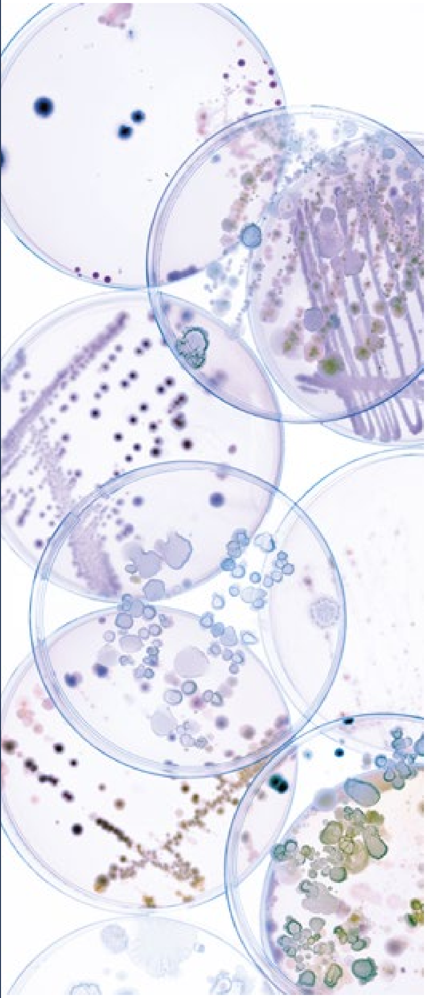
BioInItaly®
Report 2023

# The Italian Biotech Industry
# *Economic Update 2023*



FEDERCHIMICA
ASSOBIOTEC
Associazione nazionale per lo sviluppo delle biotecnologie

ENEA
Italian National Agency for New Technologies, Energy and Sustainable Economic Development

ITA
ITALIAN TRADE AGENCY

# Introduction

This report on biotechnology companies in Italy, produced thanks to the collaboration between Federchimica Assobiotec, the national association for the development of biotechnology, and ENEA, the national agency for new technologies, energy and sustainable economic development, updates the situation of the sector.

As every year, the report is based on data and information collected directly from biotech companies at the end of 2022, from the last balance sheets and from other official sources including those of the National Statistical System. The novelty of this updating report available until 2021, consists of collecting provisional data for 2022 through the statistical survey on biotechnology companies, included in the National Statistical Programme. We collected the main economic indicators about the development of the sector for 2022, a year for which final data and balance sheets are not yet available at the time of this survey. Based on data of our survey, it was possible to have some forecast for 2022, finding some suggestions about the trend for the Italian biotech sector. Compared to 2021 an increase is expected. Moreover, as every year, the new data collected was used to harmonize our times series, improving the accuracy of the data. In this report, it was decided not only to show data about the biotechnological industry's main indicators of the last available year (2021), but to present the entire time series including the provisional data related to 2022.

The Italian biotechnology industry confirms its strategic role in the Italian development of the sector. The anti-cyclicality component of our time series is due to the applications for human health; the strong dynamism of our time series also is due to the transition in industrial production processes and agricultural and livestock farming sector.

About two years after the worst period of pandemic, the update time series allow to measure more accurately both the economic and structural effects that the pandemic has had on the Italian biotechnology industry. The economic indicators showed that the sector not only held up, as noted in previous survey, but the updated time series even show a growth in term of biotech turnover and R&D investment during the year of the pandemic (2020). In 2020 the biotechnological sector was sustained, as was to be expected, by applications for human health, while in the following two years (2021-2022) there was a strong increase in term of applications for industry, agriculture, and livestock. The pandemic thus does not appear to have interrupted the development of biotechnology applications including to human health, which now account for more than a quarter of the turnover generated by biotechnology activities.

Growth in term of the weight of total applications for the bioeconomy (industry and agriculture) also resume thanks to R&D investments in biotechnology, even if more gradually given the importance of research costs for the development of new drugs and diagnostics. There is only a temporary decline in the volume of biotech R&D investments in 2021, one year later than the decline of the number of companies, which collapsed in 2020. For both indicators, however, there is a recovery starting as early as 2021.

Finally, the process of territorial diffusion of the presence of companies active in biotechnology continues without discontinuity, even if the territorial concentration of the main economic variables persists.

# The key figures of the Italian biotech sector

The data collected in our survey and processed give the picture of a sector that has proven to be more resilient than shown by previous estimates, even recording a slight growth in turnover from biotechnological activities in 2020 equal to + 1.2%. After the peak of the pandemic and its effects on the economic system, the biotechnology sector experienced a strong recovery in turnover growth in 2021 with its consolidation in 2022 exceeding 13.6 billion euros.

## Biotech active firms

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022* |
|---|---|---|---|---|---|---|---|---|---|
| Number of firms | 657 | 687 | 730 | 746 | 759 | 796 | 787 | 806 | 823 |
| Biotech turnover | 9.644.162 | 10.153.228 | 10.718.359 | 11.175.501 | 12.100.718 | 11.040.770 | 11.172.945 | 13.523.742 | 13.601.882 |
| Total R&D investments | 1.425.968 | 1.563.730 | 1.553.741 | 1.615.840 | 1.632.950 | 1.733.414 | 1.769.783 | 1.815.709 | 1.847.661 |
| Total biotech R&D investments | 443.421 | 463.039 | 471.920 | 516.335 | 545.287 | 559.372 | 598.388 | 569.753 | 588.341 |
| Biotech employees | 11.830 | 12.481 | 13.347 | 13.728 | 14.010 | 14.121 | 14.411 | 13.812 | 13.784 |
| Biotech R&D employees | 3.913 | 3.963 | 4.079 | 4.437 | 4.616 | 4.723 | 4.880 | 4.875 | 4.940 |

Values in thousands of euros

## Biotech R&D dedicated firms...

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022* |
|---|---|---|---|---|---|---|---|---|---|
| Number of firms | 331 | 349 | 347 | 365 | 357 | 383 | 387 | 312 | 312 |
| Biotech turnover | 3.830.345 | 3.778.576 | 4.299.143 | 4.313.519 | 4.905.894 | 3.459.435 | 3.526.167 | 3.557.982 | 3.350.969 |
| Total R&D investments | 364.469 | 385.683 | 386.370 | 425.924 | 443.923 | 455.425 | 531.047 | 483.953 | 496.039 |
| Total biotech R&D investments | 355.409 | 375.526 | 376.557 | 415.002 | 432.909 | 441.164 | 507.370 | 468.154 | 482.667 |
| Biotech employees | 4.967 | 5.156 | 5.684 | 5.932 | 6.068 | 5.852 | 6.362 | 5.186 | 5.497 |
| R&S Biotech R&D employees | 3.018 | 3.210 | 3.270 | 3.756 | 3.906 | 3.984 | 4.123 | 3.987 | 3.914 |

Values in thousands of euros

## ... of which, nationally controlled biotech R&D dedicated firms

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022* |
|---|---|---|---|---|---|---|---|---|---|
| Number of firms | 308 | 322 | 323 | 342 | 334 | 361 | 364 | 292 | 292 |
| Biotech turnover | 739.127 | 782.976 | 863.576 | 906.808 | 1.058.106 | 1.252.017 | 1.680.737 | 1.724.634 | 2.136.567 |
| Total R&D investments | 168.413 | 177.192 | 203.658 | 214.733 | 219.756 | 239.348 | 277.694 | 265.729 | 270.215 |
| Total biotech R&D investments | 164.174 | 172.852 | 197.755 | 207.983 | 213.545 | 229.953 | 266.007 | 256.225 | 263.354 |
| Biotech employees | 3.642 | 3.781 | 4.167 | 4.379 | 4.503 | 4.294 | 4.628 | 4.294 | 4.311 |
| R&S Biotech R&D employees | 1.621 | 1.691 | 1.750 | 1.958 | 2.013 | 2.098 | 2.164 | 2.071 | 2.100 |

Values in thousands of euros

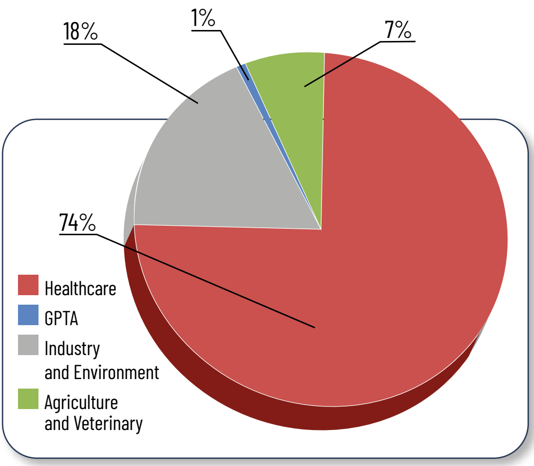
* Provisional data.

The 2022 data are provisional. The final data will be released upon completion of the 2023 survey

Furthermore, the gradually increasing weight on the total, acquired by companies Biotech R&D dedicated firms under Italian ownership is confirmed. In percentage terms, their share of turnover on the national total has more than doubled in the last decade and, in the same period, even tripled on the total turnover of companies specializing in biotechnological R&D.

# Distribution by application field

## Biotech turnover - 2021

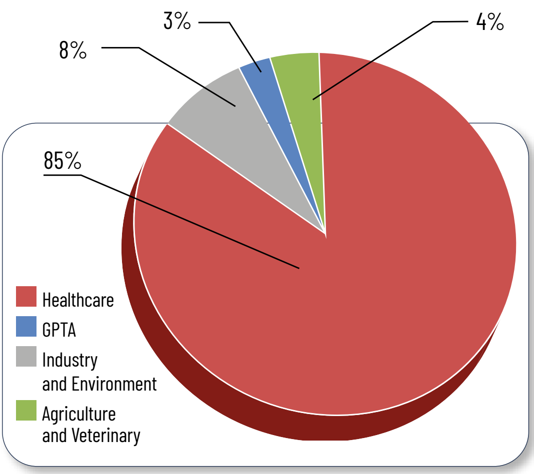



If until 2020 the turnover of the biotechnology sector was supported mostly in particular applications for human health, in the last two years it is above all applications for the bioeconomy (industry and agriculture) that temporarily resumed expansion interrupted by the pandemic (with growth rates exceeding 30% for both areas of application in the two-year period 2021-2022), coming to represent over a quarter of Italian biotech turnover with an estimated share for 2021 more than 25% of the total and further growth trend in 2022. Therefore, the trend of applications for the Bioeconomy is also confirmed, becoming increasingly relevant in the transition of our production systems.

## Intra-muros R&D investments - 2021

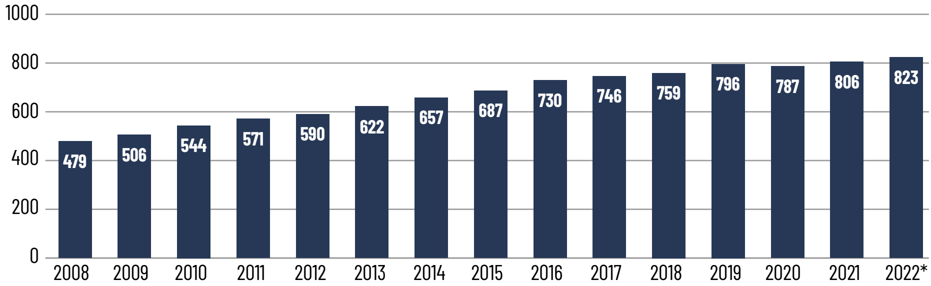
The investment in intra-muros R&D of the total of Italian biotech companies recorded a decrease with a delay of one year, contracting in 2021 by just under 5%. In 2022, however, the projections seem to indicate a decisive recovery in the growth trend, bringing back the volume of intra-mural R&D investments.

Overall, investments in intra-muros R&D biotech remain particularly concentrated in the human health area for over 85%, but the dynamics of investments in other areas of application, especially for the green sector (agriculture and animal husbandry) shows a remarkable growth.



# The evolution of the sector

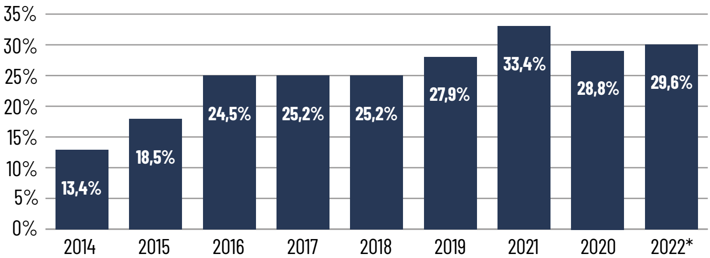
## Number of biotech firms in Italy...




* Provisional data

The number of biotechnology companies have had a slight contraction in 2020 (787 companies against 796 in the previous year) mainly due to the SME, generally focused on the development of new technologies and products. As reported in the previous report, these companies most suffered the impact of the "covid crisis", especially the micro enterprises (less than 10 employees). The more structured companies, on the other hand, showed a slight reduction only in 2021, while for 2022 there is a growth for all size classes, for a total of 823 companies (provisional data).

## ...and the start-up rate

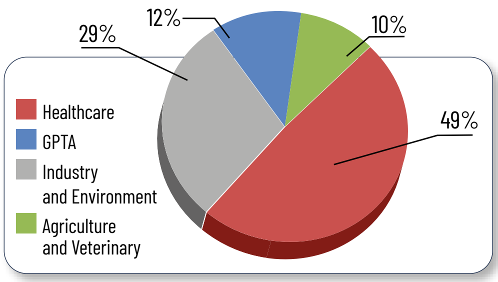



* Provisional data

Even the number of new innovative start-ups seems to have resumed the path of growth temporarily interrupted due to the pandemic crisis of 2020.

## Distribution of biotech active firms by field of main application - 2021

Although the activity of biotech companies remains largely concentrated in the area of human health (above 50%), between 2014 and 2021 there has been an expansion of the shares relating to companies developing biotech applications for the industry and the environment as well as for agriculture and animal husbandry which, since 2014, have shown great dynamism and the importance, therefore, of this sector for the bioeconomy.



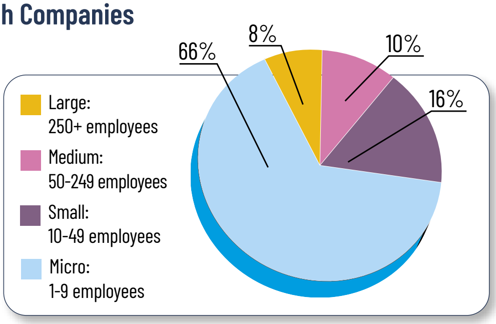
# Size analysis

## Distribution of biotech active firms by size class

The share of micro or small enterprises exceeds 82% of the total in the sector, while large enterprises represent just under 8% of the entire population under analysis.

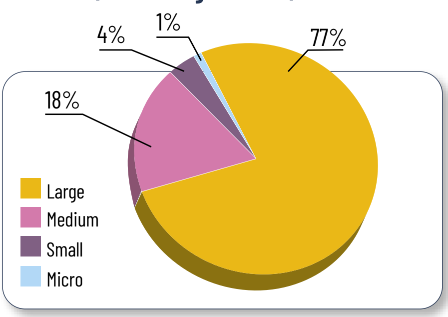
### Number of small, medium and large Biotech Companies (Percentage values) - 2021

| | Health | GPTA | Industry and environment | Agriculture and Veterinary |
|---|---|---|---|---|
| Large | 10.6% | 2.1% | 5.5% | 6.4% |
| Medium | 11.9% | 4.3% | 9.2% | 11.5% |
| Small | 15.7% | 14.9% | 16.8% | 17.9% |
| Micro | 61.9% | 78.7% | 68.5% | 64.1% |

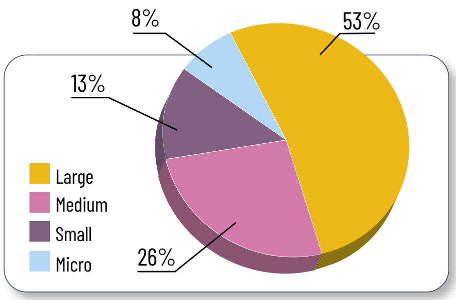



Over 94% of biotech turnover and 90% of intra-mural R&D expenditure is concentrated in medium-large companies.

### Small, medium and large Biotech Companies turnover (Percentage values) - 2021




### Small, medium and large Biotech Companies for Intra-muros R&D investments (Percentage values) - 2021




### Biotech turnover by application sector - 2021

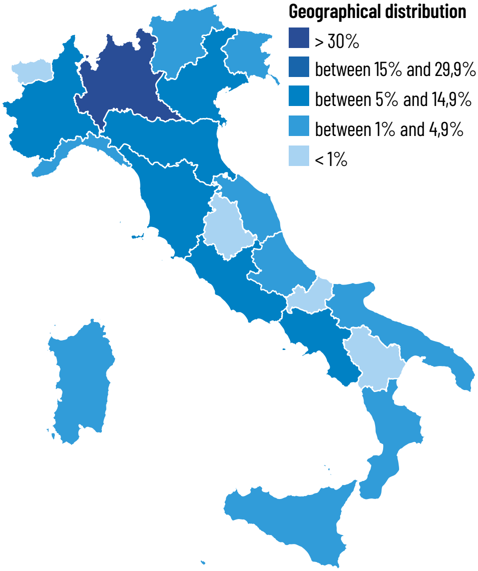
| | Health | GPTA | Industry and environment | Agriculture and Veterinary |
|---|---|---|---|---|
| Large | 76.7% | 0.1% | 81.4% | 78.4% |
| Medium | 19.0% | 70.3% | 11.7% | 16.2% |
| Micro | 0.7% | 14,9% | 5.6% | 4.8% |
| Small | 3.6% | 14.7% | 1.3% | 0.6% |

### Intra-muros biotech R&D investments by application sector - 2021

| | Health | GPTA | Industry and environment | Agriculture and Veterinary |
|---|---|---|---|---|
| Large | 55.4% | 36.0% | 40.4% | 47.9% |
| Medium | 28.9% | 2.2% | 14.5% | 6.4% |
| Micro | 9.6% | 28.8% | 27.0% | 40.8% |
| Small | 6.1% | 33.0% | 18.1% | 4.9% |

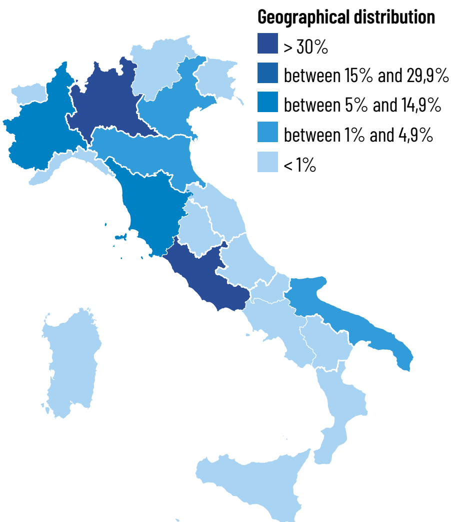
# Geographical distribution analysis

## Biotech active firms (percentages values) - 2021

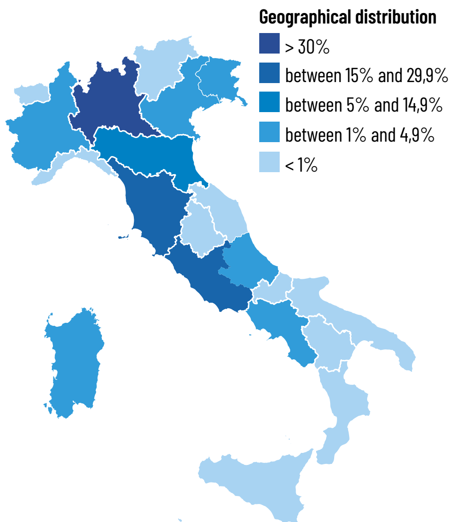



At the territorial level, the diffusion processes affecting the South and Islands are confirmed (above all in terms of the share of the number of businesses - about 21% - but not only) and the North-East of the country (about 6% of turnover and 12% of investments in R&D) especially to the detriment of the central regions. However, the polarization remains very strong, above all for the economic variables: the first 4 regions (Lombardy, Latium, Tuscany and Piedmont) represent over 90% of the turnover, 80% of intra-mural R&D investments and 80% of employees, while it drops to 52% if we consider the number of businesses). The leading region remains Lombardy, followed by Lazio and Tuscany highly specialized in applications for health, while it is the northern regions in general that show a marked specialization in the applications of biotechnologies to industrial processes.
In the south, which represents around 20% in terms of number of businesses, Campania (just under 8%) and Puglia (just over 4%) stand out.

## Biotech turnover (percentage values) - 2021

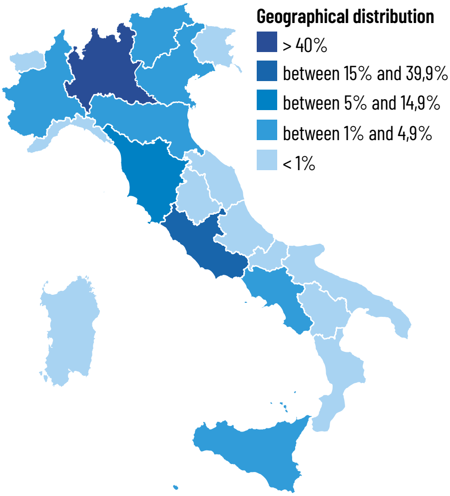



## Intra-muros R&D investments (percentage values) - 2021

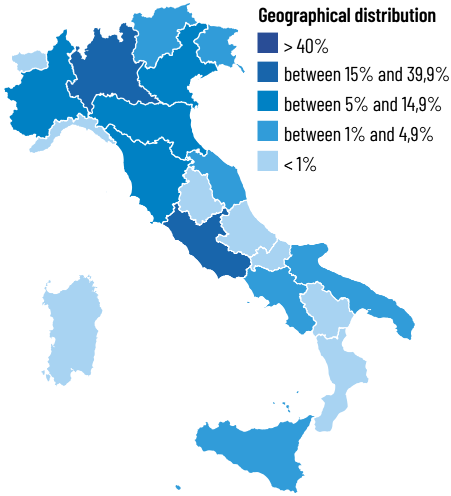


# Employee distribution

## Biotech Employees (percentage values) - 2021




## R&S biotech employees (percentage values) - 2021




At the territorial level, the strong concentration of biotech employees is confirmed especially in the North-West and Central areas, clearly driven by Lombardia and Latium, with more than 50% and 15% of employees, respectively. The North-East and the South have significantly lower shares of employees, 8.7% and 6.5% respectively, with a prominence of Emilia Romagna and Campania.

In terms of biotech R&D employees, on the other hand, the situation is less homogeneous, although Lazio and Lombardia always have relatively higher shares. North-West records 41% of employees dedicated to R&D (just under 33 percent in Lombardia) and the center 32% (concentrated between Latium and Tuscany). In the North-East there is a slight increase from previous years, bringing the share to just under 17 percent, where both Veneto and Emilia Romagna exceed 6 percent of biotech R&D employees. In the South, Campania stands out, with 4.6 percent compared to a meager 10 percent for the area.

The diffusion of biotech in the South (especially in terms of share of number of companies) and in the North-East of the country (particularly from an economic and investment point of view), has also had effects in terms of employees, especially for the North-East. However, the polarization remains very strong: the top 3 regions (Lombardy, Latium, Tuscany) account for more than 80% of biotech employees and 60% of R&D employees.

**credits**

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