

SCIENCE AND TECHNOLOGY SECTOR

Term	Definition	Formula	Main Reference	Some notes on the definition	Frequency of data	Diasaggregation	Source of data
1. Research and Development (R&D)	Comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to create new or improved products, processes, services and devise new applications.		Frascati Manual 2002	The basic criterion to distinguish R&D from related activities is the presence of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of common knowledge and techniques for the area concerned.			
2. R&D Personnel	Persons employed directly on R&D as well as those providing direct services such as R&D managers, administrators and clerical staff. The R&D personnel can be classified based on occupational category, i.e., Scientists & Engineers, Technicians and	$RDP = SE/R + T + AP$ <p>where</p> <p>RDP = total number of R&D personnel SE/R = number of Scientists & Engineers T = number of Technicians AP = number of Auxilliary Personnel</p>	Frascati Manual 2002	Consistent with the International Standard Classification of Occupations (ISCO) and the Philippine Standard Occupation Classification (PSOC)	Biennial (every 2 years)	Sector of performance, Level of education, Field of specialization, Status of appointment, Sex, Age group, Region, Position category, Annual	DOST's Survey on R&D Expenditures and Human Resources in Government, Higher Education and Private Non-Profit Sectors; Survey on R&D Personnel in

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	Auxiliary Personnel.						Private Establishments (rider survey to NSO's Annual Survey of Philippine Business and Industry (ASPBI))
2.1 Scientists and Engineers/ Researchers	Persons working in those capacities, who use or create scientific knowledge and engineering and technological principles; i.e. persons with scientific or technological training who are engaged in professional work in R&D, high-level administrators and personnel who direct the execution of R&D		Frascati Manual 2002	The term "Scientist" is generally synonymous with the definition of the term "Researcher" as defined in the Frascati Manual.	Biennial (every 2 years)	Sector of performance, Regional, Sex, Age group, Educational attainment, Field of research work, Annual	DOST's Survey on R&D Expenditures and Human Resources in Government, Higher Education and Private Non-Profit Sectors; Survey on R&D Personnel in Private Establishments (rider survey to NSO's ASPBI)
2.2 Technicians	Persons engaged in that capacity in R&D who had vocational or technical training in any branch of knowledge and technology.		Frascati Manual 2002	The term "Technicians" is generally synonymous with the definition of the term "Technicians and equivalent	Biennial (every 2 years)	Sector of performance, Regional, Sex, Age group, Educational attainment, Field of	DOST's Survey on R&D Expenditures and Human Resources in Government,

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				staff” as defined in the Frascati Manual.		research work, Annual	Higher Education and Private Non-Profit Sectors; Survey on R&D Personnel in Private Establishments (rider survey to NSO's ASPBI)
2.3 Auxilliary Personnel	Persons whose work is directly associated with the performance of R&D; i.e. clerical, secretarial and administrative personnel, skilled, semi-skilled, and unskilled workers in various trades and all other supporting workers.		Frascati Manual 2002	The term “Auxilliary personnel” is generally synonymous with the definition of the term “Other supporting staff” as defined in the Frascati Manual.	Biennial (every 2 years)	Sector of performance, Regional, Sex, Age group, Educational attainment, Field of research work, Annual	DOST's Survey on R&D Expenditures and Human Resources in Government, Higher Education and Private Non-Profit Sectors; Survey on R&D Personnel in Private Establishments (rider survey to NSO's ASPBI)
3. R&D Expenditure	Expenses or costs incurred (based on the “accrual” accounting approach) by a particular R&D	$RDE = PS + MOOE + CO$ where $RDE = \text{total amount of R\&D}$	Frascati Manual	In the operationalization of the R&D expenditure, accounting terms	Biennial (every 2 years)	Sector of performance, Funding source, Socio-economic	DOST's Survey on R&D Expenditures and Human

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	<p>institution or unit in implementing the R&D project/activity during a specific reference period. It includes all expenses or costs that are paid/payable/committed/obligated, whatever the sources of funds are. The Philippine Government R&D expenditures can be classified into the following items of expenditure, i.e., personal services, maintenance and other operating expenses and capital outlay.</p>	<p>spent during the reference period PS = amount spent on Personal Services specifically for R&D MOOE = amount spent on Maintenance and Operating Expenses specifically for R&D CO = amount spent on capital outlay specifically for R&D</p>		<p>such PS, MOOE and CO were used, since these are the more familiar terms in the Philippine Government setting. These are more or less consistent with the “intramural expense” as suggested by the Frascati Manual which include both current and capital costs. Moreover, current costs include labour costs and other current costs. For private establishments, the R&D Survey started gathering MOOE in 2003 and the PS component was added in 2005.</p>		<p>objective, Regional, Annual, type of expenditure</p>	<p>Resources in Government, Higher Education and Private Non-Profit Sectors; Survey on R&D Personnel in Private Establishments (rider survey to NSO's ASPBI); NSO's ASPBI</p>
<p>3.1 R&D Personal Services</p>	<p>Consist of wages, salaries and all related labor costs including fringe benefits such as bonuses, paid holidays, contributions</p>		<p>Department of Budget and Management (DBM)</p>	<p>Personal services is in general synonymous with labour costs as defined in the Frascati Manual.</p>	<p>Biennial (every 2 years)</p>	<p>Annual</p>	<p>DOST's Survey on R&D Expenditures and Human Resources in</p>

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	to pension funds and compulsory social security benefits, payroll taxes, including employers contributions, contract payment to consultant/s, etc., paid or payable in cash or in kind to personnel who rendered direct services in the implementation of the R&D projects/ activities. Excludes expenses or costs for personnel who provided indirect services in the implementation of the R&D project/activity.						Government, Higher Education and Private Non-Profit Sector Survey on R&D Personnel in Private Establishments (rider survey to NSO's ASPBI)
3.2 R&D Maintenance and Other Operating Expenses	Consist of all paid and payable expenses and costs of office and laboratory supplies, materials, subscriptions to journals, books, rental of buildings, maintenance, computer service, travel, postal services, and repairs of equipment, etc. used		DBM	MOOE is in general synonymous with other current costs as defined in the Frascati Manual.	Biennial (every 2 years)	Annual	DOST's Survey on R&D Expenditures and Human Resources in Government, Higher Education and Private Non-Profit Sectors; Survey on R&D

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	<p>in the implementation of the R&D projects/activities during a specific reference period. Includes expenses or costs for personnel who provided indirect services in the implementation of the R&D projects/activities.</p>						<p>Personnel in Private Establishments (rider survey to NSO's ASPBI); NSO's ASPBI</p>
<p>3.3 R&D Capital Outlay</p>	<p>Consist of all paid and payable expenses and costs of land, building and other structures, vehicle, plant, machinery, equipment and other similar capital expenditures incurred in the implementation of the R&D projects/activities during the reference period.</p>		<p>DBM</p>	<p>Capital Outlay is in general synonymous with capital costs as defined in the Frascati Manual.</p>	<p>Biennial (every 2 years)</p>	<p>Annual</p>	<p>DOST's Survey on R&D Expenditures and Human Resources in Government, Higher Education and Private Non-Profit Sectors</p>