

OECD Main Science and Technology Indicators

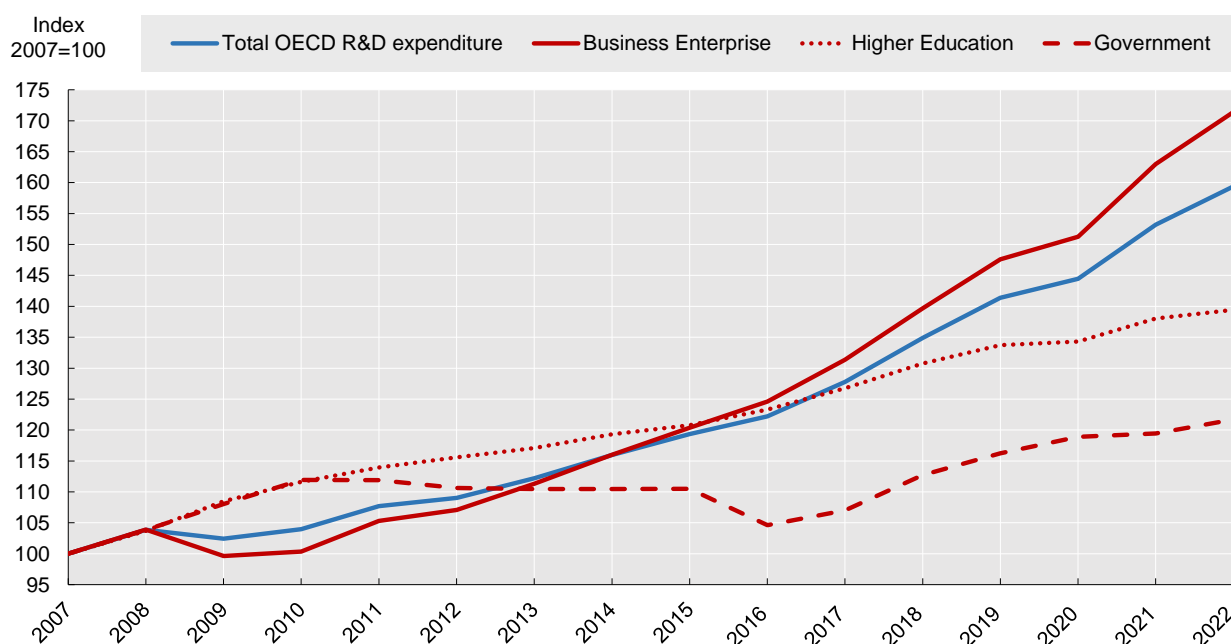
Highlights from the March 2024 edition

Growth in Research and Experimental Development (R&D) expenditures in the OECD area continued in 2022 with a 4% increase in inflation-adjusted terms on the previous year, led by the business sector. Estimates of growth in 2021 were also revised up from 4.9 to 6.1% as several OECD countries reported more complete and up-to-date estimates. However, nowcasts of growth for R&D investment by businesses and governments, point to a stark slowdown in real R&D growth in 2023.

The business sector continues to drive R&D growth in the OECD area

According to data published in the [OECD Main Science and Technology Indicators \(MSTI\)](#) on 29 March 2024, growth in R&D expenditures was once again driven by the business sector. Business enterprises experienced a 5.1% increase compared with 1.9% for R&D in Government sector institutions and 1% in the Higher Education sector, which underwent an apparent slowdown in 2022. The business sector accounted in 2022 for 74% of total Gross Domestic Expenditure on R&D (GERD) in the OECD area, compared with 66% in the EU27.

Figure 1. R&D expenditure trends in OECD countries, 2007-2022



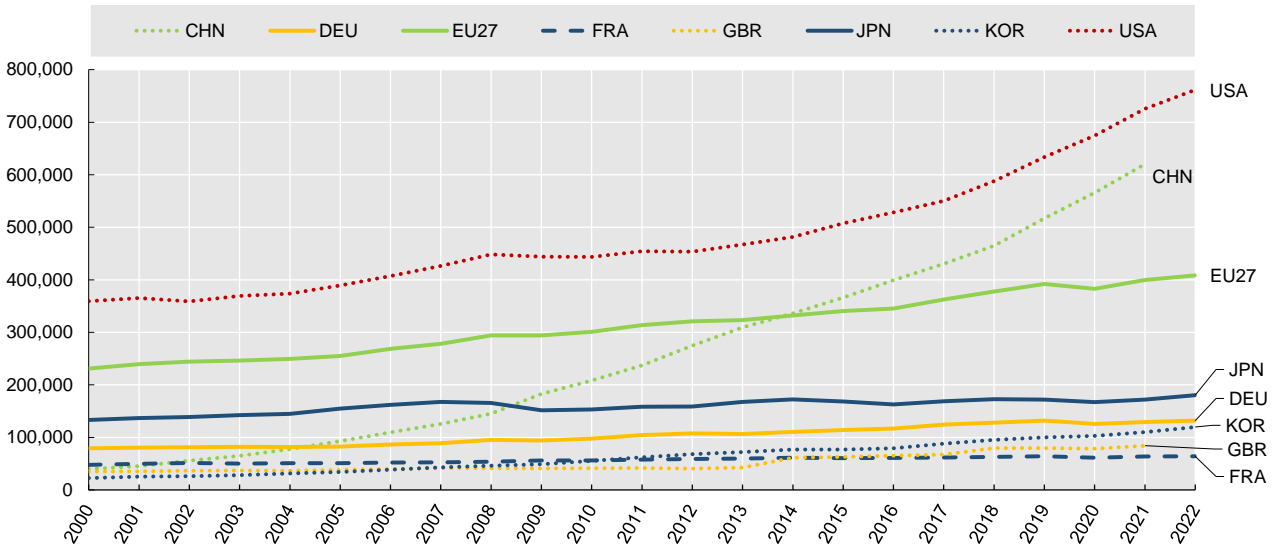
Note: Estimates adjusted for inflation. Base year 2007=100.

Source: OECD Main Science and Technology Indicators (MSTI) Database, March 2024. <http://oe.cd/msti>

R&D growth in the OECD area in 2022 was principally driven by the United States, Japan and Korea

Growth in inflation-adjusted R&D expenditure in the OECD area was distributed across several countries but with notable differences among them. Growth in the EU27 area stood at 2.2% (half of its 4.4% growth in 2021), with its two major economies, Germany and France, growing at 1.9% and 0.5% respectively, while Italy's GERD declined by 3.8%. Faster growth in R&D in the OECD was driven by the United States at 5.0%, Japan at 4.9% and Korea at 8.9%. China did not report to OECD official estimates for 2022 in time for the March 2024 release.

Figure 2. Gross domestic expenditure on R&D, selected economies, 2000-2022
USD million in constant PPP prices

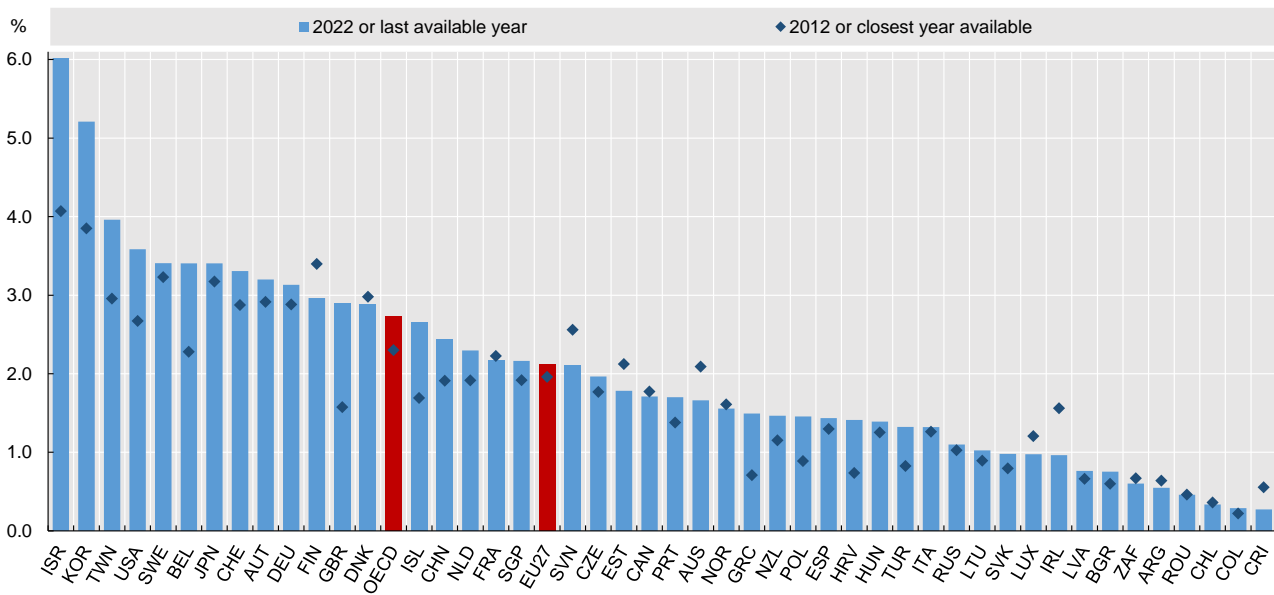


Source: OECD Main Science and Technology Indicators Database, March 2024. <http://oe.cd/msti>

R&D intensity in the OECD area remained constant in 2022

R&D expenditure growth in the OECD area in 2022 (4%) was slightly above GDP growth (2.9%), leaving R&D intensity virtually unchanged compared with 2021 at 2.7%. R&D intensity trends, a headline measure of domestic expenditure on R&D expressed as a percentage of GDP, appear to have stabilised after the COVID-19 crisis when GERD and GDP evolved at different rates. For the EU27 area, R&D intensity went slightly down from 2.15% to 2.1%. Israel and Korea continued to report the highest OECD levels of R&D intensity, at 6% and 5.2% of GDP, respectively.

Figure 3. R&D intensity: Gross domestic expenditure on R&D as a percentage of GDP



Source: OECD Main Science and Technology Indicators Database, March 2024. <http://oe.cd/msti>

Nowcasts of growth for R&D investment by businesses and governments, point to a slowdown in real R&D growth in 2023

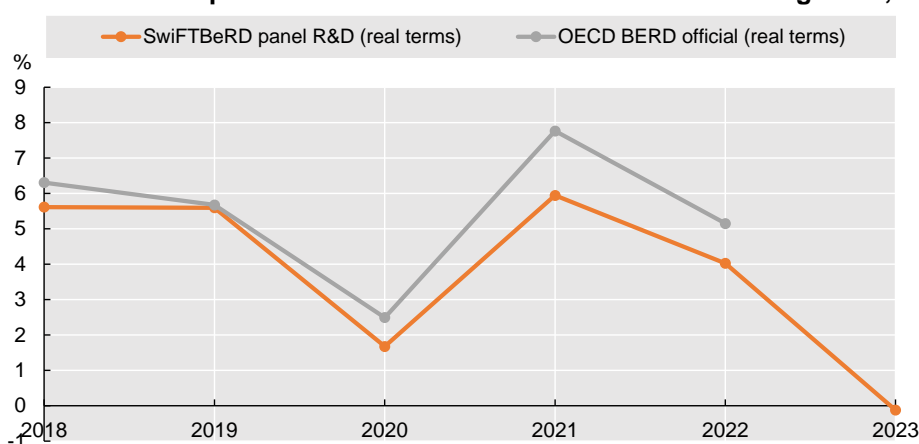
Although official statistics on R&D expenditures for 2023 will only be available in the first quarter of 2025 for most countries, the OECD develops and monitors several leading indicators to provide more timely insights into R&D investment. To do this, the OECD has developed a preliminary view of R&D spending in 2023, monitoring data from government budgets for R&D, provided by official contacts within countries, in combination with exploratory analysis of published quarterly reports and accounts for a panel of large business R&D investors.

Signs of an interruption to inflation-adjusted growth in business R&D in 2023

The OECD Short-term Financial Tracker of Business R&D (SwiFTBeRD) dashboard reports quarterly and annual data for several of the world's major R&D investors, providing company-specific and sectoral insights to deliver the timeliest possible view of R&D data reported by companies. Although compiled with very different methods, the latest estimates of real growth in R&D expenses for firms in the OECD SwiFTBeRD panel closely track the evolution of official estimates of Business Expenditure on R&D (BERD) in the OECD area.

SwiFTBeRD data suggest that there was no real growth in business R&D in 2023, which is partly explained by sustained growth in price levels, as the SwiFTBeRD index rose by 6.8% growth in nominal terms. This was still a significant slowdown compared with 13.6% nominal growth in 2022. Unless BERD in companies not covered by SwiFTBeRD has evolved very differently, this anticipates a possible significant decline in R&D intensity in 2023 since the OECD Economic Outlook's GDP 2023 growth estimate for the OECD area is 1.7%.

Figure 4. Official and experimental estimates of annual business R&D growth, 2018-2023



Source: OECD calculations, based on OECD Short-term Financial Tracker of Business R&D (SwiFTBeRD) dashboard, March 2024, <http://oe.cd/swiftberd>.

OECD Short-term Financial Tracker of Business R&D (SwiFTBeRD) dashboard

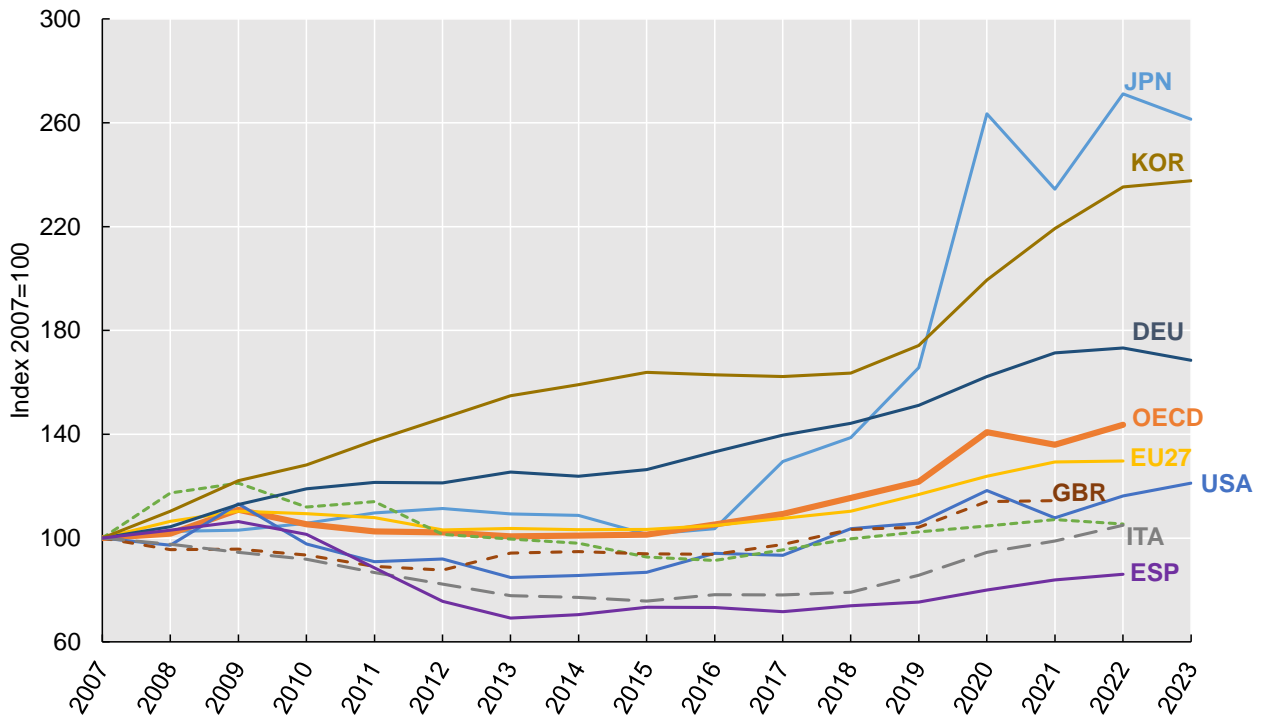
SwiFTBeRD is an initiative of the OECD Directorate for Science, Technology and Innovation that seeks to provide timely business R&D trends indicators based on data publicly disclosed by companies. This new tool complements the OECD reporting of official R&D statistics published in the OECD Research and Development Statistics and the OECD Main Science and Technology Indicators (MSTI) databases. Although official R&D data, principally based on statistical surveys, serve as a basis for the most robust and internationally comparable variable breakdowns and structural indicators, they suffer from a lack of timeliness that results from regular collection and reporting cycles designed to ensure comprehensiveness. R&D figures reported in companies' financial accounts (often reported on a quarterly basis shortly after completion) help provide a timelier picture that can complement insights survey-based data. The SwiFTBeRD data are collected by OECD from companies' financial statements accessed directly from their websites. The SwiFTBeRD dashboard includes data on R&D expenditures and total revenues.

Growth in government budgets for R&D in 2022 and slowdown expected for 2023

After falling by 3.5% in real terms in 2021, **government R&D budgets for the entire OECD area increased by 5.6% in 2022**. This represents a significant upward revision compared with the estimate of 2% published in 2023. This revision is explained by the US Congress decision to “appropriate” more funds for defence R&D than in the President’s request to Congress, which provided the basis for the initial preliminary estimates for 2022. Although it has shrunk in importance over the past two decades and its distribution is very skewed across countries, defence continues to be the largest policy objective for public R&D funds across the OECD area, followed by General University Funds.

The outlook for 2023 is still uncertain as several countries have not yet reported data for this year. As of March 2024, data on R&D budgets for 2023 are only available for a small group of OECD countries whose estimated growth is estimated at 0.7%. Provisional data on R&D budgets indicate a real-terms increase above 4% compared to 2022 in Austria, Mexico, the Netherlands and the United States, while a reduction of at least 8% in Czechia and Türkiye. The OECD continues to work with countries to ensure more timely reporting of in-year R&D budgets to inform the international community.

Figure 5. Government R&D budget trends, selected economies, 2007-2023



Note: Trend estimates are inflation-adjusted. Base year 2007=100.

Source: OECD Main Science and Technology Indicators (MSTI) Database, March 2024. <http://oe.cd/msti>

About the OECD Main Science and Technology Indicators and the March 2024 edition

The OECD Main Science and Technology Indicators (**MSTI**) are the key reference OECD publication and database for the latest international statistics on R&D --drawing on the OECD R&D statistics database compiled with contributions from OECD members and other selected economies-- and other selected key STI indicators.

MSTI is published twice each year, in March and September. Based on data reporting patterns by countries to the OECD and review procedures, the **March edition** revises previous data and contains the most timely but provisional aggregate indicators. The indicators in the **September edition** typically draw on data confirmed by countries as final as well as more disaggregated indicators reviewed by the Secretariat over the year. The September edition is also characterised by more complete reporting of indicators on Government Budgets for R&D by OECD member countries.

The March 2024 edition is the first to be entirely available through the new [OECD Data Explorer](#) platform that replaces the OECD.Stat as OECD corporate tool for statistical dissemination. MSTI indicators and several other complementary indicators are also available through the [OECD STI.Scoreboard](#) platform.

Coverage:

MSTI coverage is defined by reporting by countries to OECD of R&D data that are consistent with the guidance in the OECD Frascati Manual. The statistics compiled by OECD are based on data provided by responsible statistical bodies to the OECD annual call for R&D data from OECD member countries and selected non-member economies. In its latest available edition, MSTI reports indicators on all 38 OECD Member countries with most recent data typically reaching up to 2021 (2022 in the case of R&D budgets).

Mexico's National Survey on Research and Technological Development (ESIDET) has not been conducted since 2017. As a result, R&D statistics have been suppressed from reference year 2018 while expecting authorities to resume data collection, estimation and reporting practices consistent with OECD Frascati Manual guidance.

R&D statistics for Bulgaria and Croatia have been included for the first time in the March 2024 edition as part of the ongoing engagement of OECD with countries undergoing a formal accession process. Romania, the third EU country undergoing this process, has been included in MSTI for several years.

As reported in previous editions, in line with the OECD Council decision in response to **Russia's** large-scale aggression against Ukraine, OECD suspended its solicitation of official R&D statistics from Russian authorities, leading to the absence of more recent R&D statistics for this country in the OECD database.

MSTI data users should exercise particular care in interpreting statistical comparisons of R&D expenditures accounting for **international differences in purchasing power**, especially for non-OECD and non-EU countries since these data have been the object in the past of very significant revisions. The 2021 Cycle of the International Comparison Program of the World Bank is currently underway. Benchmark updates are expected in May 2024. See <https://www.worldbank.org/en/programs/icp>.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

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.

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