

Research and experimental development in Poland in 2021

24.10.2022


16.3%

An increase in gross domestic expenditure on R&D

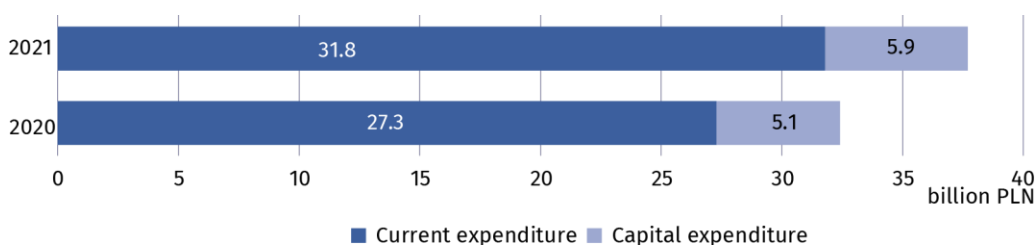
In 2021, gross domestic expenditure on R&D (GERD) amounted to 37.7 billion PLN and increased by 16.3% in comparison to the previous year. R&D intensity indicator, which constitutes a share of intramural R&D expenditure in GDP, amounted to 1.44% (in 2020 – 1.39%). Gross domestic expenditure on R&D per capita amounted to 992 PLN and was higher by 16.9% than in the previous year. The number of R&D entities increased by 15.5%.

Table 1. Selected data on R&D

Specification	2015	2016	2017	2018	2019	2020	2021
Number of entities in R&D	4 427	4 871	5 102	5 779	5 863	6 381	7 370
Gross domestic expenditure on R&D (GERD) in million PLN	18 061	17 943	20 578	25 648	30 285	32 402	37 676
Relation of GERD to GDP in %	1.00	0.96	1.03	1.21	1.32	1.39	1.44

INTRAMURAL EXPENDITURE ON RESEARCH AND DEVELOPMENT

In the year 2021, 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 84.4%.

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 23.8 billion PLN (by 16.7% more than in 2020). Expenditure of this sector accounted for 63.1% of gross domestic expenditure on R&D in 2021 (compared to 62.8% in 2020). The share of other sectors of performance in these expenditure amounted to: higher education – 34.7%, government – 2.0% and private non-profit – 0.2% (compared to 34.9%, 2.0% and 0.2% in 2020).

R&D intensity (GERD/GDP) amounted to 1.44%

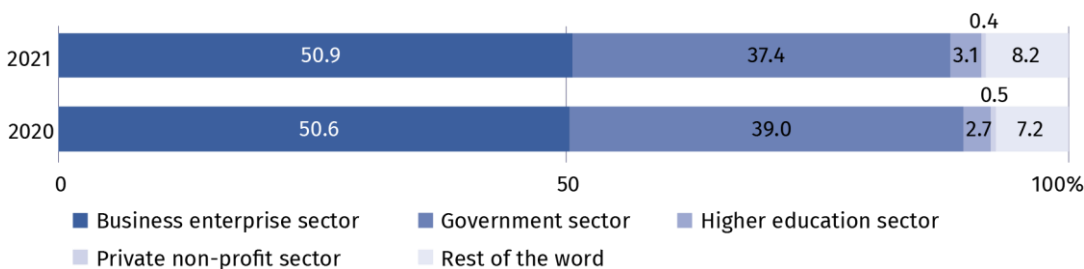
The business enterprise expenditure on R&D (BERD) accounted for 63.1% of gross domestic expenditure on R&D (GERD)

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

Sectors of performance	2020	2021
	in million PLN	
Total (GERD)	32 402.1	37 675.8
Business enterprise (BERD)	20 359.1	23 769.1
Government (GOVERD)	639.1	770.3
Higher education (HERD)	11 324.4	13 059.0
Private non-profit (PNPERD)	79.5	77.5

In the year 2021, 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 50.9% and 37.4% of all intramural expenditure on R&D, respectively (compared to 50.6% and 39.0% in 2020).

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

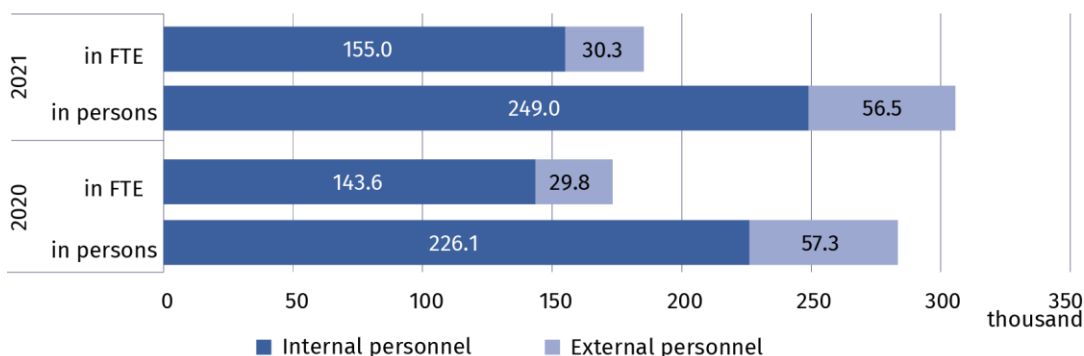


PERSONNEL IN RESEARCH AND DEVELOPMENT

The number of personnel involved in research and experimental development in 2021 amounted to 305.6 thousand persons, that is, by 7.8% more than in the previous year. Actual involvement of R&D personnel in research and experimental development in full-time equivalents amounted to 185.3 thousand FTE and increased by 6.9% on an annual basis. R&D was mainly performed by internal personnel which accounted for 81.5% of personnel in headcount and 83.7% - in FTE in 2021 (in 2020 these shares amounted to 79.8% and 82.8%, respectively).

Internal personnel accounted for 83.7% of R&D personnel in FTE

Chart 3. R&D personnel by main groups



In 2021, researchers prevailed in the structure of persons engaged in research and experimental development by R&D functions. They accounted for 70.0% of internal personnel and 73.1% of external personnel in headcount (compared to 70.0% and 66.7% in 2020). In FTE, researchers as the share of persons employed in R&D accounted for 72.7% and as the share of external contributors 75.8% (compared to 72.6% and 68.3% in 2020).

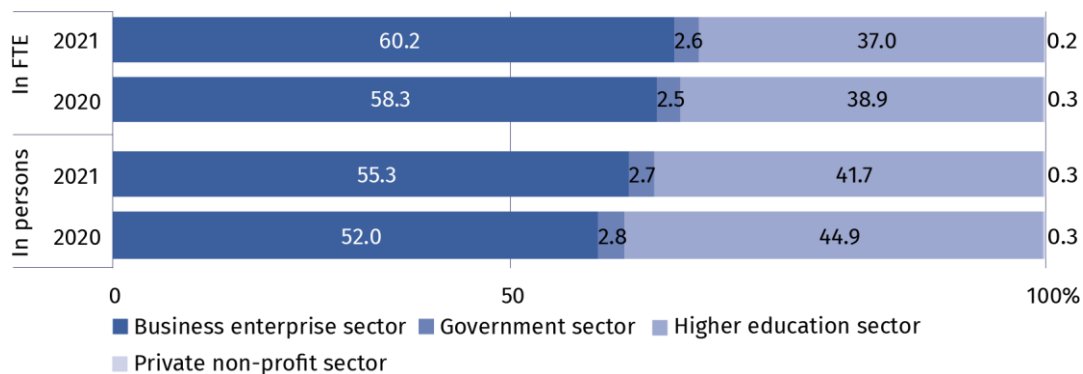
Table 3. Selected indicators on internal R&D personnel^a

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

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 2021, 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 55.3% and 41.7% 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 17.1% 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 (93.3 thousand FTE) which increased by 11.4% in comparison to 2020.

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 55.9% and 64.6% of a given R&D personnel group, respectively. Among internal R&D personnel 32.7% of persons held at least the scientific degree of doctor (PhD) and among external personnel this share amounted to 19.2%.

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

Specification a – 2020 b – 2021	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	283 431	14 196	26 053	49 797	159 145	34 240
	b	305 563	14 645	25 619	51 980	175 659	37 660
Internal personnel	a	226 131	11 076	23 268	45 434	121 301	25 052
	b	249 014	113 33	22 761	47 307	139 139	28 474
External personnel	a	57 300	3 120	2 785	4 363	37 844	9 188
	b	56 549	3 312	2 858	4 673	36 520	9 186

Prepared by:
Statistical Office in Szczecin
Director Magdalena Wegner
Phone: (+48 91) 459 77 00

Issued by:
**The Spokesperson for the President
of Statistics Poland**
Karolina Banaszek
Phone: (+48) 695 255 011

Press Office

Phone: (+48 22) 608 38 04

e-mail: obslugaprasowa@stat.gov.pl



stat.gov.pl/en/



[@StatPoland](https://twitter.com/StatPoland)



[@GlownyUrzadStatystyczny](https://www.facebook.com/GlownyUrzadStatystyczny)



[gus_stat](https://www.instagram.com/gus_stat)



[glownyurządstatystycznygus](https://www.youtube.com/glownyurządstatystyczny)



[glownyurządstatystyczny](https://www.linkedin.com/company/glownyurządstatystyczny)

Related information

[Research and experimental development in Poland 2020](#)

[Science and technology in 2020](#)

[Methodological report. Research and experimental development](#)

Data available in databases

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

[Local Data Bank \(BDL\)](#)

[Knowledge Databases \(DBW\)](#)

[Strateg](#)

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](#)

[Applied research](#)

[Experimental development](#)

[R&D personnel](#)

[Internal R&D personnel](#)

[External R&D personnel](#)