

PORTUGAL BIOTECH:

TRENDS, OPPORTUNITIES AND CHALLENGES OF
THE PORTUGUESE BIOTECHNOLOGY SECTOR

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Study Coordinator:



P-BIO

Portugal's Biotechnology Industry Organization
Associação Portuguesa de BioIndústria

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P-BIO is a private non-profit association that brings together companies related to biotechnology and life sciences in Portugal. Since its foundation in 1999, it has contributed as a key element to the development and support of biotechnology in Portugal. **P-BIO** seeks to develop a favorable environment for the creation and growth of biotech companies and to promote their national and international business development. **P-BIO** also plays a key role in the interconnection between biotech companies and government bodies, investors, regulatory agencies, and other relevant stakeholders.

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BioData.pt is the Portuguese distributed infrastructure for biological data and the Portuguese ELIXIR node. **BioData.pt** supports the national scientific system through best practices in data management and state of the art data analysis. It interfaces with both academia and industry, making research available for innovation, namely in sectors such as agro-food and forestry, sea, and health.
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#00

Portugal's Biotechnology Industry Organization (P-BIO) is the only association that brings together the vast majority of companies linked to the biotechnology and life sciences sector.

	# Firms	Operating revenue (Turnover) K EUR*	Number of employees*
Associate National	26	73 716	376
Associate MNE Biopharma	12	515 817	520
Non-profit	3	n.a.	n.a.
Total	41	589 533	896

Source: Orbis Europe - Bureau van Dijk, 2020

Portugal's Biotechnology Industry Organization (P-BIO) is the only association that brings together the vast majority of companies linked to the biotechnology and life sciences sector.

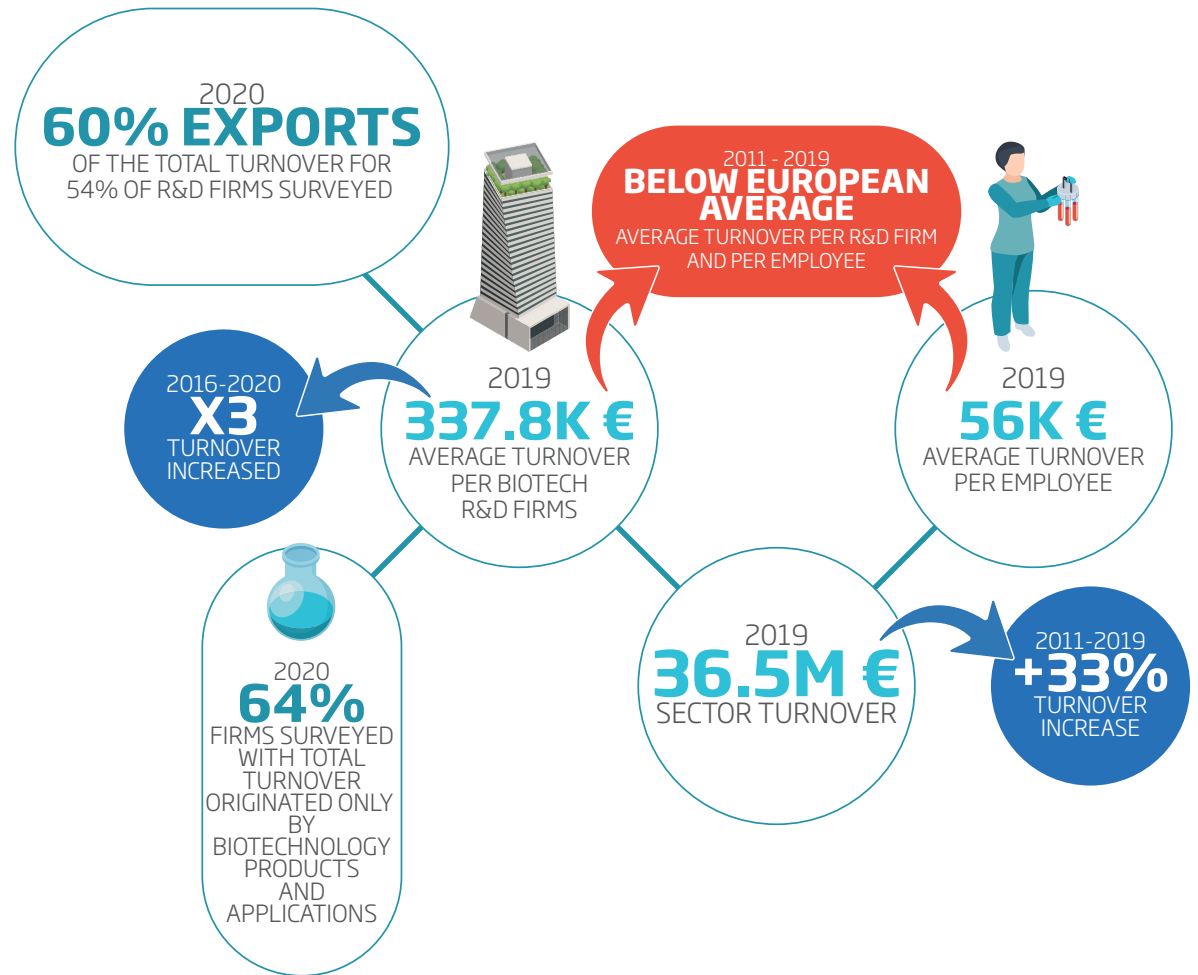
Since it was founded in 1999, it has been the cornerstone for development and support of biotechnology in Portugal. P-BIO seeks to develop an environment that is favourable to the creation and growth of start-ups,

promoting their corporate development domestically and internationally. While developing this ecosystem, it contributes to raising the profile of this sector and its developments. As a member of EuropaBio, the

Organization is key to linking companies and their relevant partners in government, investors, regulating agencies and other institutions linked to the industry.

#01

Portuguese Biotechnology industry is a high-priority sector: its ability to innovate and to promote innovation diffusion to other sectors makes it a key driver to the competitiveness of the Portuguese economy.



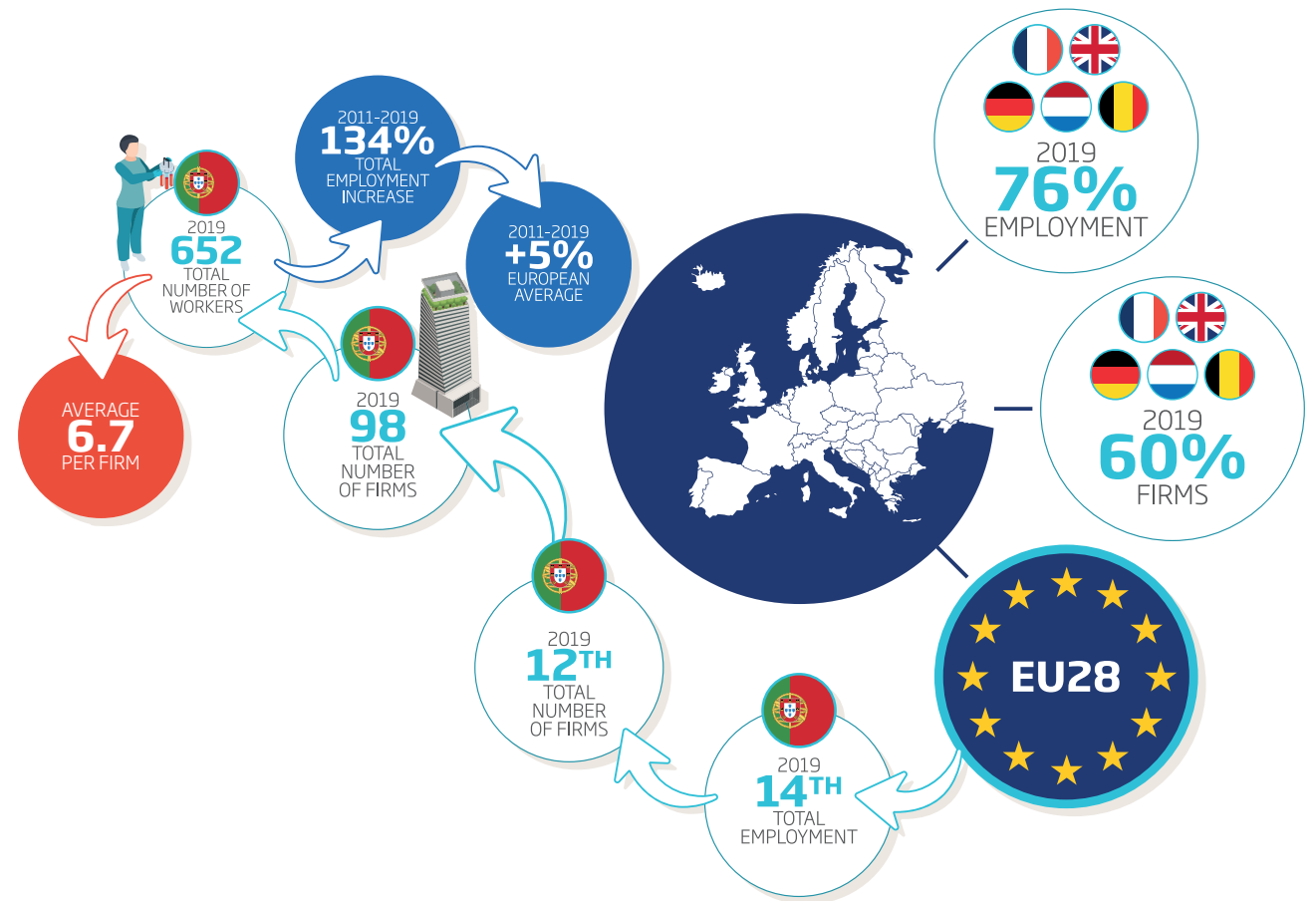
The present study aims at characterizing the Portuguese Biotechnology sector, grounded on Biotech R&D firm-level information. Its objectives are threefold: to gauge the size of the sector by means of financial and economic indicators (turnover, employment, added-value, returns on equity, among others), to characterize the labour market, and to characterize the innovation performance.

Biotechnology industry is a high-priority sector, a key driver to the competitiveness of the Portuguese economy. Its high capacity to innovate and to promote innovation diffusion to other sectors is based on its contribution to the economic growth and to technological progress in key sectors such as health, environmental activities and agro-food industries.

In 2019, in Portugal, the sector turnover was 36.5 million euros, the average turnover per firm was 337.8 thousand euros and the turnover per employee was 56.0 thousand euros. From 2011 to 2019 the sector turnover increased 33% but the average turnover per firm or per employee remain below the average observed in the 28 EU countries. From 2016 to 2020 the turnover of the surveyed

companies more than triplicated. Biotechnology products and applications represent 100% of the turnover of 64% of the companies surveyed. For 53% of the companies, exports account for more than 60% of their turnover.

#02



A growing sector in a recessive context.

In 2019, there were 98 firms in Portugal, which employed 652 workers, with an average size of 6.7 workers per firm, about a third of the European Union average (21.6

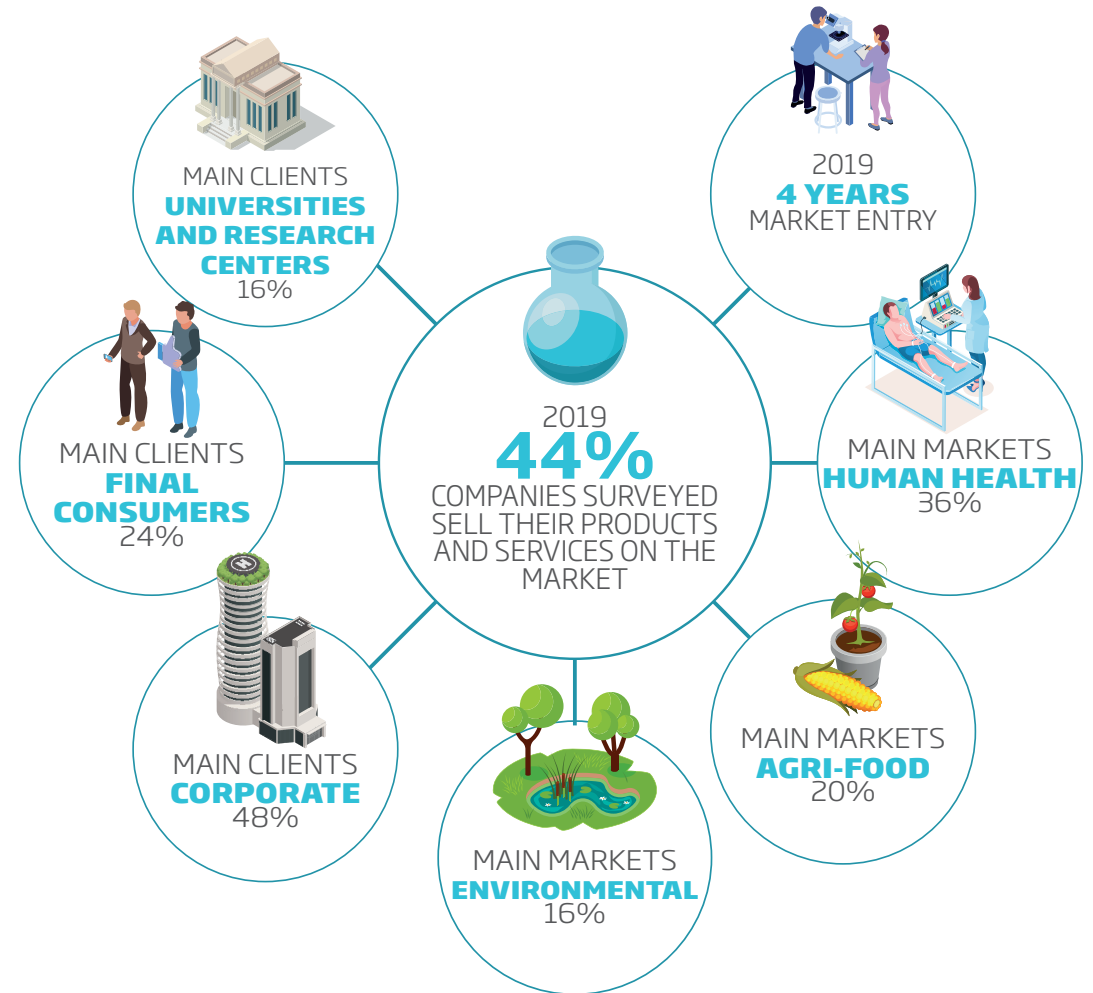
workers per firm). From 2011 to 2019, total employment experienced a strong increase, about 134%, above the average increase observed in European countries (129%).

At the European Union level, five countries concentrate 76% of the employment and 60% of the number of firms: the United Kingdom, Germany, The Netherlands, Belgium, and France. In 28 European Union

countries with comparable data, Portugal ranks 14 regarding total employment (0.5% of the total) and ranks 12 in the total number of firms (1.5% of the total).

#03

The human health area and corporate consumers are the main targets for the companies surveyed

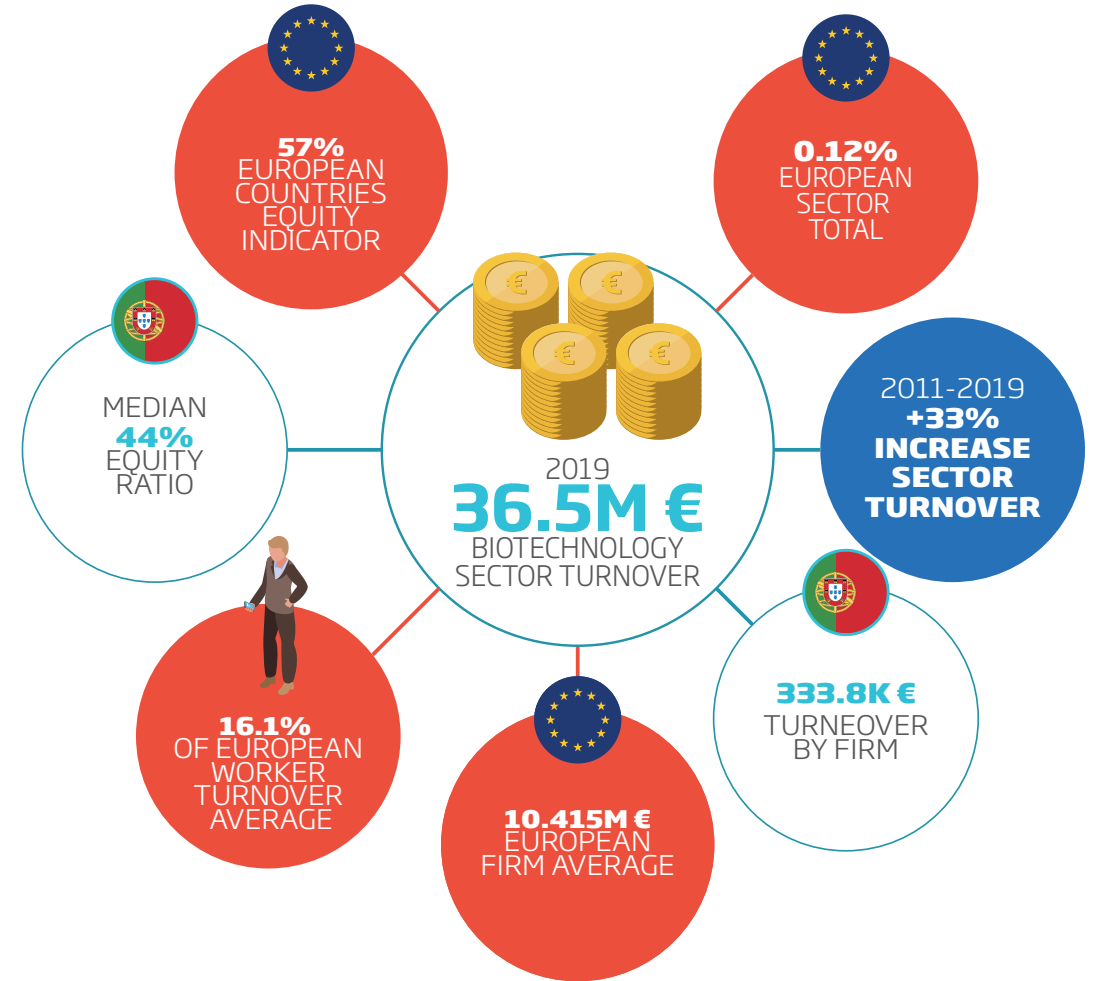


About 44% of the companies surveyed sell their products and services on the market, and needed an average of 4 years to get the products into market. The main target markets served are in the areas of human health (36.0%), agri-food

(20.0%) and environmental (16.0%). The products and services are mainly sold to corporate consumers (48.0%), final consumers (24.0%) and Universities and Research Centres (16.0%).

#04

Firm size below the European average and in need of strengthening their equity ratios.



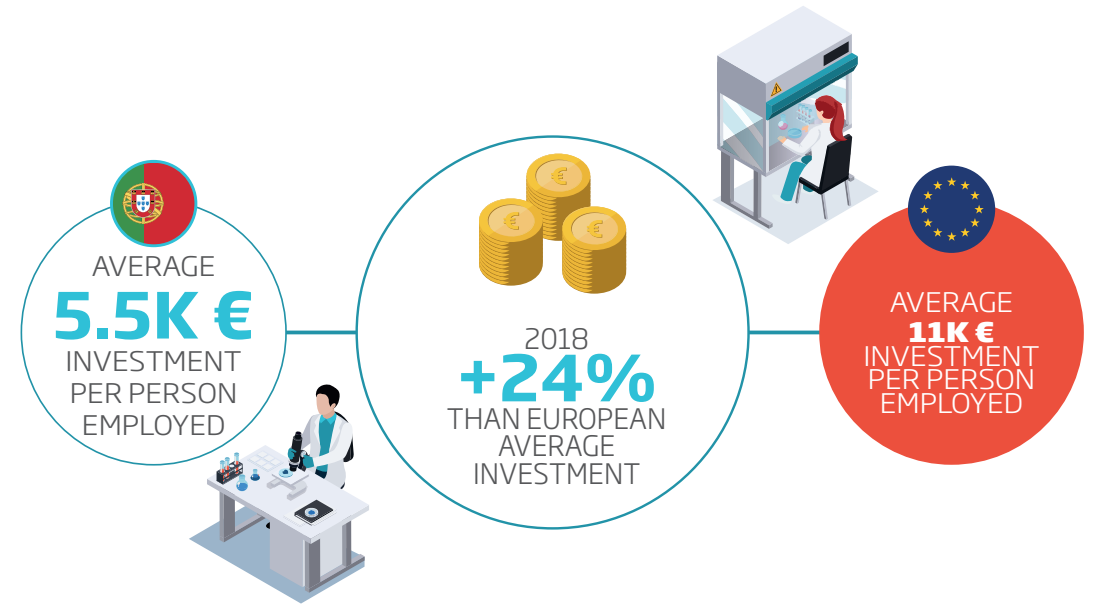
In 2019, in Portugal, the sector turnover was 36.5 million euros, corresponding to 0.12% of the total of the sector at the European level. It represents an increase of 33% compared to the turnover in 2011.

The average turnover by firm was 333.8 thousand euros, much lower than the European average of 10.415 million euros. The average turnover by worker was 16.1% of the European average.

The equity ratio of Portuguese firms (median) has been about 44%, whereas in other European countries the indicator is about 57%.

#05

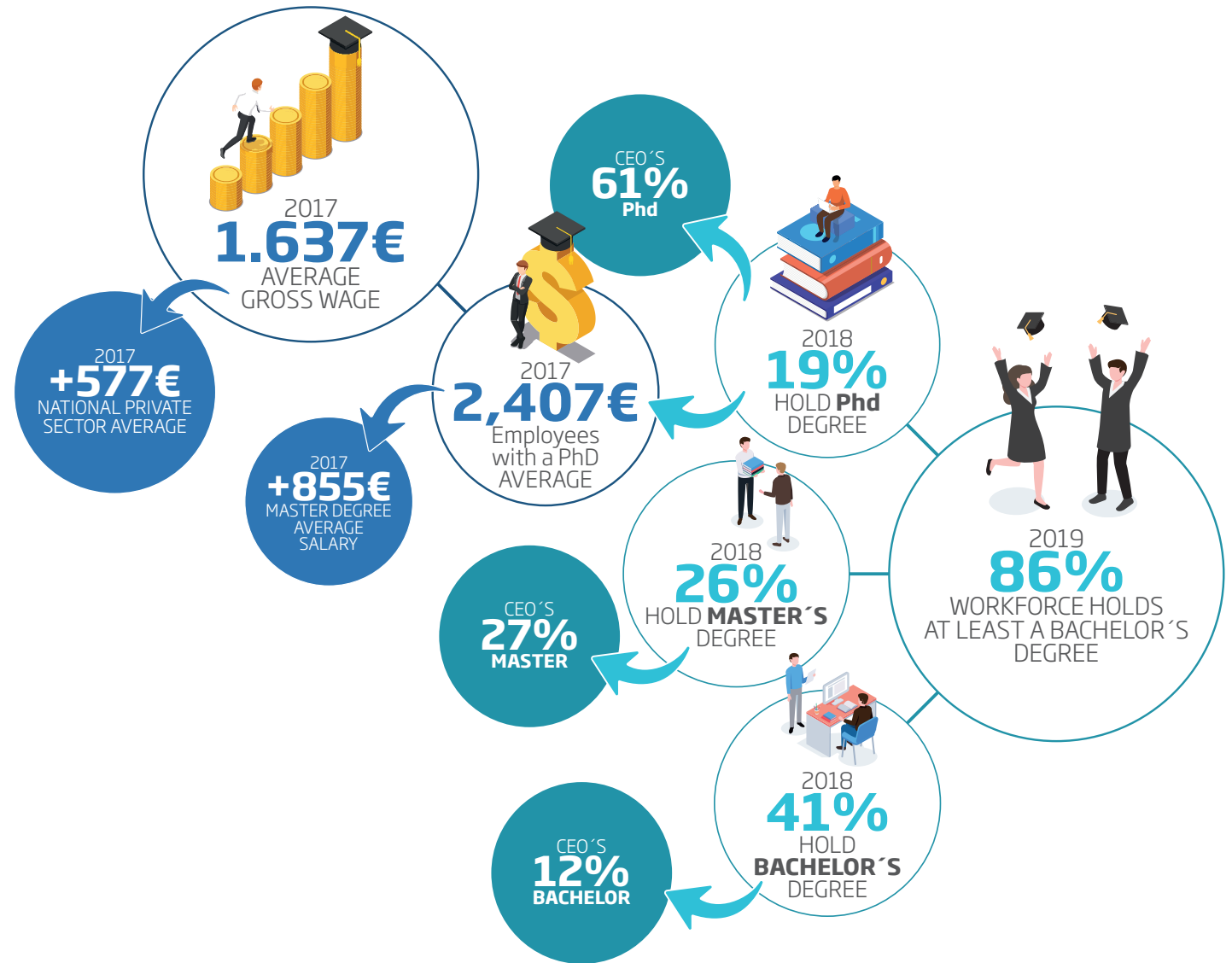
The investment rate is higher than European average, but the investment per person employed is lower.



In 2018, the investment rate (investment/-value added at factors cost) is 24%, higher than European average (18%). However, the

investment per person employed is 5.8 thousand Euro, below the European average of 11 thousand Euro.

#06



Knowledge intensive sector, creating highly skilled jobs and paying above-average wages.

About 86% of the sector workforce has at least a Bachelor's diploma. Namely, 19% of the workers have a PhD, 26% completed a Master's degree, and 41% have a Bachelor's diploma. In the companies surveyed, 61% of the CEO's have a PhD, 27% have a Master's degree and 12% have a Bachelor's degree.

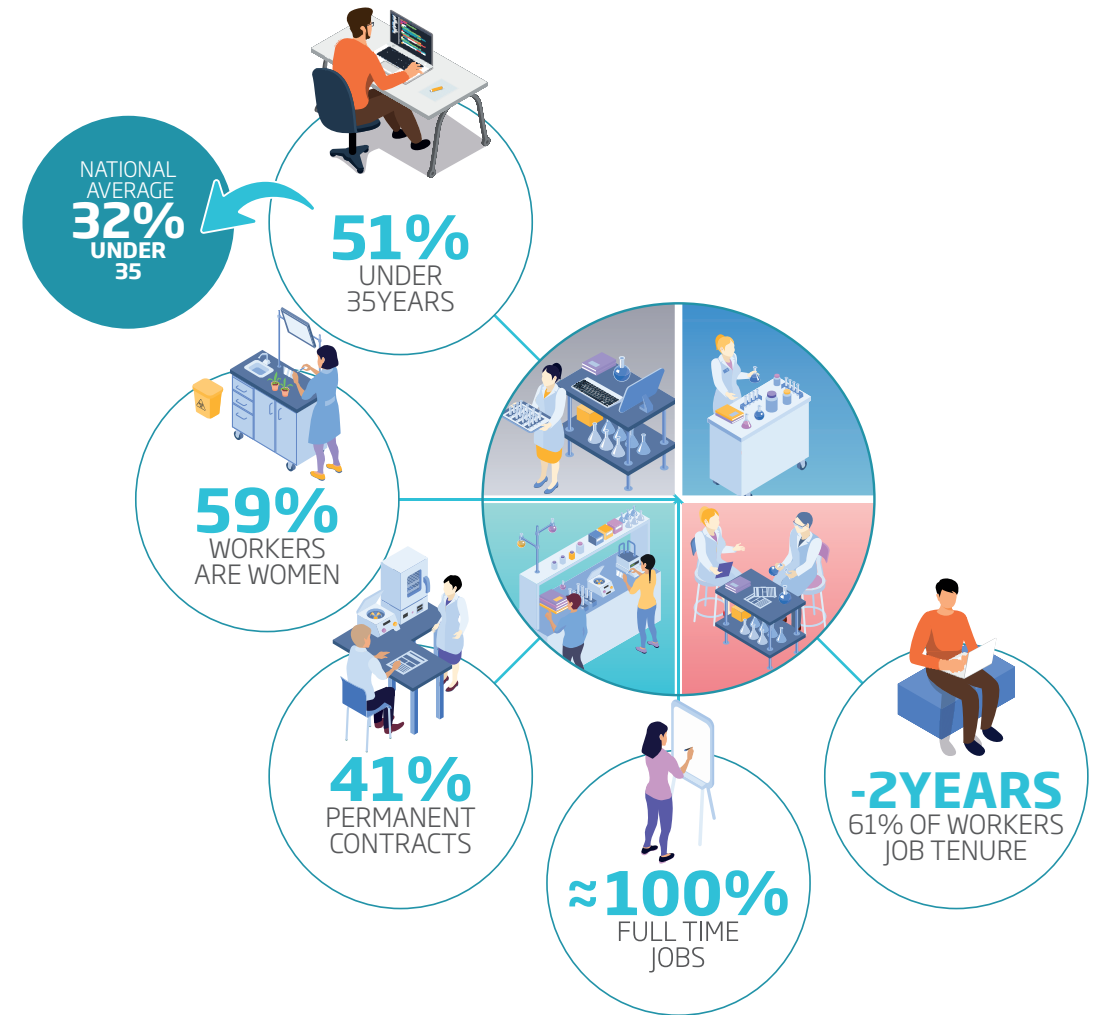
In 2017, the average gross wage (base wage plus overpayments) was 1637 euros, about 577 euros above the national private sector average. Employees with a PhD earned 2,407 euros, on average, 855 euros above the wage of an employee with a Master degree.

#07

One half of the human resources aged less than 35 years old, and the sector employs proportionally more women than men.

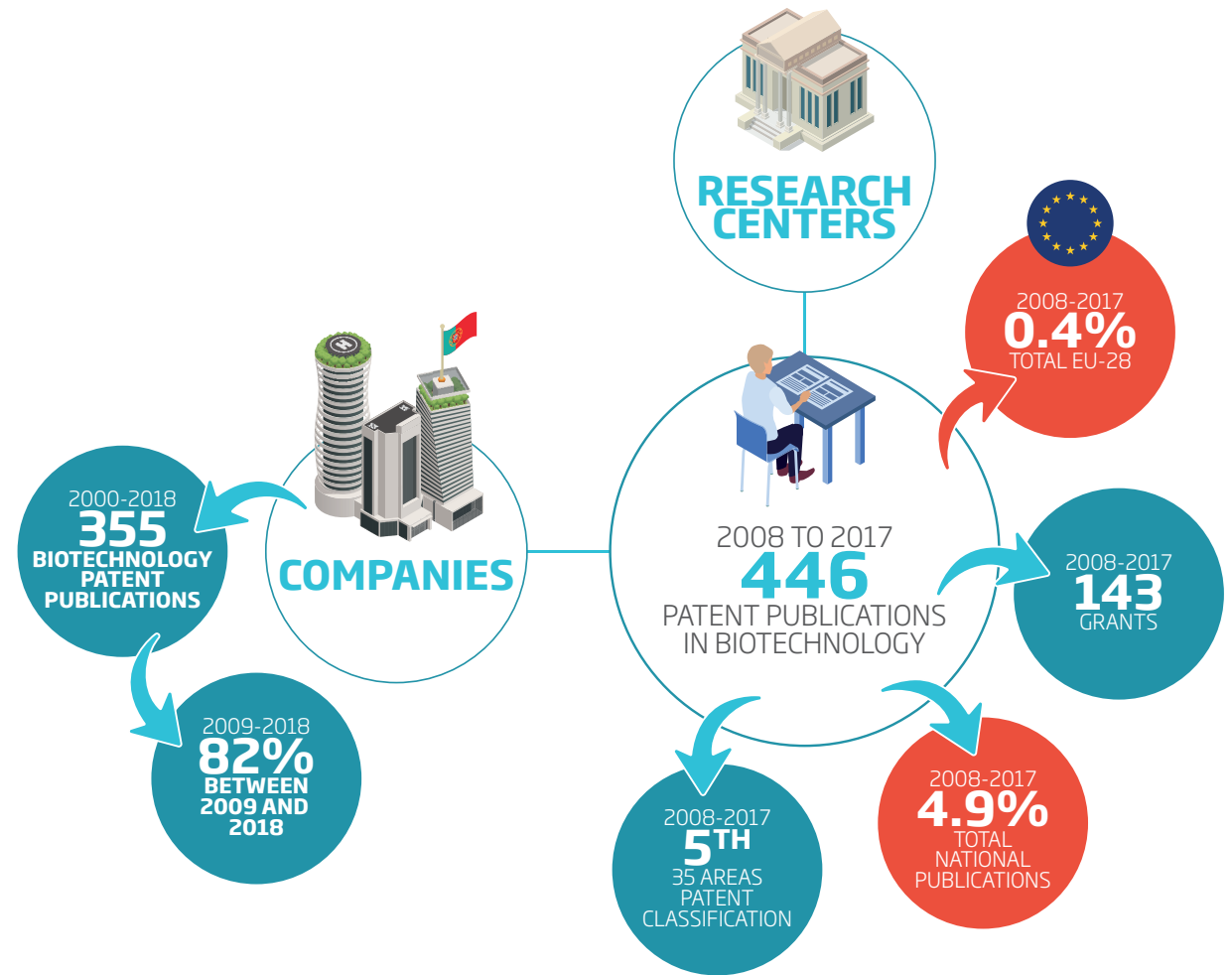
The average workers' age is below the national mean: 51% aged less than 35 years old, comparing with 32% at the national level. 59% of the workers are women.

41% of the workers have a permanent contract and almost all people work full-time. 61% of the employees have a job tenure (the length of time an employee has been employed by his current employer) lower than 2 years.



#08

More than 80% of all the patents published by Portuguese biotech firms were in the last ten years. In Portugal, the biotechnology ranks 5 in the 35 technological classifications regarding patent publications.

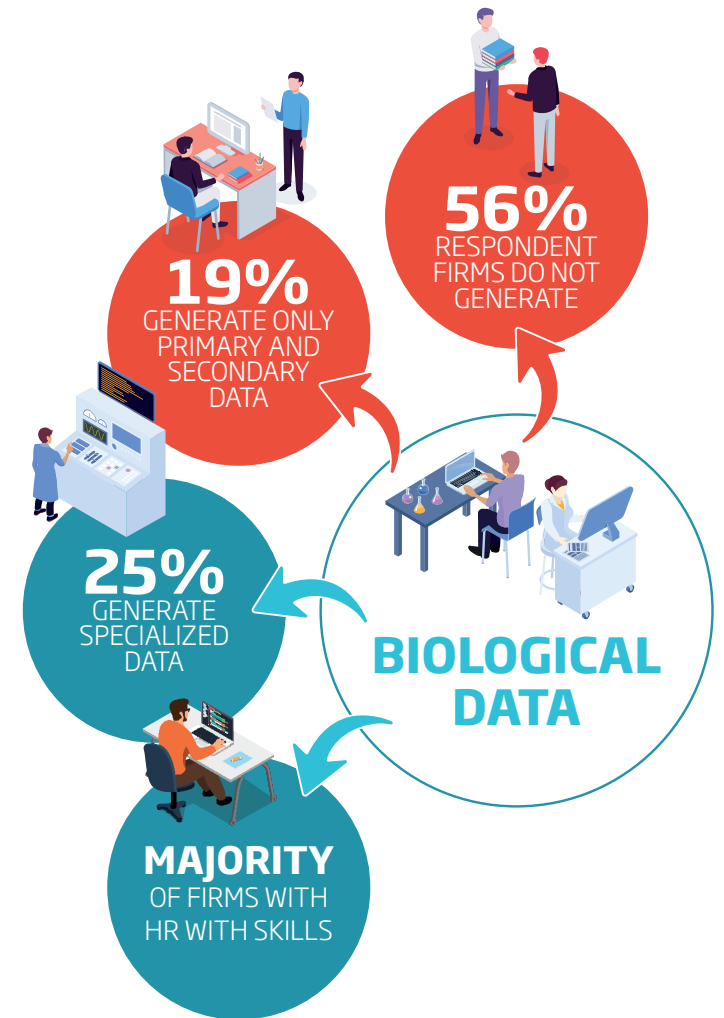


The number of patent publications by Portuguese biotech firms between 2000 and 2018 is 355, with 82% published between 2009 and 2018. From 2008 to 2017, there were 446 patent publications in biotechnology, by both companies and research centers (0.4% of the

total for the UE-28). In the same period, there were 143 grants. Those patent publications represent 4.9% of the total publications in Portugal, and puts Biotechnology in fifth place among the 35 areas of the patent classification.

#09

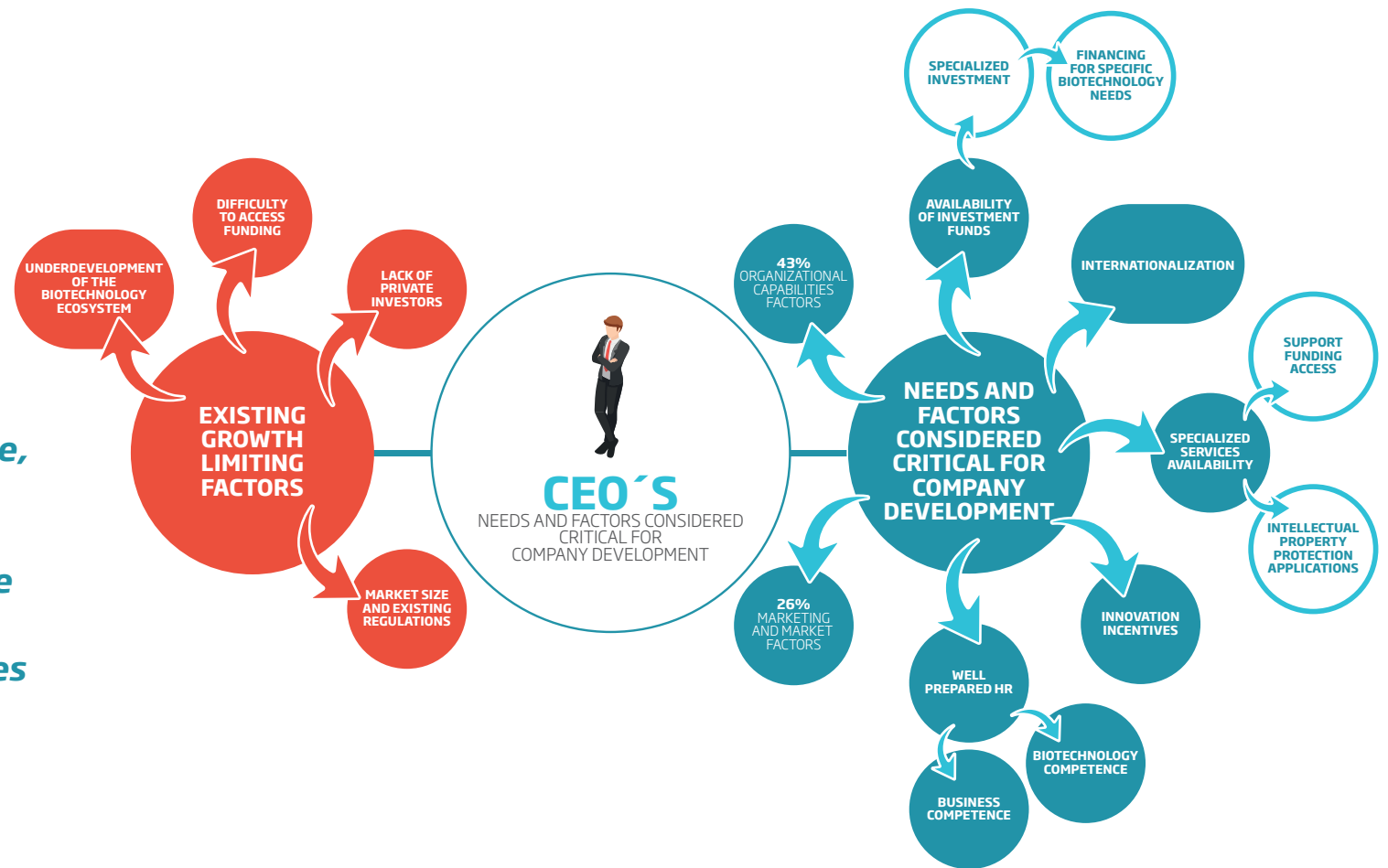
More than half of the respondent firms do not generate biological data, but the majority have employees with skills in biological data management or outsource this function.



More than half (56%) of the respondent firms do not generate biological data. The others generate primary and secondary data (19%) and one quarter specialized data. The majority of the firms have employees with skills in biological data management or outsource this function.

#10

Access to funding, lack of private investors, market size, regulations and the underdevelopment of the biotechnology ecosystem are the main factors that hinder the growth of their companies



CEOs refer more often to factors related to organizational capabilities (43%), followed by marketing issues and market conditions (26%) as the factors that they believe are critical for the development of their company.

The importance of the availability of investment funds was also mentioned as necessary to boost the sector, particularly specialized

investment, as biotechnology presents different financial challenges from other areas.

Internationalization is a critical for their own business development. Other important factors are the availability of specialized services, to support funding access and Intellectual Property protection applications,

the need to be and stay innovative and having access to well-prepared human resources, not only in terms of biotechnology competence but also business competence are also critical to business growth.

The factors that have been limiting the growth of their companies are the difficulty to access funding in general, or to the lack of

private investors. Market size, regulations and the underdevelopment of the biotechnology ecosystem is limiting the growth of their companies.