

Research and experimental development in Poland in 2022

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18.6%

An increase y/y in gross domestic expenditure on R&D

In 2022, gross domestic expenditure on R&D (GERD) amounted to 44.7 billion PLN and increased by 18.6% in comparison to the previous year. R&D intensity indicator, which constitutes a share of intramural R&D expenditure in GDP, amounted to 1.46% (in 2021 – 1.43%). Gross domestic expenditure on R&D per capita amounted to 1 182 PLN and was higher by 19.2% than in the previous year. The number of R&D entities increased by 0.8% in comparison to the previous year.

Table 1. Selected data on R&D

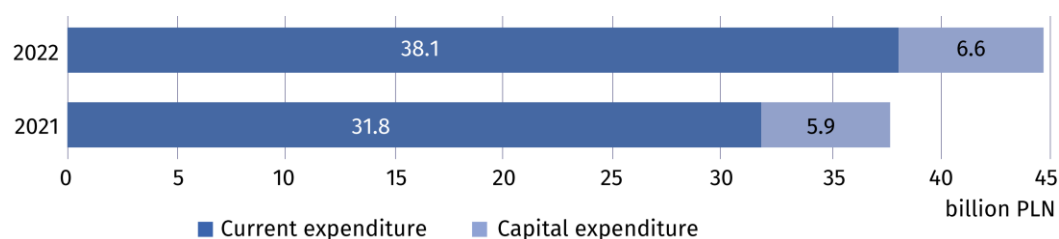
Specification	2015	2016	2017	2018	2019	2020	2021	2022
Number of entities in R&D	4 427	4 871	5 102	5 779	5 863	6 381	7 370	7 431
Gross domestic expenditure on R&D (GERD) in million PLN	18 061	17 943	20 578	25 648	30 285	32 402	37 676	44 702
Relation of GERD to GDP in %	1.00	0.97 ^a	1.04 ^a	1.21	1.32	1.39	1.43 ^a	1.46

^aData changed compared to previously published due to GDP revision.

INTRAMURAL EXPENDITURE ON RESEARCH AND DEVELOPMENT

In the year 2022, like in the previous years, current expenditure prevailed in the structure of intramural expenditure on R&D by type of costs. Their share in all incurred expenditure on scientific research and experimental development amounted to 85.1%.

R&D intensity (GERD/GDP) amounted to 1.46%

Chart 1. Intramural expenditure on R&D by type of costs


The highest intramural expenditure on research and experimental development among the sectors of performance were incurred by the business enterprise sector which allocated on conducting research and experimental development 29.5 billion PLN (by 23.9% more than in 2021). Expenditure of this sector accounted for 65.9% of gross domestic expenditure on R&D in 2022 (compared to 63.1% in 2021). The share of other sectors of performance in these expenditure amounted to: higher education – 32.0%, government – 1.9% and private non-profit – 0.2% (compared to 34.7%, 2.0% and 0.2% in 2021).

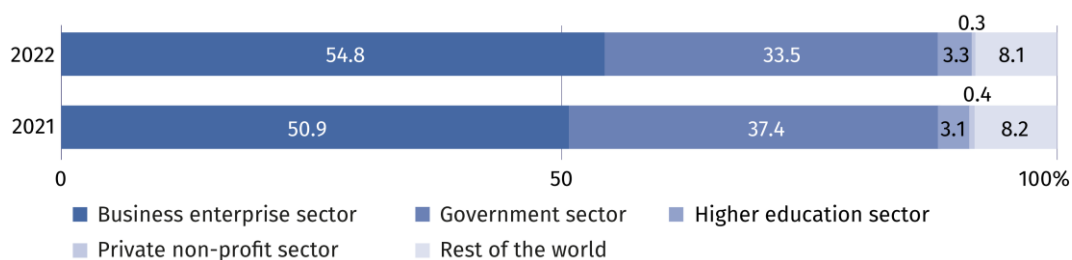
The business enterprise expenditure on R&D (BERD) accounted for 65.9% of gross domestic expenditure on R&D (GERD)

Table 2. Intramural expenditure on R&D by sectors of performance

Sectors of performance	2021	2022
	in million PLN	
Total (GERD)	37 675.8	44 702.4
Business enterprise (BERD)	23 769.1	29 455.1
Government (GOVERD)	770.3	863.7
Higher education (HERD)	13 059.0	14 296.8
Private non-profit (PNPERD)	77.5	86.8

In the year 2022, like in the previous years, main funding sectors for research and experimental development were the business enterprise sector and the government sector whose funds accounted for 54.8% and 33.5% of all intramural expenditure on R&D, respectively (compared to 50.9% and 37.4% in 2021).

Chart 2. Intramural expenditure on R&D by funding sectors

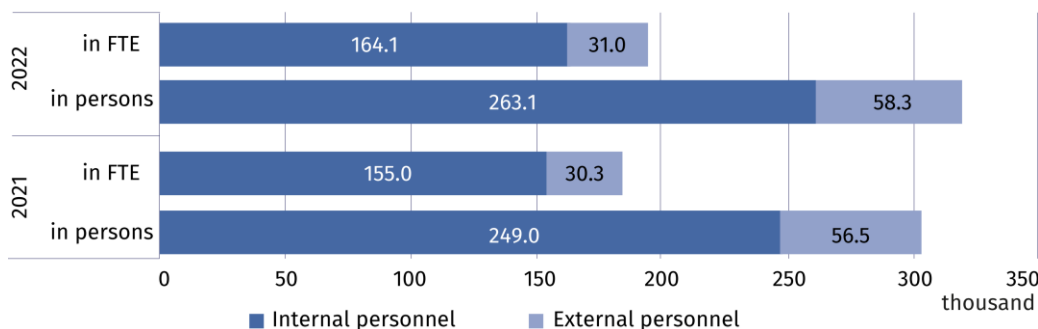


PERSONNEL IN RESEARCH AND DEVELOPMENT

The number of personnel involved in research and experimental development in 2022 amounted to 321.4 thousand persons, that is, by 5.2% more than in the previous year. Actual involvement of R&D personnel in research and experimental development in full-time equivalents amounted to 195.1 thousand FTE and increased by 5.3% on an annual basis. R&D was mainly performed by internal personnel which accounted for 81.8% of personnel in headcount and 84.1% – in FTE in 2022 (in 2021 these shares amounted to 85.1% and 83.7%, respectively).

Internal personnel accounted for 84.1% of R&D personnel in FTE

Chart 3. R&D personnel by main groups



In 2022, researchers prevailed in the structure of persons engaged in research and experimental development by R&D functions. They accounted for 69.3% of internal personnel and 71.2% of external personnel in headcount (compared to 70.0% and 73.1% in 2021). In FTE, researchers as the share of persons employed in R&D accounted for 72.5% and as the share of external contributors 71.7% (compared to 72.7% and 75.8% in 2021).

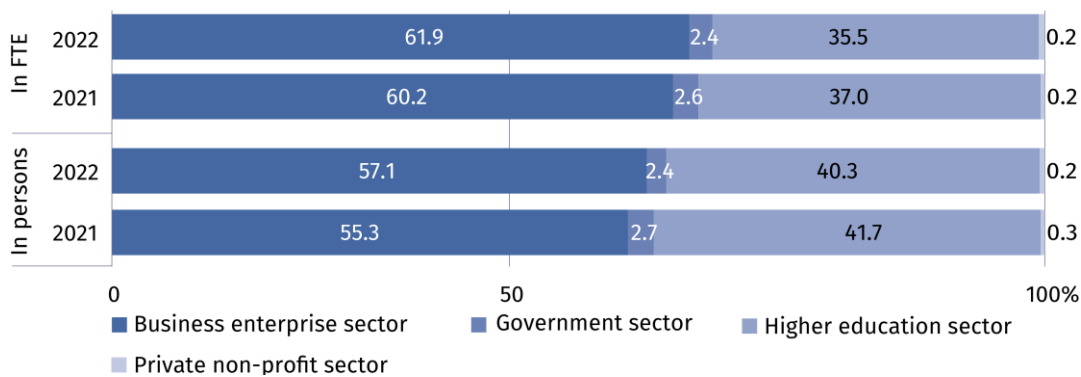
Table 3. Selected indicators on internal R&D personnel ^a

Specification	2015	2016	2017	2018	2019	2020	2021	2022
per 1000 active population ^b								
Internal R&D personnel	6.4	6.6	7.1	7.8	8.1	8.6	9.0	9.5
of which researchers	4.9	5.2	5.7	5.8	5.9	6.2	6.5	6.9
per 1000 persons employed ^c								
Internal R&D personnel	6.9	7.0	7.5	8.1	8.4	8.8	9.3	9.8
of which researchers	5.3	5.5	6.0	6.1	6.1	6.4	6.8	7.1

a In full-time equivalents (FTE). In 2015 – employees. b Active population aged 15-89 years according to the LFS – average annual data. c Persons employed aged 15-89 years according to the LFS – average annual data.

In 2022, the business enterprise sector and higher education sector had the highest share in the structure of internal R&D personnel by sectors of performance. The percentage of internal personnel in these sectors accounted for 57.1% and 40.3% of total number of internal personnel engaged in conducting research and experimental development. On an annual basis, the number of person included in internal personnel increased by 9.0% in the business enterprise sector and by 2.0% in the higher education sector. The highest value of full-time equivalent was noted in the business enterprise sector (101.6 thousand FTE) which increased by 8.9% in comparison to 2021.

Chart 4. Internal R&D personnel by sectors of performance



Persons with other tertiary education prevailed among both internal personnel and external personnel – they accounted for 57.0% and 67.5% of a given R&D personnel group, respectively. Among internal R&D personnel 31.6% of persons held at least the scientific degree of doctor (PhD) and among external personnel this share amounted to 19.9%.

Table 4. R&D personnel by educational level and main groups

Specification a – 2021 b – 2022	Total	With tertiary education				Persons with other educational level	
		with professor title	with scientific degree of		other		
			habilitated doctor	doctor (PhD)			
		in headcount					
Total	a	305 563	14 645	25 619	51 980	175 659	37 660
	b	321 391	14 760	25 989	53 872	189 237	37 533
Internal personnel	a	249 014	113 33	22 761	47 307	139 139	28 474
	b	263 057	11 248	22 859	48 932	149 870	30 148
External personnel	a	56 549	3 312	2 858	4 673	36 520	9 186
	b	58 334	3 512	3 130	4 940	39 367	7 385

When citing data from the Central Statistical Office, please include the following information: "Source of CSO data", and in the case of publishing calculations made on the data published by the Central Statistical Office, please include the following information: "Own study based on GUS data"

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Data available in databases

[Macroeconomic Data Bank \(BDM\)](#)

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Terms used in official statistics

[Research and experimental development \(R&D\)](#)

[Gross domestic expenditures on research and development \(GERD\)](#)

[Intramural expenditures on R&D](#)

[Basic research](#)

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