



EUROSTAT QUALITY PROFILE

Indicator (definition)	Gross Domestic Expenditure on R&D as a percentage of GDP: Total gross domestic expenditure on research and development (GERD) as a percentage of gross domestic product (GDP).
Eurostat Unit	Education, science and research
Other Commission DGs	DG RTD
European Statistical System Working Group (WG)	WG on Statistics on Science, Technology and Innovation
Date	December 2010

1. Overall assessment of accuracy and comparability (Description of quality grades under the following link: http://circa.europa.eu/Public/irc/dsis/structind/library?l=/general_information/quality_profiles/annex_enpdf/EN_1.0_&a=d)

A B C Indicator to be developed

Data is collected from reliable sources applying high standards with regard to the methodology. Shortcomings with regard to the comparability over time are well documented.

2. Objective and relevance of the indicator:

The total gross domestic expenditure on research and development comprises: business enterprise expenditure on R&D, higher education expenditure on R&D, government expenditure on R&D and private non-profit sector expenditure on R&D.

The indicator measures the key R&D investments that support future competitiveness and result in higher GDP.

R&D expenditure represents one of the major drivers of economic growth in a knowledge-based economy. As such, trends in the R&D expenditure indicator provide key indications of the future competitiveness and wealth of the EU.

Research and development spending is essential for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth. Recognising the benefits of R&D for growth and being aware of the rapidly widening gap between Europe's R&D effort and that of the principal partners of the EU in the world, the Barcelona European Council (March 2003) set the EU a target of increasing R&D expenditure to 3 per cent of GDP by 2010, two thirds of which should come from the business enterprise sector.

Investing 3% of GDP is one of the headline targets in the new Europe 2020 strategy for developing an economy based on knowledge and innovation.

Restriction of the indicator's relevance and other characteristics which may lead to restrictions in using it in monitoring and reporting

GERD includes total intramural expenditure on R&D performed within a country, funded nationally and from abroad but excludes payments for R&D performed abroad. To complete the picture, information on international purchases of R&D performed abroad should be taken into account. Moreover, an emerging EU emphasis on encouraging international collaboration in R&D may not be fully revealed as recording each partner's actual (intramural) R&D expenditure only understates the investment, provided all parts have full access to the outcome of the project.

In some countries small enterprises with less than 10 employees or some economic activities (NACE rev 1.1.) where R&D activity is expected to be negligible are excluded from the R&D surveys. However, this leads only to minor impact on the aggregates.

For some countries which attract significant foreign direct investments, a use of GDP as denominator restricts relevance as while these investments are visible in GDP and high-tech exports figures for countries where investments are made, R&D work may be performed in investors countries and they are not visible in R&D expenditure figures for the countries where the investments are made. In these cases it would be better to use Gross National Income (GNI) as denominator, provided all transactions between R&D-exporting and importing countries are measured. Measurement problems may occur in case of multi-nationals.

3. Data availability: details

(t₁: earliest reference year available; t₂: latest reference year available in December 2010)

	EU Member States	ACC/CC	USA, Japan, China and South Korea	EFTA ¹
t ₁	1990: BG, DK, ES, FR, IT, NL, AT, FI, UK 1991: BE, DE, HU, SE 1993: LV, SI, SK 1994: LT 1995: CZ, IE, EL, PL, PT 1998: EE, CY, RO 2000: LU 2002: MT	1990: IS, TR 2002: HR	-	1995 1992: CH (every four years – 1992-2008)
t ₂	2009: BE, BG, CZ, DK, DE, IE, EL, ES, IT, CY, LV, LT, LU, HU, MT, NL, PL, PT, RO, SI, SK, SE 2010: EE, FR, AT, FI, UK	2008: IS, TR 2009: HR	-	2008: CH 2009: NO

Comments (including information on time series):

Data t-2 is available in November/December. According to the Commission Regulation 753/2004 final annual data are to be transmitted to Eurostat within 18 months of the end of the calendar year of the reference period and provisional data within 10 months.

Before the implementation of the Commission Regulation 753/2004, data for EL, SE and NO is available for every second year only (before reference year 2003 for EL and SE and before 2001 for NO).

4. Overall accuracy

High



Overall accuracy can be considered as high. The data on R&D is compiled on the basis of separate surveys on R&D performers. The survey population is updated regularly (on the basis of information coming from business registers, administrative sources, other surveys, etc.).

Accuracy is ensured through European legislation using proposed standard practice for surveys in research and following the OECD experimental development – Frascati Manual (2002).

GDP data is regularly transmitted in the framework of the transmission

¹ While being a member of the EFTA, Liechtenstein has complete or partial exemptions from several statistical requirements due to its size. Thus, Liechtenstein is excluded from this overview as most of the data for structural indicators are missing.

programme associated to Annex B of ESA 95 (European System of Accounts). Countries compile GDP according to standard international rules (ESA 95/ESA 79 – in some cases). At the European level, accuracy of GDP is regularly monitored in the framework of the GNI (Gross National Income) Committee and technical aspects are regularly analysed in several working groups and technical committees.

Restricted
(sources, errors,
methodology, etc.)

5. Comparability across countries

High For the compilation of the R&D data all countries use the OECD Frascati methodology which assures comparability across countries.
The US data excludes most of the capital expenditure, thus data for the US is somewhat underestimated.
Comparability of GDP data across countries is ensured by the application of the legal framework represented by the European System of Accounts (ESA 95).
Comparability of GDP data for the EU countries is regularly monitored in the context of the work of the GNI Committee. Harmonisation of techniques and, to some extent, compilation tools is ensured by the work of the national accounts working groups (Eurostat, OECD, UN).
At present, some EU Member States are still in the implementation phase of ESA 95 and full comparability is not yet achieved but this leads only to minor discrepancies.

Restricted

6. Comparability over time

High Comparability over time is ensured by the application of the Frascati Manual over years.
New Member States and Candidate Countries introduced the Frascati methodology in 1990-1997 (break in series): TR in 1990, SI in 1993, HU/SK in 1994, CZ/PL in 1995, BG/LT in 1996 and HR in 1997.
Figures may be revised (affected as well by normal revision process of GDP).
ESA 95 requires coherent long time series for GDP what most of the EU Member States produce. In some countries, methodological breaks can affect time series (normally on a temporary basis). A backward calculation of the time series is applied to ensure full time coherence in a case of methodological changes.

Restricted

7. Development perspective for improving the quality of this indicator (including as far as possible an indication of the burden on Member States and respondents.)

Possibilities to separately identifying R&D in the National Accounts should be explored in order to improve accuracy and international comparability.

At this moment, the international System of National Accounts is being revised. One change being considered is the capitalisation of R&D expenditure. The resulting National accounts based R&D investment and R&D capital indicators would be helpful supplementary indicators measuring the use of R&D in an economy and the genuine R&D intensity of an economy.

With the implementation of Commission Regulation (EC) No 753/2004 and by putting under scrutiny the quality reporting by the Member States it is expected that quality of the data will increase.

8. Contribution to quality of the set/potential to qualify for an integrated policy analysis

Relevant European legislation:

Commission Regulation (EC) NO 753/2004 of 22 April 2004 implementing Decision No 1608/2003/EC of the European Parliament and of the Council as regards statistics on Science and Technology: data are collected in line with this Regulation from the reference year 2003 onwards.

Council Regulation (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community (ESA 95).

Proposed Standard Practice for Surveys of Research and Experimental Development - Frascati Manual, (OECD, 2002)