In 2021, the full-time equivalent (FTE) personnel dedicated to internal R&D activities in biotechnology was 32,901.7. This figure represented 13.2% of the total personnel in internal R&D activities.

A total of 57.6% of the personnel employed in internal R&D activities in Biotechnology were women. The highest percentages of female participation were found in *PNPI* (64.4%) and in the *Public Administration* (62.8%).

The number of researchers in internal R&D activities in Biotechnology reached 20,945.8 people in full-time equivalence.

Personnel employed in internal R&D activities in Biotechnology by execution sector, occupation, and sex
Year 2021. Full Time Equivalence

Sector	Total		Researchers	
	Total	% Women	Total	% Women
TOTAL	32,901.7	57.6	20,945.8	54.1
Government	11,271.7	62.8	6,454.3	58.7
Higher Education	9,934.5	52.6	8,036.0	50.2
Enterprises	11,528.6	56.7	6,342.7	54.5
Private non-profit	166.9	64.4	112.8	54.9

Data by Autonomous Community

The Autonomous Communities with the highest expenditure on internal R&D activities in Biotechnology in 2021 were Cataluña (31.5% of the total), Comunidad de Madrid (25.2%) and Andalucía (9.9%).

Expenditure on internal R&D in Biotechnology by autonomous communities, according to execution sector
Year 2021. Thousand euros

	TOTAL	%	Enterprises	%	Rest of sectors *	%
TOTAL	**2,269,946**	**100.0**	**1,038,582**	**100.0**	**1,231,364**	**100.0**
Andalucía	224,764	9.9	70,929	6.8	153,835	12.5
Aragón	33,853	1.5	14,519	1.4	19,334	1.6
Asturias, Principado de	23,680	1.0	6,852	0.7	16,829	1.4
Balears, Illes	21,900	1.0	..	..	..	..
Canarias	18,978	0.8	6,194	0.6	12,784	1.0
Cantabria	..	..	..	..	..	..
Castilla y León	60,217	2.7	23,311	2.2	36,907	3.0
Castilla-La Mancha	31,320	1.4	18,919	1.8	12,401	1.0
Cataluña	715,272	31.5	349,052	33.6	366,220	29.7
Comunitat Valenciana	184,687	8.1	87,411	8.4	97,276	7.9
Extremadura	3,801	0.2	2,222	0.2	1,579	0.1
Galicia	113,236	5.0	35,446	3.4	77,790	6.3
Madrid, Comunidad de	572,064	25.2	249,881	24.1	322,183	26.2
Murcia, Región de	51,830	2.3	24,355	2.3	27,474	2.2
Navarra, Comunidad Foral de	48,950	2.2	..	..	..	..
Pais Vasco	149,538	6.6	113,601	10.9	35,937	2.9
Rioja, La	9,132	0.4	..	..	..	..
Ceuta	..	..	..	..	.	.
Melilla	.	.	.	.	.	.

(*) Rest of sectors: Government, PNP and Higher Education

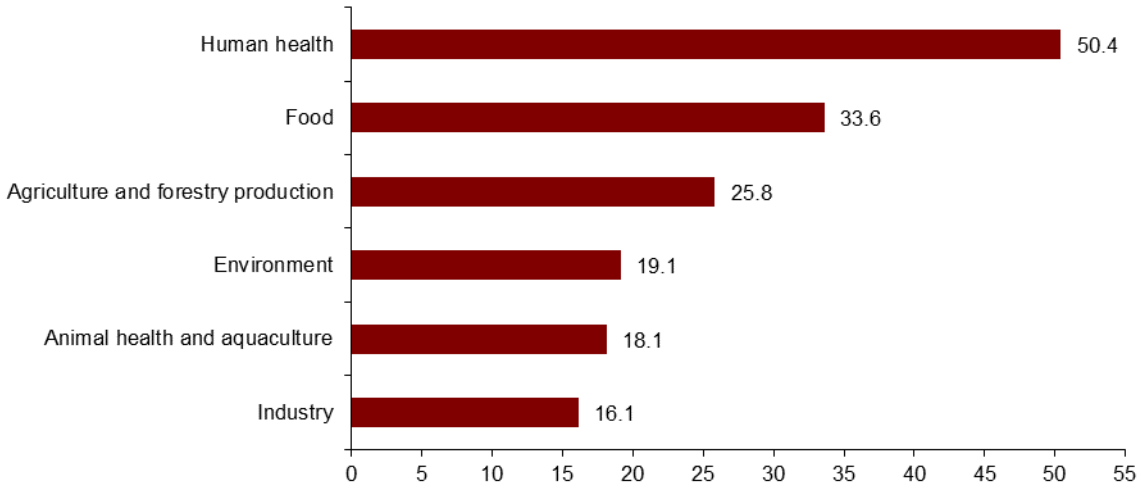
(.) Not available or unexist

(..) Protected data by confidentiality

Biotechnology Application Areas

Among the areas of final application of the products obtained from the use of the different types of biotechnology, worth noting were *Human health* and *Food*, with 50.4% and 33.6% of the total units, respectively.

Units with biotechnological activities, according to the areas of final Biotechnology application. Year 2021. Percentage



Data Review and Update

The data published today are final. The results are available at INEBase.

Methodological annex

New practical implementation of the statistical unit 'Enterprise'

The statistical definition of the "Enterprise" statistical unit is established by a regulation of the European Union (696/93) that defines it as the *"smallest combination of legal units that produces goods or services and that enjoys a certain degree of decision-making autonomy, particularly when using the resources available to it."*

Up to and including the 2020 reference period, the INE has been identifying, for operational purposes, the statistical unit Enterprise with the Legal Unit (by means of the NIF) in the Statistics on the use of Biotechnology. Thus, for statistical purposes each Legal Unit formed an enterprise.

However, the progressive complexity of the way in which enterprise groups operate internally nowadays caused the European Statistical System (ESS) to search for an improvement as regards the way in which the activity of these groups is reflected in enterprises' official statistics. Legal Units that belong to enterprise groups sometimes sell their products or provide their services exclusively or mainly within the group, without being market-oriented or having decision-making power over the entire production process.

For these reasons, based on data with reference 2021, the Statistics on the Use of Biotechnology in the Business Sector establishes a new practical application of the statistical concept of Enterprise, by which an 'Enterprise' can be:

- An independent Legal Unit that is not part of the enterprise group, meaning that it should have decision-making autonomy.
- An enterprise group made up of one or more Legal Units, which operate together.
- A subset of one or more Legal Units of an enterprise group.

This change in the treatment of enterprises -which was also implemented in the Statistical Use of the Central Enterprise Register (DIRCE)- was announced by the INE in December 2019:
https://www.ine.es/prensa/nueva_definicion_empresa.pdf

For more information on the delineation of the statistical unit Enterprise within enterprise groups, please see the following link:
https://www.ine.es/metodologia/t37/t3730200_profiling.pdf

Effects of the implementation of the Statistical Enterprise on the Statistics on the use of Biotechnology (Business sector)

The adoption of the concept of the Statistical Enterprise in the Statistics on the Use of Biotechnology implies that, when the Enterprise is made up of more than one Legal Unit (LU), its LUs must be grouped, condensing all values of each indicator into the Statistical Enterprise.

This consolidation produces a reclassification effect in the 2021 results based on the Statistical Enterprise, due to the grouping of the Legal Units that form part of the Enterprise and their reallocation to the main activity, autonomous community where the headquarters is located, and size of the Enterprise. This reclassification effect is defined as the variation rate of the variables calculated for the Statistical Enterprises before consolidation, with respect to those obtained based on the LUs; both referring to 2021.

Impacts of the implementation of the Statistical Enterprise on the S. on R&D the Use of Biotechnology (Enterprises) 2021

	N of R&D enterprises	Expenditures on internal R&D	R&D Personnel (FTE)	Researchers (FTE)
	Rec effect (%)	Rec effect (%)	Rec effect (%)	Rec effect (%)
Agriculture	-1.8	1.8	0.4	1.1
Industry & Construction	-0.7	4.9	2.9	4.7
Services	-5.4	-2.8	-1.4	-1.6

Statistical results based on Legal Units

The following tables show the differences of the main variables studied in the Enterprise sector of the Statistics on the Use of Biotechnology if the Legal Unit were taken as an approximation to the enterprise concept.

Main variables by Legal Unit

	2021	2020	Annual rate
N. of R&D enterprises	1,348	1,233	9
Expenditures on internal R&D*	1,037,887	897,333	16
R&D Personnel (FTE)	11,523	9,402	23
Researchers (FTE)	6,342	5,398	17

*Thousands of euros

Within the Enterprise sector, spending on internal R&D in Biotechnology stood at 1,037.9 million euros in 2021, with an increase of 15.7%.

Full-time equivalency (FTE) personnel who carried out internal Biotechnology R&D tasks in companies increased by 22.6%. In turn, the number of FTE researchers who carried out internal R&D in Biotechnology increased by 17.5%.

Comparison of internal R&D spending by branch of activity and Legal Unit

	2021		2020		
	Thousands of €	%	Thousands of €	%	Annual rate
TOTAL	**1,037,886.9**	**100.0**	**897,332.8**	**100.0**	**15.7**
Agriculture	40,692.0	3.9	43,560.7	4.9	-6.6
Industry & Construction	365,151.3	35.2	308,397.7	34.4	18.4
Services	632,043.6	60.9	545,374.4	60.8	15.9

By activity branches, spending on internal R&D in Biotechnology increased by 13.1% in *Industry*, 18.4% in *Construction* and 15.9% in *Services*. In turn, it decreased by 6.6% in *Agriculture.*

Methodological note

The objective of the Statistics on the use of biotechnology is to measure national efforts in biotechnology-related activities, in order to provide the necessary information for adequate decision-making in scientific-technological policy.

In this regard, the objective is to ascertain the type of biotechnology-related activities that are carried out in each of the sectors in which the economy is divided; the final application areas of the products obtained via the development of biotechnologies; economic and human resources appointed to the biotechnology-related productive and investigation activity in Spain.</p>

Type of survey: continuous annual survey.

Population scope: the group of companies, public bodies, universities or higher education centres and private nonprofit institutions (IPSFL) that use Biotechnology in their activities.

Geographical scope: the entire national territory.

Reference period: the calendar year.

Collection method: mixed with questionnaire shipments by postal mail and web completion.

For more information you can access the methodology and the standardized methodological report at:

http://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176808&menu=metodologia&idp=1254735576669

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