

## ANNEX 2

### *Glossary of terms*

Accounting on an **accruals basis** recognises a transaction when the activity (decision) generating revenue or consuming resources takes place, regardless of when the associated cash is received or paid. See also accounting on a *cash basis*.

**Applied research** is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.

**Appropriations** are policy bills that provide / set aside money for specific government departments, agencies, programmes and/or functions. Appropriations provide legal authority to enter into obligations that will result in outlays. See also *obligations* and *outlays*.

**Authorisations** are policy bills that establish, continue or modify government programmes and are often accompanied by spending ceilings or policy guidance for subsequent appropriations. However, an authorised funding level has no necessary link with an appropriated funding level. See also *appropriations*.

**Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.

A **branch campus abroad (BCA)** is defined as a tertiary educational institution that is owned, at least in part, by a local higher education institution (i.e. resident inside the compiling country) but is located in the Rest of the world (resident outside the compiling country); operates in the name of the local higher education institution; engages in at least some face-to-face teaching; and provides access to an entire academic programme that leads to a credential awarded by the local higher education institution.

**Business enterprise expenditure on R&D (BERD)** represents the component of GERD incurred by units belonging to the Business enterprise sector. It is the measure of intramural R&D expenditures within the Business enterprise sector during a specific reference period. See also *Gross domestic expenditure on R&D* and *intramural R&D expenditures*.

The **Business enterprise sector** comprises:

- All resident corporations, including not only legally incorporated enterprises, regardless of the residence of their shareholders. This group includes all other types of quasi-corporations, i.e. units capable of generating a profit or other financial gain for their owners, recognised by law as separate legal entities from their owners, and set up for purposes of engaging in market production at prices that are economically significant.
- The unincorporated branches of non-resident enterprises are deemed to be resident because they are engaged in production on the economic territory on a long-term basis.
- All resident non-profit institutions (NPIs) that are market producers of goods or services or serve business.

This sector comprises both private and public enterprises.

**Capital R&D expenditures** are the annual gross amount paid for the acquisition of fixed assets that are used repeatedly or continuously in the performance of R&D for more than one year. They should be reported in full for the period when they took place, whether acquired or developed in house, and should not be registered as an element of depreciation.

The most relevant types of assets used for R&D for which capital R&D expenditures should be compiled are:

- land and buildings
- machinery and equipment
- capitalised computer software
- other intellectual property products.

**Capitalised computer software** consists of computer software that is used in the performance of R&D for more than one year. It includes long-term licences or the acquisition of separately identifiable computer software, including programme descriptions and supporting materials for both systems and applications software. The production costs (e.g. labour and materials) of internally produced software should be reported. Software from external vendors may be obtained through the outright purchase of rights or licences to use. Software used or licensed for one year or less should be reported under current expenditures. See also *software R&D*.

**Carry over provisions (tax relief):** a process by which the deductions or credits of one taxable year that cannot be used to reduce tax liability in that year are applied against a tax liability in subsequent years (carryforward) or previous years (carryback).

Accounting on a **cash basis** recognises a transaction when the cash is received or when cash is paid out. See also *accounting on an accrual basis*.

**Central (or federal) government** is generally composed of a central group of departments or ministries that make up a single institutional unit – this unit is often referred to as the national government and the unit covered by the main budget account – plus, in many countries, other institutional units. The departments may be responsible for considerable amounts of R&D expenditure (for intramural or extramural R&D) within the framework of the government's overall budget, but often they are not separate institutional units capable of owning assets, incurring liabilities, engaging in transactions, etc., independently of central government as a whole. Their revenues as well as expenses and expenditures are normally regulated and controlled by a Ministry of Finance or its functional equivalent by means of a general budget approved by the legislature.

**Chain linking** consists in joining together two time series that overlap in one period by rescaling one of them to make its value equal to that of the other in the same period, thus combining them into a single time series. More complex methods may be used to link together time series that overlap by more than one period.

The **Classification of Functions of Government (COFOG)** is a generic classification of the functions, or socioeconomic objectives, that general government units aim to achieve through various kinds of expenditure. COFOG provides a classification system for government entities and financial outlays by functions of general interest. The level-one headings in COFOG have significant similarities with classifications of socioeconomic objectives used for R&D. The use of this classification for government institutions in the context of R&D statistics cannot be actively recommended by the *Frascati Manual*, because the categories are not optimised for the purpose of describing R&D expenditures. See also *socio-economic objectives*.

**Controlled affiliates abroad (CAA)** are the majority-owned affiliates located abroad of a parent company resident in the compiling country. See also *majority-ownership* and *parent company of a multinational enterprise (MNE)*.

**Corporations** comprise all entities that are capable of generating a profit or other financial gain for their owners, that are recognised by law as separate legal entities from their owners who enjoy limited liability, and that are set up for purposes of engaging in market production. The term covers cooperatives, limited liability partnerships and quasi-corporations. For some practical purposes, this category can be extended to comprise households or individuals formally engaged in market production where the separation of liability is difficult to establish. Overall, this group should essentially match the units identified as Business enterprises.

**Current R&D expenditures** are composed of labour costs and other current costs (including for *external R&D personnel*) used in R&D. Services and items (including equipment) used and consumed within one year are

current expenditures. Annual fees or rents for the use of fixed assets should be included in current expenditures.

**Doctoral students** attend “tertiary programmes which lead to the award of an advanced research qualification [and which] are therefore devoted to advanced study and original research and are not based on course work only”. Such students are usually required to submit a thesis or dissertation of publishable quality, i.e. the product of original research that represents a significant contribution to knowledge. See also *International Standard Classification of Education*.

An **economic activity** or **industry** consists of a group of establishments engaged in the same, or similar, kinds of activity. The International Standard Industrial Classification (ISIC) is the reference classification for economic activities. See also *International Standard Industrial Classification (ISIC)*.

**Economically significant prices** are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when (a) the producer has an incentive to adjust supply with the goal of either making a profit in the long run or, at a minimum, covering capital and other costs and (b) consumers have the freedom to purchase or not purchase, and make the choice on the basis of the prices charged. See *System of National Accounts*.

**Editing of collected data** is performed to identify possible errors in the data and either to validate a record or variable, or to correct for errors and inconsistencies in the collected data.

**Employees** include all persons who work in or for the statistical unit, who have a contract of employment with the unit and who receive compensation in cash or in kind at regular intervals of time. Employees engaged in activity ancillary to the main activity of the unit are also included, as well as the following groups: persons on short-term leave (sick leave, annual leave or vacation); persons on special paid leave (educational or training leave, maternity or parental leave); persons on strike; and part-time workers, seasonal workers and apprentices when on the payroll. Employees also include persons working physically outside the statistical unit's premises, when paid by and under the control of the unit (outworkers); for example, outside service engineers and repair and maintenance personnel are employees.

**Employment** – See *persons employed*.

An **enterprise** is the view of any institutional unit – not necessarily within what the *Frascati Manual* defines as the Business enterprise sector – as a producer of goods and services (See SNA). The term enterprise may refer to a corporation, a quasi-corporation, a non-profit institution or an unincorporated enterprise. An enterprise is an economic transactor with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more economic activities at one or more locations. An enterprise may be a sole legal unit.

An **enterprise group** is a set of enterprises controlled by the group head. The group head is a parent legal unit that is not controlled either directly or indirectly by any other legal unit. It can have more than one decision-making centre, especially for the policy on production, sales and profits, or it may centralise certain aspects of financial management and taxation. It constitutes an economic entity that is empowered to make choices, particularly concerning the units that it comprises. The enterprise group as a unit is particularly useful for financial analyses and for studying company strategies; however, it can be too varied in nature and unstable to be adopted as a unit for statistical surveys and analysis.

An **establishment** is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. Establishments are sometimes referred to as local kind-of activity units (local KAUs). See also *enterprise*.

**Estimation** is concerned with inference about the numerical value of unknown population values from incomplete data such as a sample.

**Exchange funds for R&D** are funding flows from one statistical unit to another statistical unit in return for the performance of R&D and the delivery of relevant R&D outcomes. The unit funding the work incurs a delivery risk associated with the uncertainty of the project. Examples of exchange funds activities include R&D purchases (sales from the perspective of the performer), R&D outsourcing and contributions in the context of collaborative R&D agreements.

**Experimental development** is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

**External R&D funds** are the amount of money spent on R&D that originate outside the control of a reporting unit.

**External R&D personnel** (or contributors) are independent (self-employed) or dependent (employee) workers fully integrated into a statistical unit's R&D projects without formally being persons employed by the same R&D-performing statistical unit.

In this Manual **extramural R&D** is any R&D performed outside of the statistical unit about which information is being reported; its "funds for extramural R&D" should include only internal funds (not from external sources) provided to an outside unit for R&D performance including both where there is an expected compensatory delivery of R&D (exchange or purchase) and where no compensatory delivery is expected (transfer or grant). It may also be noted that such funds for extramural R&D often will include payments for costs other than for R&D, such as cost elements covering depreciation costs, performer profit, delivery charges, etc.

**Fellow enterprises abroad** are identified from the point of view of a foreign-controlled affiliate resident in the compiling economy. The term refers to enterprises located outside the compiling country that are under the control or influence of the same foreign parent company as the foreign-controlled affiliate. For the purposes of the *Frascati Manual*, fellow enterprises abroad are of interest as sources or destinations of R&D funds involving foreign-controlled affiliates.

The OECD **fields of research and development (FORD)** classification has been developed in the framework of the *Frascati Manual* and is used to classify R&D units and resources by fields of enquiry, namely, broad knowledge domains based primarily on the content of the R&D subject matter.

**Foreign-controlled affiliates (FCA)** are the fully consolidated enterprise group within the compiling country that are majority-owned members of foreign MNEs (thus majority-owned by their foreign parent companies. Activities of FCAs are a consequence of inward FDI, whereas activities of CAAs relate to outward FDI. See also *majority-ownership, multinational enterprise, parent company* and *controlled affiliate abroad*.

**Foreign direct investment (FDI)** reflects the objective of obtaining a lasting interest by a resident enterprise in one economy (an MNE parent or “direct investor”) in an enterprise resident in another economy (a foreign affiliate or “direct investment enterprise”). For official statistical purposes, a lasting interest is deemed to exist by direct or indirect ownership of 10% or more of the ordinary shares or voting power of an incorporated enterprise, or the equivalent of an unincorporated enterprise. The 10% voting power criterion also establishes the existence of a direct investment relationship between an affiliate and its MNE parent.

**Full-time equivalent (FTE)** of R&D personnel is defined as the ratio of working hours actually spent on R&D during a specific reference period (usually a calendar year) divided by the total number of hours conventionally worked in the same period by an individual or by a group.

Public **general university funds (GUF)** are defined as the R&D funding share coming from the general grant universities receive from the central government (federal) ministry of education or the corresponding provincial (state) or local (municipal) authorities in support of their overall research/teaching activities.

In broad terms, **globalisation** refers to the international integration of financing, factor supply, R&D, production, and trade of goods and services.

**Government budget allocations for R&D (GBARD)** encompass all spending allocations met from sources of government revenue foreseen within the budget, such as taxation. Spending allocations by extra-budgetary government entities are only within the scope to the extent that their funds are allocated through the budgetary process. Likewise, R&D financing by public corporations is outside the scope of GBARD statistics, as it is based on funds raised within the market

and outside the budgetary process. Only in the exceptional case of budgetary provisions for R&D to be carried out or distributed from public corporations should this be counted as part of GBARD. See also *Socio-economic (SEO) objectives classification*.

**Government control of NPIs** is typically determined by the use of the following five indicators of control:

1. The ability to dictate the appointment of officers or management boards.
2. The ability to dictate other provisions, allowing the government to determine significant aspects of the general policy or programme of the NPI, such as the right to remove key personnel or to veto proposed appointments, to require prior approval of budgets or financial arrangements by the government, or to prevent the NPI from changing its constitution or dissolving itself.
3. The presence of contractual agreements, giving rights to impose conditions, such as those cited above.
4. The degree and type of financing by government, to the extent that this may prevent the NPI from determining its own policy or programme.
5. The existence of risk exposure, if a government openly allows itself to be exposed to all, or a large proportion of, the financial risks associated with an NPI's activities.

**Government expenditure on R&D (GOVERD)** represents the component of GERD incurred by units belonging to the Government sector. It is the measure of expenditures on intramural R&D within the Government sector during a specific reference period. See also *Gross domestic expenditure on R&D (GERD)* and *intramural R&D expenditures*.

The **Government sector** consists of the following groups of resident institutional units:

- all units of central (federal), regional (state) or local (municipal) government, including social security funds, except those units that provide higher education services or fit the description of higher education institutions provided in this manual.
- all non-market NPIs that are controlled by government units that are not part of the Higher education sector.

The sector does not include public corporations, even when all the equity of such corporations is owned by government units. Public enterprises are included in the Business enterprise sector.

**Government tax relief for R&D expenditures (GTARD)**. This concept describes tax relief provisions that apply to taxpayers strictly as a result of their engagement in R&D performance and/or funding activities, relative to a normal or baseline tax structure. The concept of GTARD applies to the statistical measurement of the cost of such R&D-specific provisions (GTARD indicator) that is proposed in this manual.

**Government units** are unique kinds of legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area. See SNA. These units are of special relevance for the analysis of R&D budgets and tax incentives.

**Gross domestic expenditure on R&D (GERD)** is total intramural expenditure on R&D performed in the national territory during a specific reference period.

**Gross national expenditure on R&D (GNERD)** comprises total expenditure on R&D financed by a country's institutions regardless of where the R&D is performed. As such, it includes R&D performed in the "rest of the world" that is financed by national institutions or residents; it excludes R&D performed within a country that is funded from institutions outside of the national territory (that is, from institutions that are part of the "rest of the world"). GNERD is constructed by adding the domestically financed intramural expenditures of each performing sector plus the R&D performed in the "rest of the world" that is financed by domestic funding sectors.

**The headcount (HC)** of R&D personnel is defined as the total number of individuals contributing to intramural R&D, at the level of a statistical unit or at an aggregate level, during a specific reference period (usually a calendar year).

**Higher education expenditure on R&D (HERD)** represents the component of GERD incurred by units belonging to the Higher education sector. It is the measure of intramural R&D expenditures within the Higher education sector during a specific period. See also *Gross domestic expenditure on R&D (GERD)* and *intramural R&D expenditures*.

The **Higher education sector** comprises all universities, colleges of technology and other institutions providing formal tertiary education programmes, whatever their source of finance or legal status, and all research institutes, centres, experimental stations and clinics that have their R&D activities under the direct control of, or are administered by, tertiary education institutions.

For inward investment, the **immediate parent company of a FCA** is the first foreign investor outside the compiling country that exercises control over the foreign affiliate. See also *parent company*, *foreign-controlled affiliate* and *investor of ultimate control*.

**Imputation** is a procedure for entering a value for a specific data item where the response is missing or unusable.

**Industry** – see *economic activity*.

An **institutional unit** is a national accounting concept and is defined in the System of National Accounts as "an economic entity that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities and transactions with other entities". This concept can be applied to the measurement of R&D activities and R&D-related flows. In the R&D case, institutional units have to be capable of decision-making in respect of the



conduct of R&D, from the allocation of financial resources for internal or external use to the management of R&D projects. These are weaker requirements than those used to define an institutional unit in the National Accounts, but they serve for the purposes of this manual.

**Internal R&D funds** are the amount of money spent on R&D that originate within the control of and are used for R&D at the discretion of a reporting statistical unit. Internal R&D funds do not include R&D funds received from other statistical units explicitly for intramural R&D.

**Internal R&D personnel** are persons employed by the statistical unit who contribute to the unit's intramural R&D activities. See *persons employed*.

**International organisations** have as members either national states or other international organisations whose members are national states. They are established by formal political agreements between their members that have the status of international treaties; their existence is recognised by law in their member countries, and they are not subject to the laws or regulations of the country, or countries, in which they are located. For example, they cannot be compelled by national authorities to provide statistical information on their R&D performance or funding activities. For the purposes of the SNA and also for R&D statistics, international organisations are treated as units that are resident abroad (part of Rest of the world), regardless of the physical location of their premises or operations.

The **International Standard Classification of Education (ISCED)** is the reference classification for organising education programmes and related qualifications by education levels and fields. ISCED is designed to serve as a framework to classify educational activities as defined in programmes and the resulting qualifications into internationally agreed categories. The basic concepts and definitions of ISCED are therefore intended to be internationally valid and comprehensive of the full range of education systems. ISCED classifies education programmes by their content using two main cross-classification variables: levels of education and fields of education. The ISCED version of 2011 introduces a related classification of educational attainment levels based on recognised educational qualifications.

The **International Standard Classification of Occupations (ISCO)** is used to classify jobs. For the purpose of ISCO, a job is defined as a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment. An occupation is defined as a set of jobs whose main tasks and duties are characterised by a high degree of similarity. A person may be associated with an occupation through the main job currently held, a second job or a job previously held. Jobs are classified by occupation with respect to the type of work performed, or to be performed. The basic criteria used to define the system of major, sub-major, minor and unit groups are the “skill level” and “skill specialisation” required to perform the tasks and duties of the occupations competently.

**The International Standard Industrial Classification of All Economic Activities (ISIC)** consists of a coherent and consistent classification structure of economic activities based on a set of internationally agreed concepts, definitions, principles and classification rules. It provides a comprehensive framework within which economic data can be collected and reported in a format that is designed for purposes of economic analysis, decision-taking and policy-making. The classification structure represents a standard format to organise detailed information about the state of an economy according to economic principles and perceptions. The scope of ISIC in general covers productive activities, i.e. economic activities within the production boundary of the System of National Accounts (SNA). A few exceptions have been made to allow for the classification of activities beyond the production boundary but which are of importance for various other types of statistics. These economic activities are subdivided in a hierarchical, four-level structure of mutually exclusive categories, facilitating data collection, presentation and analysis at detailed levels of the economy in an internationally comparable, standardised way. See also *economic activity*.

**Intramural R&D expenditures** are all current expenditures plus gross fixed capital expenditures for R&D performed within a statistical unit during a specific reference period, whatever the source of funds. Intramural R&D expenditure is synonymous with the performance of R&D within a statistical unit. The aggregation of intramural R&D for all units within a sector is synonymous with the performance of R&D within a sector of the economy; the summation of intramural R&D for all sectors is synonymous with the performance of R&D for the entire economy (GERD).

The **investor of ultimate control of a FCA** (also called “ultimate controlling institutional unit”) is the head of a chain of companies or affiliates that controls all the enterprises in the chain without itself being controlled by any other company. See also *foreign controlled affiliate* and *immediate parent company*.

A **joint venture** involves the establishment of a corporation, partnership or other institutional unit in which each party legally has joint control over the activities of the unit. The units operate in the same way as other units except that a legal arrangement between the parties establishes joint control over the unit. As an institutional unit, the joint venture may enter into contracts in its own name and raise finance for its own purposes. If R&D joint ventures are stand-alone units, they should also be classified on the basis of the units they predominantly serve, taking whenever possible into account the established practice of the System of National Accounts.

A **kind-of-activity unit (KAU)** is an enterprise, or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. Each enterprise must, by definition, consist of one or more kind-of-activity units.

**Land and buildings** include land acquired for R&D use (e.g. testing grounds, sites for laboratories and pilot plants) and buildings constructed or purchased for R&D use, including major improvements, modifications and repairs. Since buildings are produced assets and land is a non-produced asset in National Accounts, R&D expenditures for land and for buildings should be separately identified.

**Labour costs**, or compensation of employed personnel, comprise annual wages and salaries and all associated costs or fringe benefits, such as bonus payments, stock options, holiday pay, contributions to pension funds. In this manual, the concept of labour costs also includes other social security payments and payroll taxes.

**Leased employees** are included in external R&D personnel. Leased employment entails the provision for a fee of human resources for client businesses. Leased employees are on the payroll of an employment (or staffing) agency rather than the payroll of the statistical unit paying the fee. This provision of human resources is typically conducted on a short-term basis.

A **local unit** is an enterprise, or a part of an enterprise, that engages in productive activity at or from one location.

The **local (or municipal) government** subsector consists of local governments that are separate institutional units in addition to agencies and non-market NPIs that are controlled by local governments. In principle, local government units are institutional units whose fiscal, legislative and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes. The scope of their authority is generally much less than that of central government or state governments.

**Machinery and equipment** cover major (i.e. capitalised) machinery and equipment acquired for use in the performance of R&D. For the purpose of measuring R&D for National Accounts, expenditures on machinery and equipment should be identified by more detailed breakdowns, including “information and communications equipment” and “transportation equipment”.

**Majority-ownership or control** refers to ownership of more than 50% of the ordinary shares or voting power of an incorporated enterprise or the equivalent of an unincorporated enterprise. Examples of majority-owned or controlled affiliates include subsidiaries (incorporated enterprises) and branches (unincorporated enterprises).

**Master's students** may in some cases be counted as researchers; in particular, this would include students following an ISCED level 7 research master's programme “...leading to the award of research qualifications that are designed explicitly to train participants in conducting original research but are below the level of a doctoral degree”. However, it is important that only Master's students receiving payment for their R&D activity are included in R&D personnel totals.

A **multinational enterprise (MNE)** refers to a parent company resident in the country and its majority-owned affiliates located abroad, which are labelled controlled affiliates abroad (CAA). MNEs are also referred to as global enterprise groups. See also *parent company*, *majority-ownership* and *controlled affiliates abroad*.

**NABS classification** – see *Socio-economic objectives classification*.

**Non-profit institutions (NPIs)** are legal or social entities, created for the purpose of producing goods and services, whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them. They can be engaged in market or non-market production.

**Non-profit institutions serving households (NPISHs)** consist of non-market NPIs that are not controlled by government. They provide goods and services to households free or at prices that are not economically significant. Most of these goods and services represent individual consumption, but it is possible for NPISHs to provide collective services.

**Obligations** represent the monetary amounts for orders placed, contracts awarded, services received and similar transactions during a given period, regardless of when the funds were appropriated and when the future payment of money is required.

**Oriented basic research** is basic research carried out with the expectation that it will produce a broad base of knowledge likely to form the basis of the solution to recognised or expected current or future problems or possibilities.

**Other current costs** comprise non-capital purchases of materials, supplies, equipment and services to support R&D performed by the statistical unit in the reference year. Examples are water and fuel (including gas and electricity); books, journals, reference materials, subscriptions to libraries, scientific societies, etc.; imputed or actual costs of small prototypes or models made outside the statistical unit; and materials for laboratories (e.g. chemicals, animals, etc.). Other current costs include royalties or licences for the use of patents and other intellectual property rights, the lease of capital goods (machinery and equipment, etc.) and the rental of buildings to support R&D performed by the statistical unit in the reference year.

**Other supporting staff** include skilled and unskilled craftsmen, and administrative, secretarial and clerical staff participating in R&D projects or directly associated with such projects.

**Other intellectual property products** (in capital R&D expenditures) include purchased patents, long-term licences or other intangible assets used in R&D, and which are in use for more than one year. Other intangibles that can be reported in a unit's internal financial accounts, such as marketing assets or goodwill, should not be included. See *System of National Accounts*.

**Outlays** (used interchangeably with expenditures in terms of spending) represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated (when referring to government funds).

Survey **paradata** refer to information related to the survey process. Examples of paradata may include whether or not the unit is in the sample; a response follow-up history; and the mode of collection. Use of paradata after a survey cycle may assist in improving the survey instrument in future iterations.

**Parent companies of MNEs** are measured as the fully consolidated enterprise group within the compiling country and include all units resident in the compiling country that are majority-owned by the company. See also *multinational enterprise, enterprise group, residence and majority-ownership*.

**Performers of R&D** consist of statistical units that undertake (i.e. perform) R&D in each of the main sectors covered in this manual: Business enterprise, Government, Higher education and Private non-profit. See *Statistical Unit*.

**Persons employed** include both employees and unpaid family workers and working proprietors (i.e. active business partners). Silent or inactive partners whose principal activity is conducted outside of the statistical unit should be excluded. See also *internal R&D personnel*.

**Private affiliation status** – see *Public affiliation status*.

**Private non-profit expenditure on R&D (PNPERD)** represents the component of GERD incurred by units belonging to the Private non-profit sector. It is the measure of intramural R&D expenditures within the Private non-profit sector during a specific reference period. See also *Gross domestic expenditure on R&D (GERD)* and *intramural R&D expenditures*.

The **Private non-profit (PNP) sector** comprises:

- all non-profit institutions serving households (NPISH), as defined in the SNA 2008, except those classified as part of the Higher education sector
- for completeness of presentation, households and private individuals engaged or not engaged in market activities, as explained in this manual.

**A “Professor emeritus”** is a retired professor who continues to research and collaborate in the academic activities of his/her former employer – usually a university – without receiving any compensation (although he/she may receive some logistical support for their activities).

**A prototype** is an original model constructed to include all the technical characteristics and performances of the new product.

**Public or private sector affiliation status.** The public or private status of an institutional unit should be determined by whether or not the unit is controlled by government. Units tagged as private (or public) in all sectors can be grouped together for the presentation of statistics that meet user requirements.

**Purchasers' prices** are the amounts paid by the purchasers, excluding the deductible part of value-added taxes (VAT) and similar taxes. Purchasers' prices reflect the actual costs to the users. This means that the valuation of current and capital expenditures on goods and services for R&D is the total price paid by the reporting unit, including any taxes on products, which act to increase the price paid, and the price-reducing effect of any subsidies on the products purchased.

**Pure basic research** is basic research carried out for the advancement of knowledge, without seeking long-term economic or social benefits or making any effort to apply the results to practical problems or to transfer the results to sectors responsible for their application.

A **quasi-corporation** is either an unincorporated enterprise owned by a resident institutional unit that has sufficient information to compile a complete set of accounts and is operated as if it were a separate corporation and whose de facto relationship to its owner is that of a corporation to its shareholders, or an unincorporated enterprise owned by a non-resident institutional unit that is deemed to be a resident institutional unit because it engages in a significant amount of production in the economic territory over a long or indefinite period of time.

**R&D coefficients** are a tool for calculating / estimating the shares of personnel and expenditure data attributable to R&D. They are especially used for distributing total resources among research, teaching and other activities (including administration) in the Higher education sector. They can be used for the total expenditure or for parts of it, like public general university funds (GUF) or for personnel only.

R&D personnel are classified according to their **R&D function**, which may be researcher, technician or other support staff.

**R&D personnel** in a statistical unit include all persons engaged directly in R&D, whether employed by the statistical unit or external contributors fully integrated into the statistical unit's R&D activities, as well as those providing direct services for the R&D activities (such as R&D managers, administrators, technicians and clerical staff). See also *internal R&D personnel* and *external R&D personnel*.

**Refundable/payable tax credit.** Tax credits can be payable, in the sense that any amount of the credit that exceeds the tax liability is paid to the beneficiary. See also *tax credit*.

The **reporting unit** is the unit *from which* data are reported. This corresponds to the unit that would receive a questionnaire or interview. In the case of administrative data, it would correspond to the unit that is represented by the individual record.

**Research and experimental development (R&D)** comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.

**Researchers** are professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods.

The **residence** of an institutional unit is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest. The economic territory includes the land area, airspace and territorial waters, including jurisdiction over fishing rights and rights to fuels or minerals. In a maritime territory, the economic territory includes islands that belong to the territory. The economic territory also includes territorial enclaves in the Rest of the world. These are clearly demarcated land areas (such as embassies, consulates, military bases and scientific stations) located in other territories and used by governments that own or rent them for diplomatic, military, scientific or other purposes with the formal agreement of the governments of the territories where the land areas are physically located.

The **Rest of the world** includes:

- all institutions and individuals without a location, place of production or premises within the economic territory on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale
- all international organisations and supranational entities, defined further below, including facilities and operations within the country's borders.

For statistical purpose, **scientific and technological activities (STA)** can be defined as all systematic activities which are closely concerned with the generation, advancement, dissemination and application of scientific and technical knowledge in all fields of science and technology, that is, the natural sciences, engineering and technology, the medical and agricultural sciences (NS), as well as the social sciences and humanities (SSH). The activities that should be covered in the statistical practice may be divided into three broad groups: research and experimental development; S&T education and training at broadly the third level; and scientific and technological services.

**Self-employed** persons are persons who are the sole or joint owners of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasi-corporations. In the *Frascati Manual*, self-employed consultants or contractors undertaking R&D projects for another unit at an economically significant price are included in the Business enterprise sector.

A **socio-economic objectives (SEO) classification** is used to distribute GBARD. The criteria for classification should be the purpose of the R&D programme or project, i.e. its primary objective. The allocation of R&D budgets to socio-economic objectives should be at the level that most accurately reflects the funder's objective(s). The recommended distribution list is based on the

European Union classification adopted by Eurostat for the Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (NABS) at the one-digit level. See also *Government budget allocations for R&D (GBARD)*.

A **software** development project is classified as R&D if its completion is dependent on a scientific and/or technological advance, and the aim of the project is the systematic resolution of a scientific and/or technological uncertainty. In addition to the software that is part of an overall R&D project, the R&D associated with software as an end product or software embedded in an end product could also be classified as R&D when the R&D criteria apply. Software development is an integral part of many projects that in themselves have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. An upgrade, addition or change to an existing program or system may be classified as R&D if it embodies scientific and/or technological advances that result in an increase in the stock of knowledge. Software-related activities of a routine nature are not to be considered R&D. See also *capitalised computer software*.

The **source of R&D funds** is the unit that provides the funds for R&D performance. Sources may be internal or external to the reporting unit. In surveys and data presentation, external sources are grouped by main sector and relevant subsectors. In broad terms, there are five main sources for R&D funding: Business enterprise, Government, Higher education, Private non-profit and the Rest of the world.

The **state (or regional) government** subsector consists of regional or state governments that are separate institutional units in addition to agencies and non-market NPIs that are controlled by regional (state) governments. This subsector exercises some of the functions of government at a level below that of central/federal government and above that of the governmental institutional units existing at a local level. They are institutional units whose fiscal, legislative and executive authority extends only over the individual “states” into which the country as a whole may be divided. Such “states” may be described by different terms in different countries, i.e. by reference to terms such as “regions” or “provinces”.

A **statistical unit** is an entity about which information is sought and for which statistics are ultimately compiled. It is the unit at the basis of statistical aggregates and to which tabulated data refer.

A **supranational authority** is an international organisation that has been endowed with the authority to raise taxes or other compulsory transfers within the territories of the countries that are members of the authority. Despite the fact that supranational authorities fulfil some of the functions of government within each member country, they are always considered non-resident institutional units.

The **System of National Accounts (SNA)** is the internationally agreed standard set of recommendations on how to compile measures of economic activity in accordance with strict accounting conventions based on economic principles.



**Tax allowance.** Tax allowances, exemptions and deductions are subtracted from the tax base before the tax liability is computed – it reduces the taxable amount before assessing the tax. See also *tax exemptions*.

A **tax credit** is an amount subtracted directly from the tax liability due by the beneficiary household or corporation after the liability has been computed.

**Tax exemptions.** Exemptions are amounts excluded from the tax base.

**Tax expenditures** are provisions of tax law, regulation or practices that reduce or postpone revenue collected by government from a group of taxpayers relative to a benchmark or “normal” tax structure. Tax expenditures are sometimes described as synonymous with tax reliefs, tax subsidies and tax aid. In this manual, the term “tax expenditure” is used to describe the measure of the cost to government of related tax relief provisions.

**Technicians and equivalent staff** are persons whose main tasks require technical knowledge and experience in one or more fields of engineering, the physical and life sciences, or the social sciences, humanities and the arts. They participate in R&D by performing scientific and technical tasks involving the application of concepts, operational methods and the use of research equipment, normally under the supervision of researchers.

**Tertiary education** includes what is commonly understood as academic education but also includes advanced vocational or professional education. It comprises ISCED levels 5, 6, 7 and 8, which are labelled as short-cycle tertiary education, Bachelor’s or equivalent level, Master’s or equivalent level, and doctoral or equivalent level, respectively.

A **time-use survey** is a statistical survey that aims to report data on how people spend their time. Guidelines on time-use surveys are given in the *Frascati Manual* to help in deriving the necessary information for estimating the R&D component of full-time equivalents (FTEs) and expenditures in the Higher education sector, if the necessary coefficients cannot be derived from administrative data or other survey data.

**Transactions** are voluntary exchanges or transfers where there is a change in economic ownership (who bears the risk and is entitled to benefits) in the provision of goods or services. Flows of goods, services and income are recorded in the current account of the balance of payments. See *System of National Accounts*.

**Transfer R&D funds** are funding flows from one statistical unit to another statistical unit to perform R&D that does not require any good or service in return and where the funder is not entitled to any significant rights on the outcome of the R&D it has funded. The unit that provides transfer funds for R&D may impose some conditions on the performer, such as periodic reporting, compliance with the activity or project description as agreed in the terms of the agreement, or even public dissemination of research outcomes. Examples of transfer funds include grants, debt forgiveness, philanthropy, crowd-funding and personal transfers such as gifts and GUF (by convention for international comparisons).

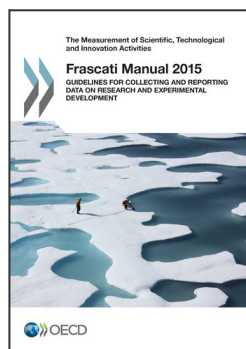
To be included as R&D transfer funds, the funds should be intended by the originating source to be used for R&D. Normally, the R&D performer will retain most rights to the outcomes of the R&D, which explains the transfer nature of this R&D funding transaction.

**Types of costs of R&D** include individual current and capital cost categories for intramural R&D. Types of current costs include labour costs for internal R&D personnel and other current costs (for external R&D personnel, purchases of services, purchases of materials, and other costs not elsewhere classified. Types of capital costs include land and buildings, machinery and equipment, capitalised computer software and other intellectual property products.

Three **types of R&D** are considered and defined in the *Frascati Manual*: basic research, applied research and experimental development. See the relevant definitions in this glossary of terms.

A **value-added type tax (VAT)** is a tax on goods or services that is collected in stages by enterprises but which is ultimately charged in full to the final purchasers. In line with the SNA and for international comparison purposes, a net system of recording VAT should be followed. Under the net system, VAT is recorded as being payable by purchasers, not sellers, and only by those purchasers who are not able to deduct it. Countries should make every effort to exclude deductible VAT from expenditure figures for all R&D performing sectors. It is recommended that figures forwarded for international comparison should exclude deductible VAT from intramural R&D totals.

In the context of this manual, **volunteers** are the part of external R&D personnel who are unpaid workers providing a statistical unit with a defined R&D contribution.



**From:**

## **Frascati Manual 2015**

### **Guidelines for Collecting and Reporting Data on Research and Experimental Development**

**Access the complete publication at:**

<https://doi.org/10.1787/9789264239012-en>

#### **Please cite this chapter as:**

OECD (2015), "Glossary of terms", in *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264239012-17-en>

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