KEY BIOTECHNOLOGY INDICATORS

(December 2011)

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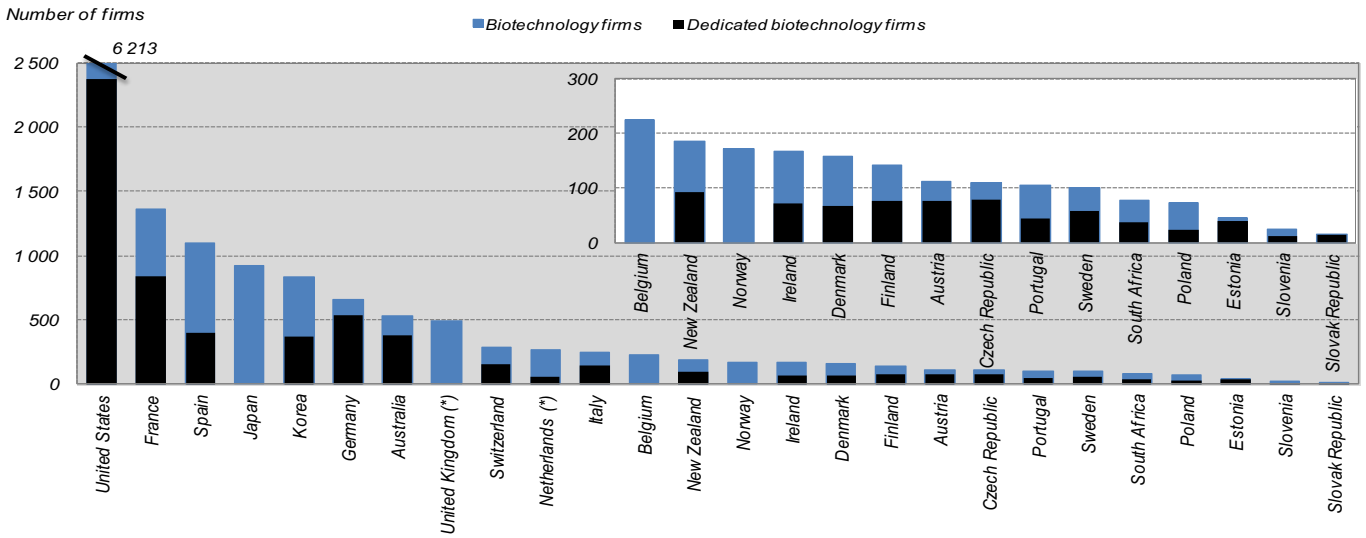
www.oecd.org/sti/biotechnology/indicators

KBI 1. Number of biotechnology firms, 2010 or latest available year



(*) Notes at the end of this document.

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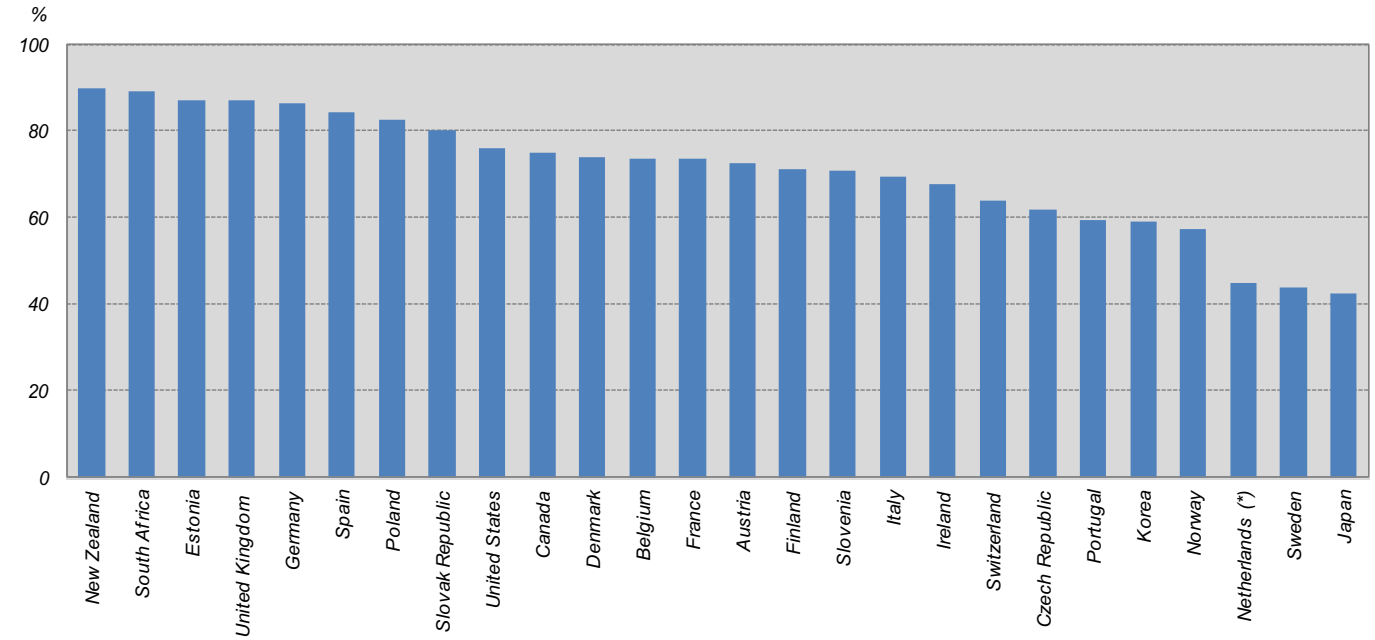
KBI 2. Percentage of small -- less than 50 employees -- biotechnology firms, 2010 or latest available year



(*) Notes at the end of this document.

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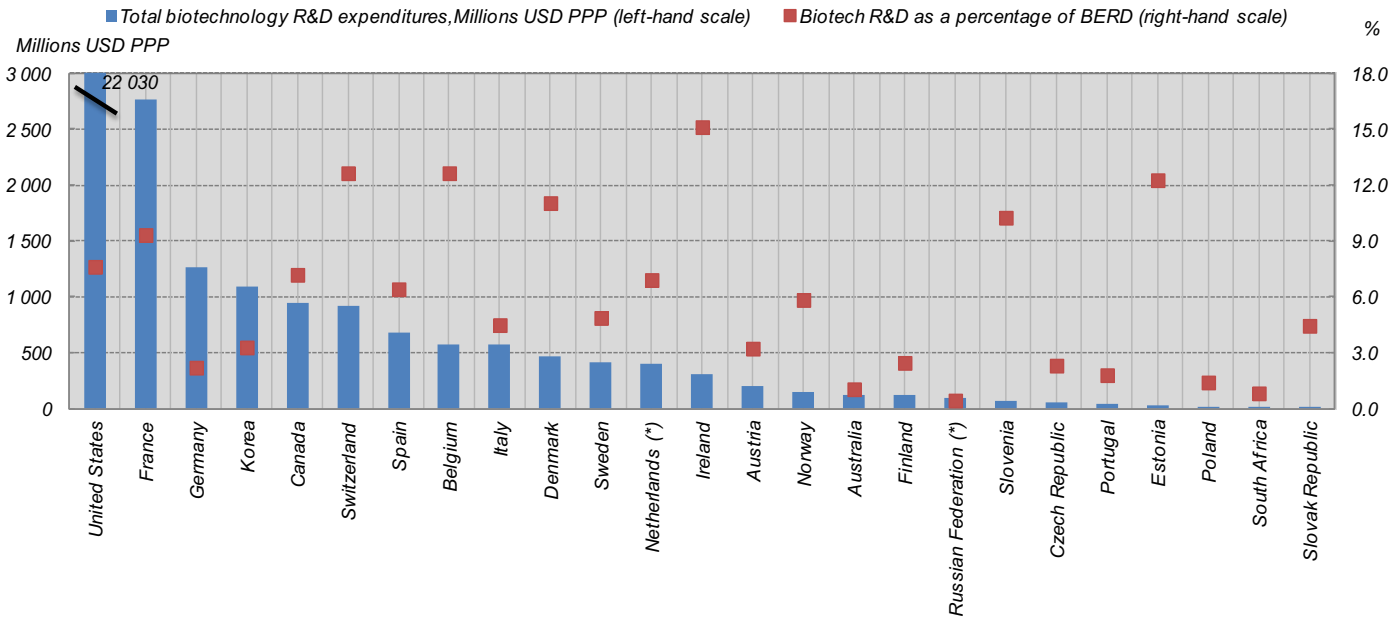
Source: OECD, Biotechnology Statistics Database, December 2011.

The United States has the largest number of biotechnology firms (6 213 firms), followed by France (1 359 firms) and Spain (1 095 firms). The 18 reporting countries from the European Union have a total of 5 398 firms. The share of dedicated biotechnology firms out of the total number of all biotechnology firms ranges from 21% in the Netherlands to 87% in the Slovak Republic. The average for the reporting countries is 55%.

Biotechnology firm size class data shows that the majority of firms have less than 50 employees. The share of firms with less than 50 employees ranges from 43% in Japan to 90% in New Zealand. The average for the reporting countries is 71%.

KBI 3. Total biotechnology R&D expenditures in the business sector, 2010 or latest available year

Millions of USD PPP and as a percentage of Business Enterprise R&D



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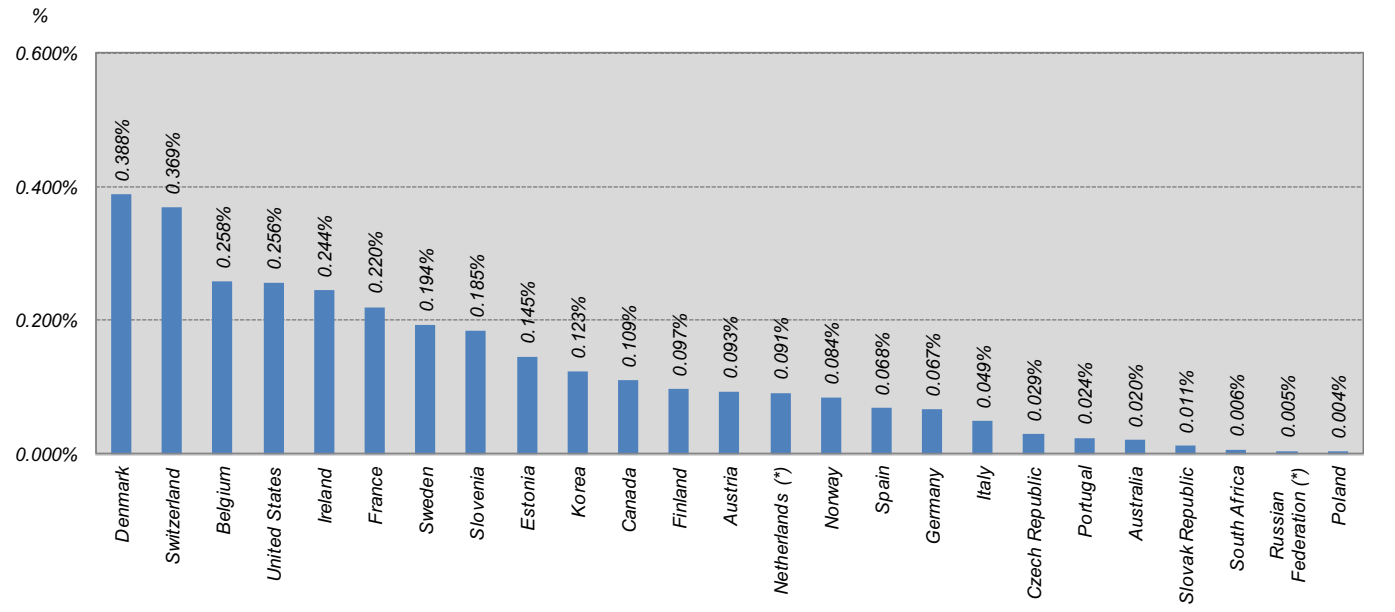
KBI 4. Biotechnology R&D intensity, 2010 or latest available year

Biotechnology R&D expenditures in the business sector as a percentage of industry value added



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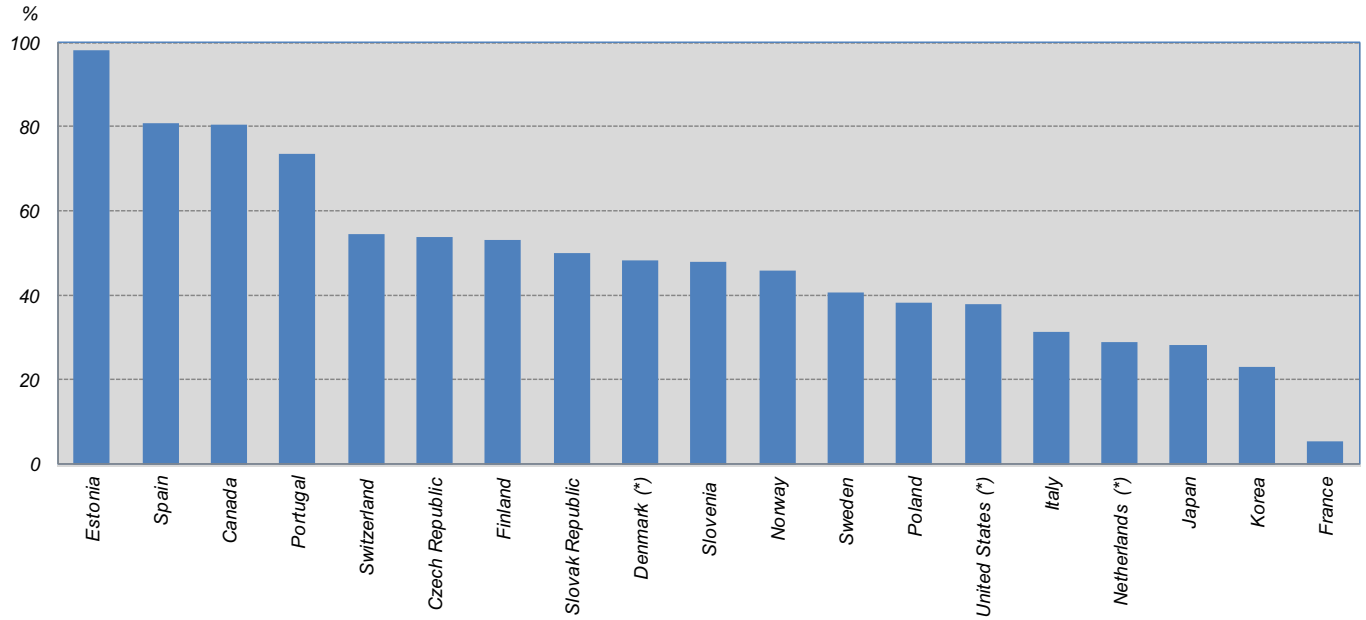
Source: OECD, Biotechnology Statistics Database, and OECD, Main Science and Technology Indicators Database, December 2011.

The United States spent USD 22 030 million PPP on biotechnology R&D, approximately 7.6% of total US Business Enterprise R&D (BERD). This accounts for 66% of the total biotechnology R&D expenditures by firms in the 25 countries for which data are available.

Biotechnology BERD as a share of total BERD is an indicator of country's research focus on biotechnology. On average, biotechnology BERD accounted for 6% of total BERD. Ireland spends the most as a percentage of BERD (15.1%).

An alternative measure of a research focus on biotechnology is the biotechnology R&D intensity, defined as the share of biotechnology R&D expenditures out of the total value added of the industry sector. The average biotechnology R&D intensity is 0.126% for the 25 countries for which data are available.

KBI 5. Percentage of biotechnology R&D expenditure in the services sector by dedicated biotechnology R&D firms, 2010 or latest available year



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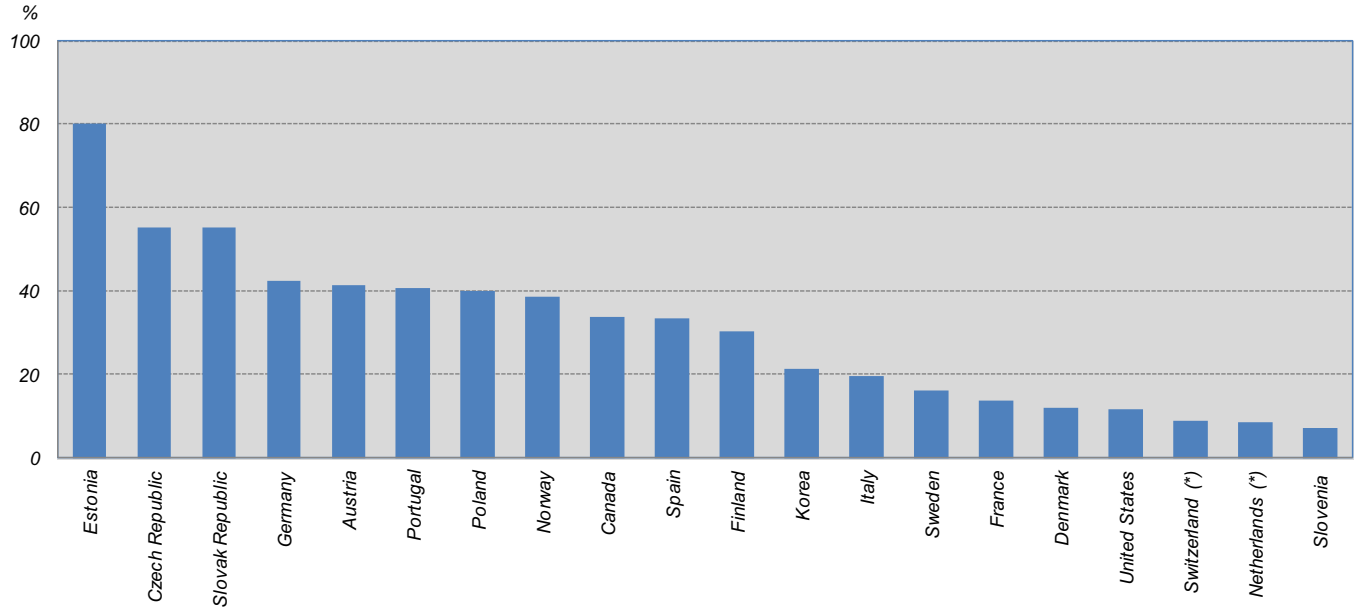
KBI 6. Percentage of biotech R&D expenditure performed by small -- less than 50 employees -- biotech R&D firms, 2010 or latest available year



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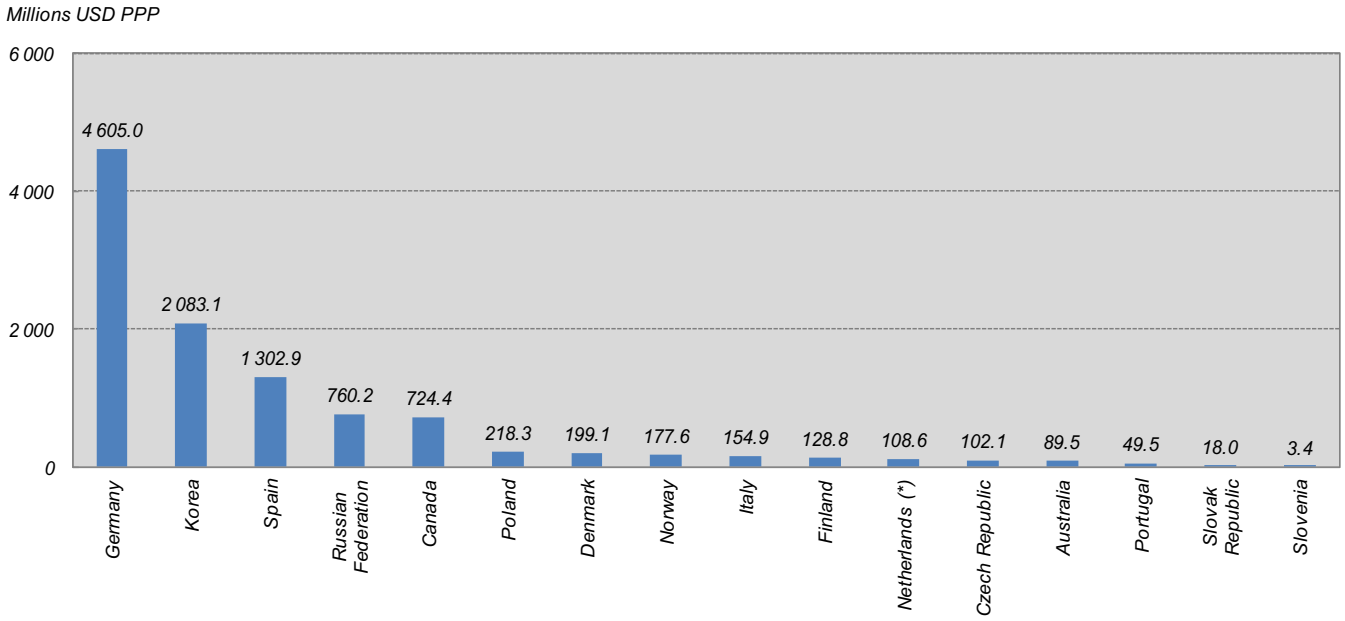
Source: OECD, Biotechnology Statistics Database, December 2011.

Biotechnology firms that provide services to other firms or which have no products on the market are assigned to the services sector. These firms either sell services, for instance platform technologies such as genetic sequencing, or primarily conduct R&D with the goal of developing future marketable goods such as new pharmaceuticals or plant varieties The share of all biotechnology R&D that is performed in the services sector ranges from 5.6% in France to 98% in Estonia, with an average of 48.5% for the 19 reporting countries.

Although the majority of biotechnology firms have less than 50 employees, most biotechnology R&D is performed by firms with over 50 employees. The average spent by small biotechnology firms is 31%. In the United States, approximately 72% of all biotechnology R&D was performed by biotechnology R&D firms with over 250 employees.

KBI 7. Biotech R&D expenditures by the public sector, millions of USD PPP, 2009 or latest available year
Government and higher education biotechnology R&D



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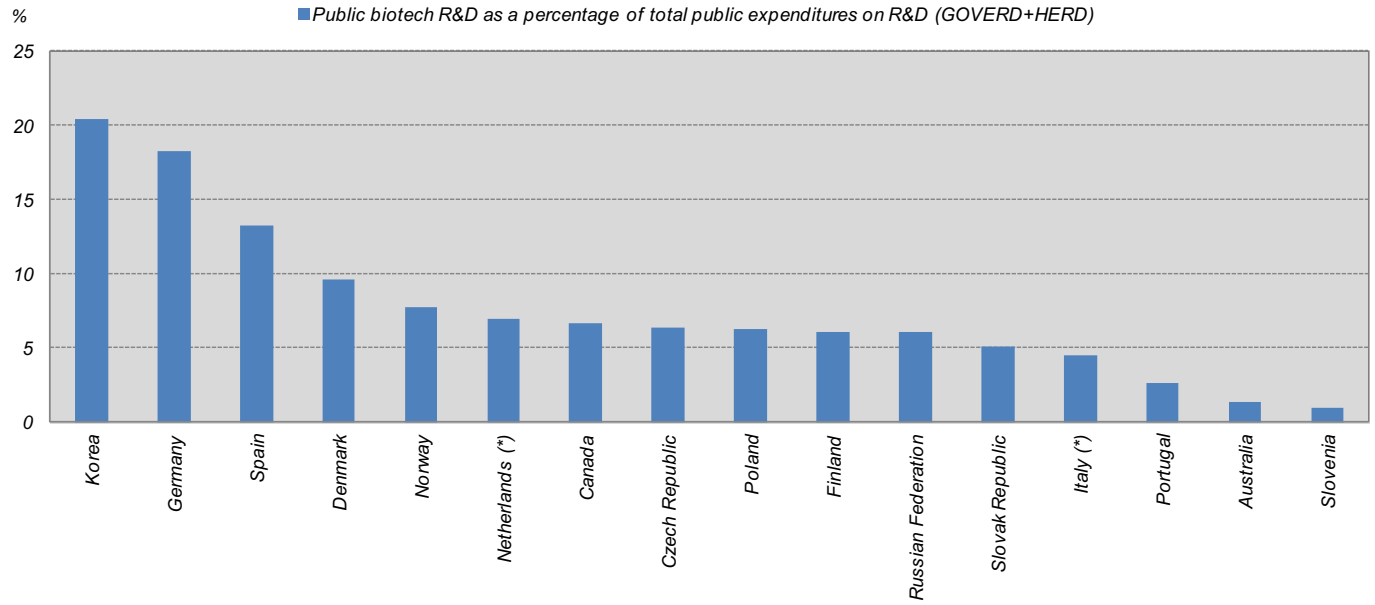
KBI 8. Public sector biotech R&D as a percentage of total public sector R&D, 2009 or latest available year
Government and higher education biotechnology R&D



(*) Notes at the end of this document. GOVERD: Government Expenditure on R&D; HERD: Higher Education Expenditure on R&D.

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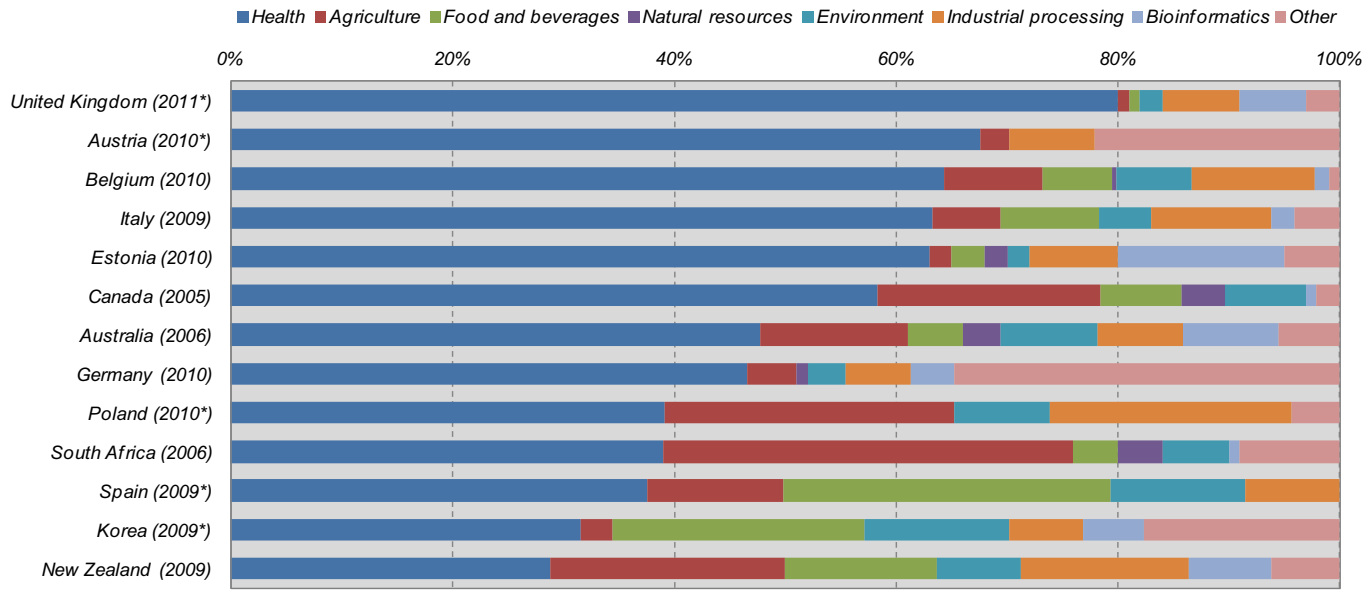
Source: OECD, Biotechnology Statistics Database, and OECD, Main Science and Technology Indicators Database, December 2011.

Public biotechnology R&D has been defined as the sum of government and higher education biotechnology R&D. The highest level of public sector expenditures on biotechnology R&D is found in Germany, followed by Korea and Spain.

The share of public biotechnology R&D in total public R&D spending provides an indicator of the importance governments place on biotechnology R&D. The biotechnology share of all public R&D expenditures is highest in Korea, at 20.4%, followed by Germany (18.3%) and Spain (13.3%). The average for the reporting countries is 7.6%.

KBI 9. Percentage of dedicated biotechnology firms by application, latest available year



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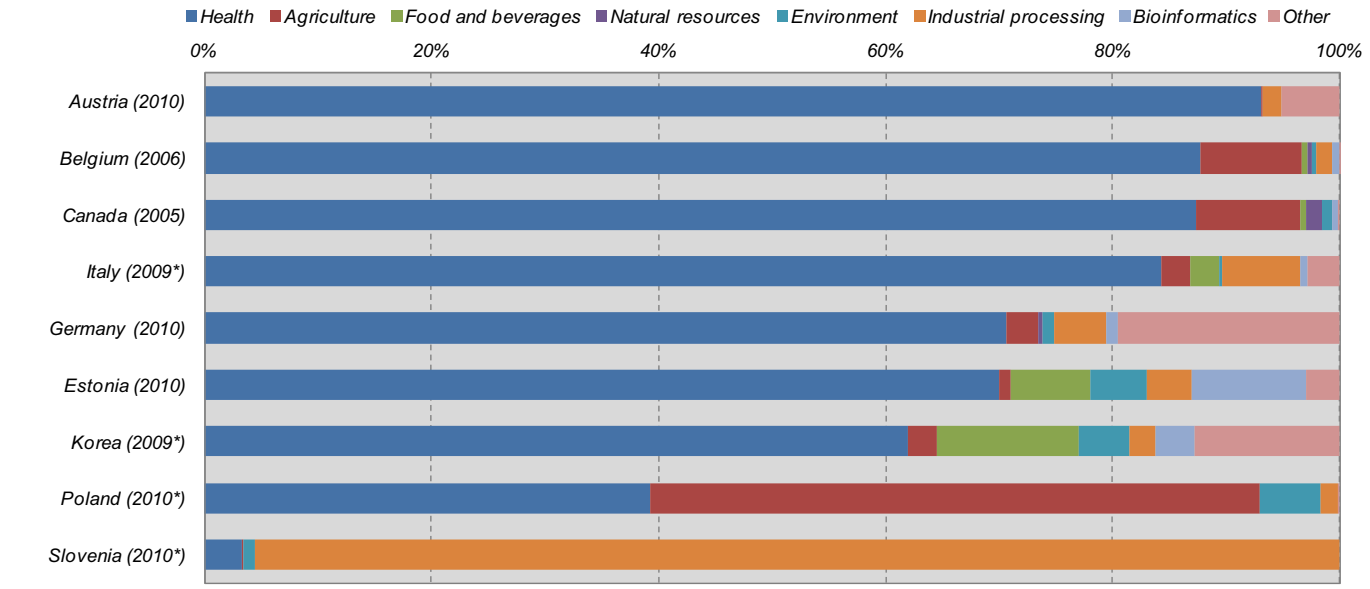
KBI 10. Percentage of biotechnology R&D investments by application, latest available year



(*) Notes at the end of this document.

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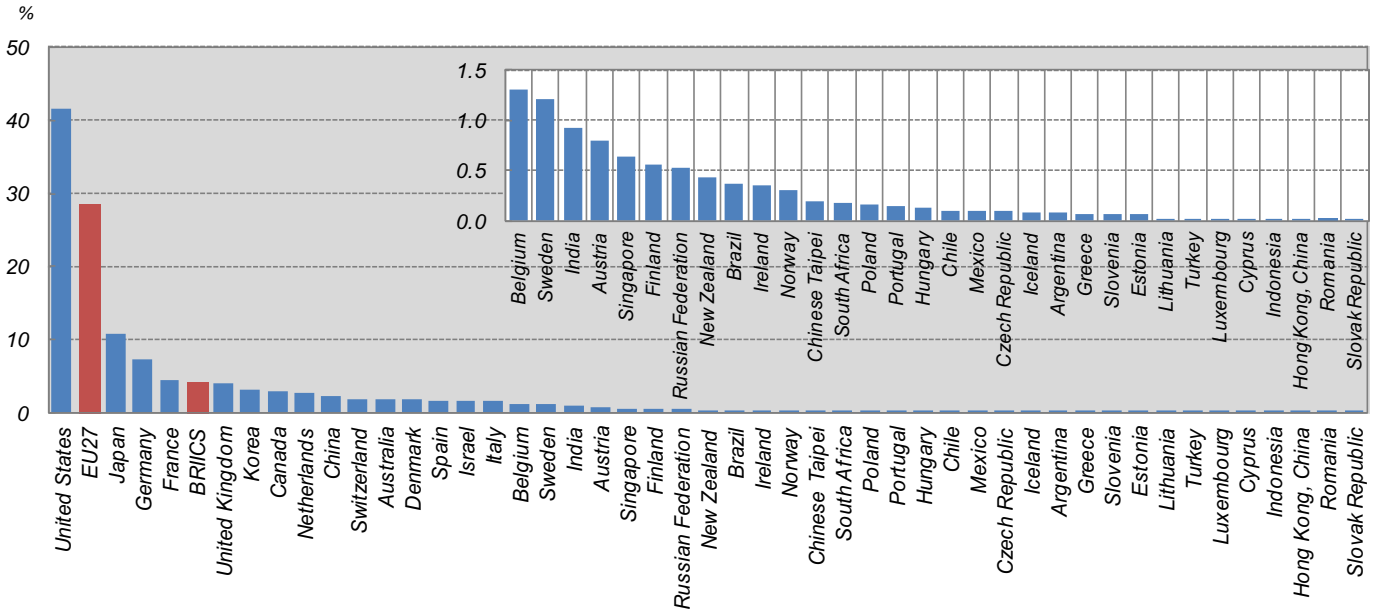
Source: OECD, Biotechnology Statistics Database, December 2011.

Biotechnology has applications in many fields, including health (human and animal), agriculture, food and beverages processing, natural resources, environment, industrial processing, and bioinformatics. In addition, an "other" category mostly covers platform biotechnologies and minor applications that are not included in the seven main categories.

For all countries combined, 51% of firms are active in health, followed by 12% of firms active in agriculture.

Health applications also dominate biotechnology R&D. Approximately 66% of all estimated biotechnology R&D expenditures in the nine countries are for health applications, followed by 13% for industrial processing.

KBI 11. Share of countries in biotechnology patents filed under PCT, 2007-09



BRIICS: Brazil, the Russian Federation, India, Indonesia, China and South Africa.

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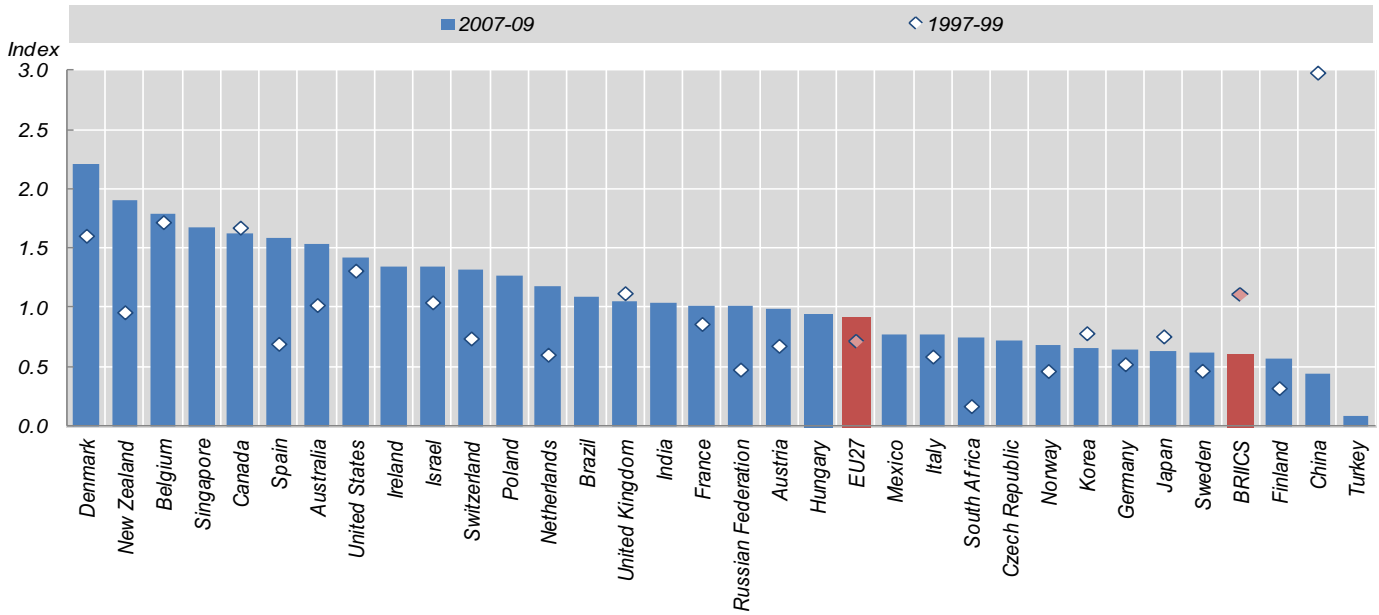
KBI 12. Revealed technological advantage in biotechnologies, 1997-99 and 2007-09

Index based on patent applications filed under the PCT



BRIICS: Brazil, the Russian Federation, India, Indonesia, China and South Africa.

StatLink http://www.oecd.org/dataoecd/41/45/48719986.xls

Source: OECD, Patent Database, December 2011.

The United States contributed to 41.5% of all biotechnology PCT patent applications during the 2007-09 period. Japan and Germany follow with respective shares of 10.9% and 7.3%.

The revealed technological advantage is defined as a country's share of patents in a particular technology field divided by the country's share in all patent fields. The index is equal to zero when the country holds no patents in a given sector; is equal to 1 when the country's share in the sector equals its share in all fields (no specialisation); and above 1 when a positive specialisation is observed. The number of biotechnology patents remained fairly stable during the 2000s, most countries' relative specialisation in biotechnology patenting increased. Denmark had the largest specialisation ratio in biotechnology in 2007-09.

Notes

Methodological information (hyperlink to document)

KBI 1. Number of biotechnology firms

Biotechnology firm: a firm that uses biotechnology to produce goods or services and/or to perform biotechnology R&D. These firms are captured by biotechnology firm surveys.

Biotechnology R&D firms: a firm that performs biotechnology R&D. These firms are captured by R&D surveys.

Dedicated biotechnology firm: a biotechnology firm whose predominant activity involves the application of biotechnology techniques to produce goods or services and/or to perform biotechnology R&D. These firms are captured by biotechnology firm surveys.

Dedicated biotechnology R&D firms devote 75% or more of their total R&D to biotechnology R&D. These firms are captured by R&D surveys.

For the Netherlands, provisional data. Firms with 10 or more employees only.

For the United Kingdom, an estimated 66% of the biotech firms (for most of which biotech as defined by OECD is a predominant activity) undertake R&D.

KBI 2. Percentage of small biotechnology firms

For the Netherlands, provisional data. Firms with 10 or more employees only.

KBI 3. Total biotechnology R&D expenditures in the business sector

For Austria, the Czech Republic, Germany, the Netherlands, Poland, the Russian Federation, the Slovak Republic and Slovenia, 2009 Business Expenditures on R&D (BERD) was used to calculate the biotech R&D intensity, 2010 BERD was not available.

For Australia, Korea and the United States, 2008 BERD was used to calculate the biotech R&D intensity, 2009 BERD was not available.

For the Netherlands, provisional data. Firms with 10 or more employees only.

For the Russian Federation, a proxy indicator is used: R&D expenditure by priority areas of S&T (Living Systems) which includes: Bioengineering; Biocatalysis, biosynthesis and biosensor technologies; Biomedical and veterinary technologies; Genomics and pharmaco-genetics; Living cell technologies.

KBI 4. Biotechnology R&D intensity

For the Netherlands, provisional data. Firms with 10 or more employees only.

For the Russian Federation, a proxy indicator is used: R&D expenditure by priority areas of S&T (Living Systems) which includes: Bioengineering; Biocatalysis, biosynthesis and biosensor technologies; Biomedical and veterinary technologies; Genomics and pharmaco-genetics; Living cell technologies.

KBI 5. Percentage of biotechnology R&D expenditure in the services sector by dedicated biotechnology R&D firms

Non-manufacturing for Denmark.

For the Netherlands, provisional data. Firms with 10 or more employees only.

Non-manufacturing for the United States. The United States classifies its data into manufacturing and non-manufacturing. Non-manufacturing includes: services, mining, construction and utilities.

Notes

KBI 6. Percentage of biotech R&D expenditure performed by small biotech R&D firms

For the Netherlands, provisional data. Firms with 10 or more employees only.

For Switzerland, firms with fewer than 100 employees.

KBI 7. Biotech R&D expenditures by the public sector

The "public" sector is defined as the Government sector and the Higher Education sector.

For Italy, excluding the higher education sector.

For the Netherlands, provisional data and excluding the higher education sector. Public sector firms or institutes with 10 or more employees only.

For the Russian Federation, a proxy indicator is used: R&D expenditure by priority areas of S&T (Living Systems).

KBI 8. Public sector biotech R&D as a percentage of total public sector R&D

For Italy and the Netherlands, excluding the higher education sector.

KBI 9. Percentage of dedicated biotechnology firms by application

Results limited to dedicated biotechnology firms, except for biotechnology firms for Belgium, Korea, Spain and the UK and dedicated biotechnology R&D firms for Estonia and Italy.

For Austria, "Other" includes "With 17 companies, the second largest category is 'non-specific applications'. This also includes all companies providing services exclusively or mainly for other biotechnology firms, or which are active for these as suppliers. For example, the cell culture media specialists PAA Laboratories GmbH, or Polymun Scientifc GmbH, specialised in contract research and manufacturing of biopharmaceuticals, also falls into this category. Pure contract manufacturers of biological molecules without in-house development activities are also included here. With 22 % this makes it the second most important industry segment."

For Korea, "Agriculture" includes "Natural resources".

For Poland, results are by primary application. "Industrial processing" includes "Food and beverages".

For Spain, multiple selection: firms can be active in more than one application field.

For United Kingdom, information is not available on the number of non-biotechnology firms e.g. manufacturers of chemicals, which use biotechnology in industrial processing. Information on agricultural biotechnology companies was collected for the first time in 2011, and may underestimate the number of companies.

KBI 10. Percentage of biotechnology R&D investments by application

Results limited to dedicated biotechnology firms, except for biotechnology R&D firms for Estonia, Italy and Slovenia, biotechnology firms for Korea.

For Italy, results are by primary application.

For Korea, "Agriculture" includes "Natural resources".

For Poland, results are by primary application. "Industrial processing" includes "Food and beverages".

For Slovenia, "Industrial biotechnology" instead of "Industrial processing".

Notes

KBI 11. Share of countries in biotechnology patents filed under PCT

Data relate to patent applications filed under the PCT, at international phase, designating the European Patent Office (EPO). Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

KBI 12. Revealed technological advantage in biotechnologies

Data relate to patent applications filed under the Patent Co-operation Treaty (PCT), at international phase, published by the WIPO. Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

The revealed technological advantage index is calculated as the share of country in biotechnology patents relative to the share of country in total patents. Only countries with more than 500 patents over the periods are included in the figure.

Cyprus: The following note is included at the request of Turkey:

"The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the « Cyprus issue »".

The following note is included at the request of all the European Union Member States of the OECD and the European Commission:

"The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus".

Israel: "The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law."

"It should be noted that statistical data on Israeli patents and trademarks are supplied by the patent and trademark offices of the relevant countries."