

# A global leader

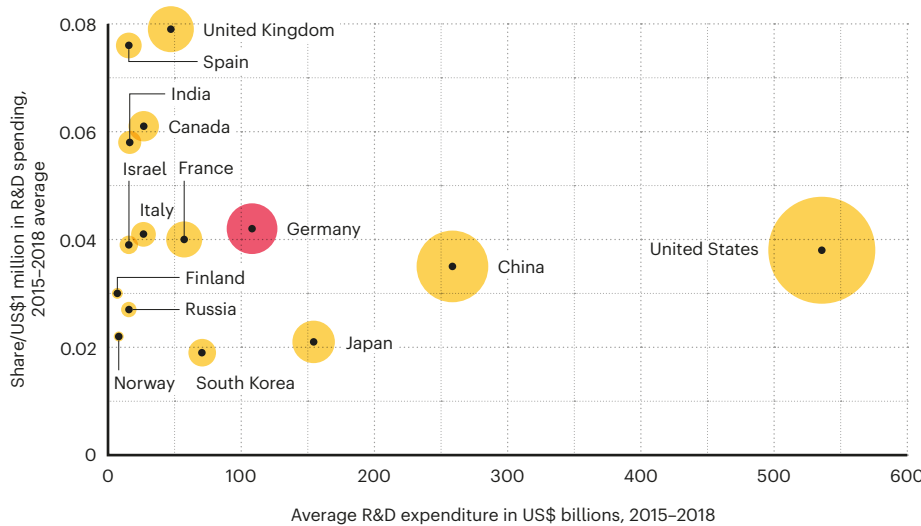
Germany's science strengths shown on the world stage.

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Infographic by Bec Crew and Tanner Maxwell

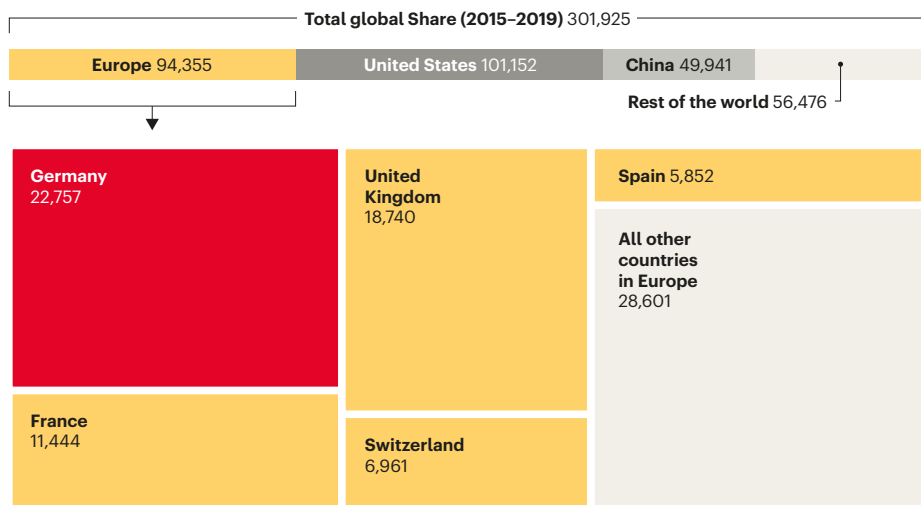
## RESEARCH EXPENDITURE

Selected countries' efficiency of research spending, measured by how much Share they produce for each dollar of R&D invested. The UK comes out on top, with a normalized Share of 0.079 for each million US dollars spent. Germany is in the mid-range of efficiency, with a normalized Share of 0.042 for each million US dollars spent. Circles are sized according to each country's total Share (2015–2018). On the x axis, the US had the highest annual average R&D spend, while Finland, Norway and Israel were among the lowest in absolute spending terms.



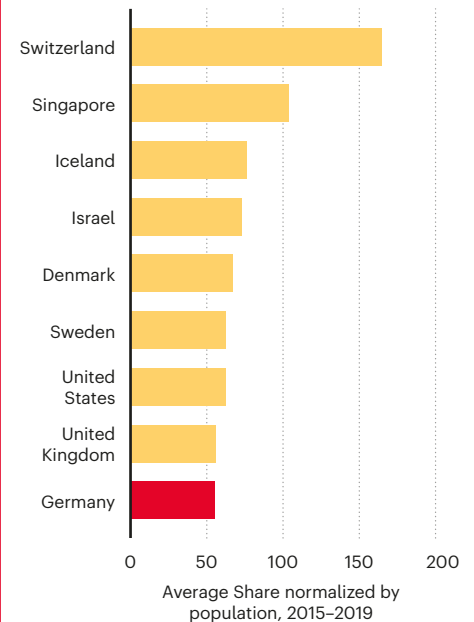
## EUROPEAN SCIENCE POWERHOUSE

For high-quality research output in Europe, which in the Nature Index includes the UK and Switzerland, Germany is the heaviest hitter. It is ranked third in the world after the US and China. From 2015 to 2019, Germany accounted for 24% of total Share in Europe and 7.5% of the total global Share. In the same time period, the 47 countries in Europe in the Nature Index accounted for roughly one-third of the total global Share, its contribution only slightly lower than the United States'.



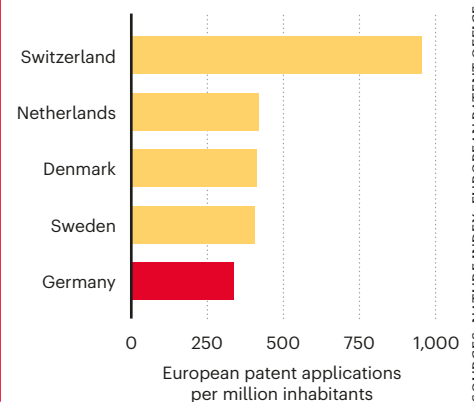
## RESEARCH OUTPUT BY POPULATION

Germany (population: 83 million) is among the best-performing nations in the world for Share per capita. Switzerland (population: 8.6 million) is world leader by this measure, with the Swiss Federal Institute of Technology, Zurich its strongest institutional performer.



## FORWARD-THINKERS

In 2018, Germany was ranked 5th in the world for its ratio of European patent applications to population, a measure of inventiveness. While Germany had 332 patent applications per million inhabitants, Switzerland, which out-performed every other country, had 956.



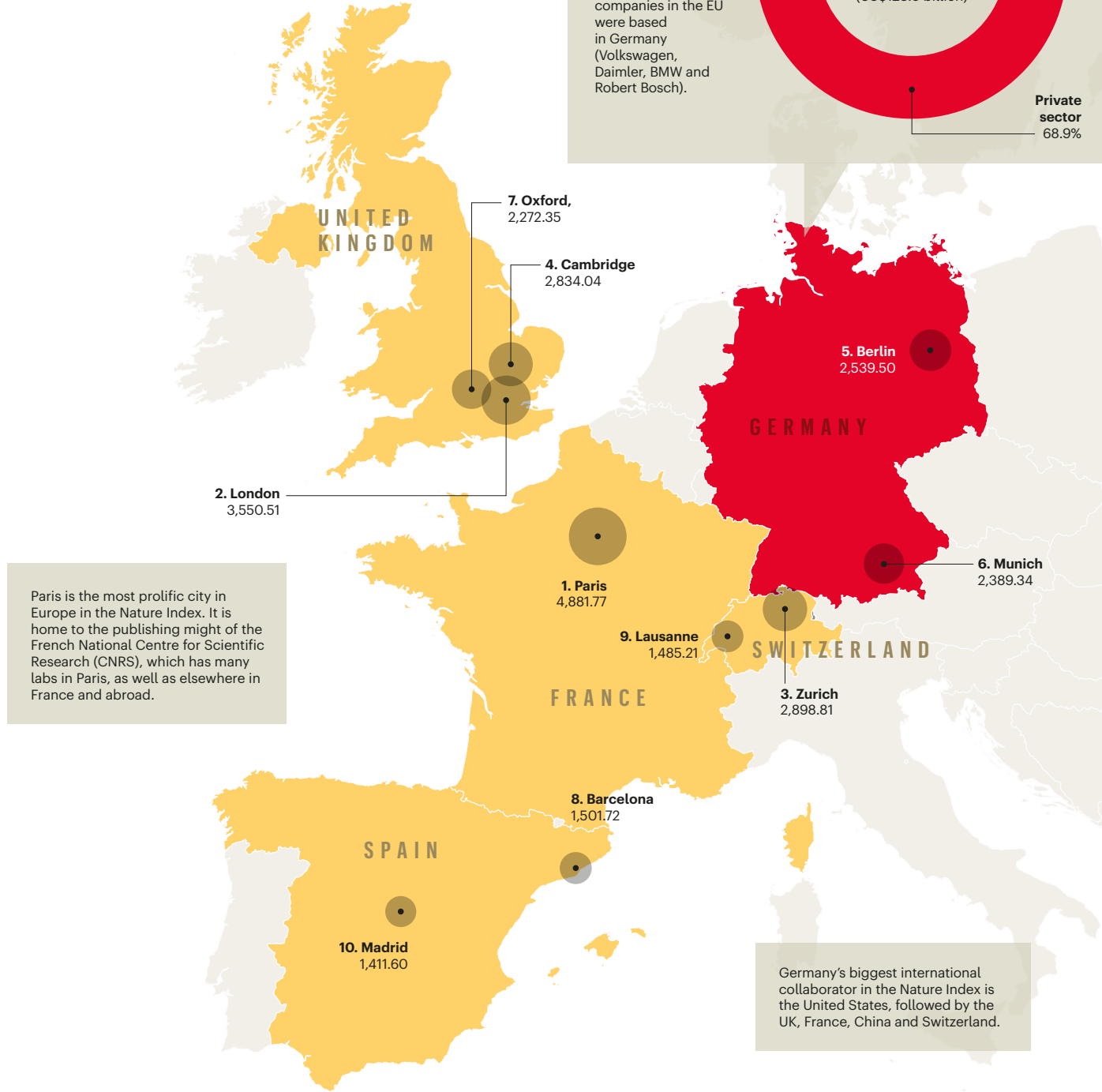
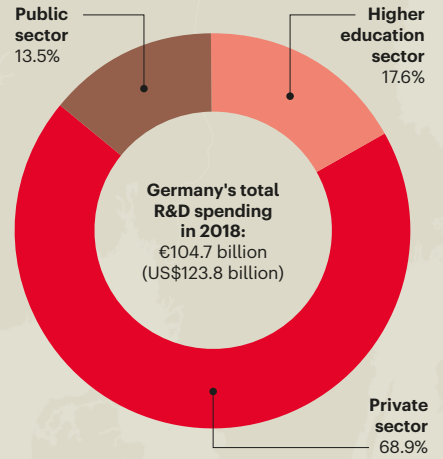
SOURCES: NATURE INDEX, EUROPEAN PATENT OFFICE

## SCIENCE CITIES

The top science cities in Europe are those with institutions that collectively published the highest output in the 82 journals tracked by the Nature Index from 2015 to 2019. Germany has two cities in the top 10, Berlin and Munich. While headquarters for two of the country's most prolific institutions, the Helmholtz Association of German Research Centres and Leibniz Association, are located in Berlin, Munich is home to the headquarters of the Max Planck Society, Germany's leading institution in the Index. Germany's top-ranked universities, Ludwig Maximilians University of Munich and the Technical University of Munich, are also located in the city.

## RESEARCH BUDGET

The private sector contributes the vast majority of funding to Germany's R&D budget. According to the European Union's 2019 R&D Investment Scoreboard, 4 of the 20 most active R&D companies in the EU were based in Germany (Volkswagen, Daimler, BMW and Robert Bosch).



Paris is the most prolific city in Europe in the Nature Index. It is home to the publishing might of the French National Centre for Scientific Research (CNRS), which has many labs in Paris, as well as elsewhere in France and abroad.

Germany's biggest international collaborator in the Nature Index is the United States, followed by the UK, France, China and Switzerland.