

Foreword

This publication is prepared by the Economic Analysis and Statistics (EAS) Division of the OECD Secretariat in collaboration with the Working Party of National Experts on Science and Technology Indicators (NESTI). It contains the main data series selected from the OECD Scientific and Technological Indicators Database.

The first part of this publication presents key figures in the field of science and technology. These are found in one summary table and several graphs showing the most used indicators.

The second part consists of 72 standard tables showing data series on resources devoted to research and experimental development (R&D) and some measures of output and the impact of scientific and technological activities. It is complemented by a description of the general methodology used. National specifications and background economic indicators are shown in annex.

R&D data

The OECD has been collecting R&D data for member countries on a regular basis since the early 1960s. During the 1990s, it has also embarked on the collection of R&D data for selected non-member economies, some of which are presented in the tables below. This publication presents various indicators of the level and trends in total national R&D efforts. The standard expenditure measure is the Gross Domestic Expenditure on Research and Experimental Development (GERD), which covers all R&D carried out on national territory in the year concerned. The pattern of financing and of performance of GERD is also presented.

Further information is given on R&D performed in the business enterprise sector. This includes tables showing data on total business enterprise R&D carried out by the major industries concerned. Sets of data are provided for R&D carried out in the higher education and government sectors. All the above tables are essentially based on retrospective surveys of the units carrying out the R&D though national forecasts have been included when available.

More up-to-date information on R&D financed by government can be derived from budget data. These data show government R&D appropriations distinguishing firstly between defence and civil programmes and secondly between the main objectives of civil R&D. Readers are warned that these budget R&D data vary in coverage from those in previous tables and that these two types of data should not be combined.

Two tables show data on R&D expenditure of foreign affiliates. These data come from the OECD Database on Foreign Affiliates and in some cases are not directly comparable with standard business enterprise R&D.

Measures of the output and impact of science and technology

The publication contains no direct measures of the output of scientific and technological activities, such as indicators based on innovation. However, three types of proxy indicators based on data originally collected for other purposes are presented: patents, the technology balance of payments and trade in R&D-intensive industries. While each of these indicators has its shortcomings, taken together they may throw light on countries' technological performances.

Patent data can be considered as proxy measures of the output of R&D in the form of inventions. The data presented show the total number and national percentages of triadic patent families, as well as the number of patent applications to the EPO in two specific sectors of interest: the ICT and biotechnology sectors.

The technology balance of payments (TBP) series are data extracted from national sources (balance of payments or survey results) with the aim of measuring the flow of technological know-how and services into and out of the country concerned. The OECD manual “Proposed Standard Method of Compiling and Interpreting Technology Balance of Payments Data”, TBP Manual 1990, gives the methodology for the international standards for compiling such data. The series quoted comprise money paid or received for the acquisition or use of patents, licences, trademarks, designs, inventions, know-how and closely related technical services.

Indicators of trade performance in R&D intensive industries can be used as proxy measures of the industrial and economic impact of scientific and technological activity. The tables concerned give trade balances and export market shares for three selected groups of R&D intensive industries: “pharmaceuticals”, “computer, electronic and optical industry”, and “aerospace”.



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