

SCIENCE AND TECHNOLOGY SECTOR

Note: Metadata for the first batch of concepts for the Science and Technology sector, which are defined below, are provided in Annex BR-12-2007-02.

- 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.

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.

Examples of what are included and excluded in R&D

<i>Included</i>	<i>Excluded</i>
<i>For Social Sciences and humanities</i>	
Work related to conceptual, methodological and empirical part of any specific project and routine activities that are undertaken as integral part of a particular research project	Projects of routine nature wherein social scientists bring established methodologies and facts of social sciences to bear on a particular problem (e.g. economic forecasting using existing economic data and use of standard applied psychology techniques to a particular population)
<i>In Medicine</i>	
Activities such as special investigation to determine the effectiveness of a type of cancer treatment that requires certain tests to generate a data set for the program of research	Routine testing (such as body scanning, autopsies or blood tests)
<i>For Physical phenomena</i>	
Work to investigate the effects of climate change, to devise new or substantially improved methods or instruments for measuring temperature and pressure (e.g. development of new forecasting models by PAGASA, or measuring temperature in upper air station using balloons), or for developing new materials and evaluating their properties	Routine testing such as daily records of temperature and pressure variation or quality control on material composition and properties

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<i>In Engineering disciplines</i>	
To cover a major part of engineering work the development of a fundamental research up to the start of production, construction, and implementation stage, including incremental developments where they arise from a program of research designed to result in substantial improvement	Design and drawing work for the preparation, execution and maintenance of production standardization, or to promote the sale of products
<i>Software R&D</i>	
Investigations in areas such as the theoretical computer science, new operating systems, new programming languages, technical advances in algorithms, software engineering methodologies for improved computer programs and artificial intelligence, and new generations of video games that uses new platform	Software-related activities of a routine nature such as work on system-specific or program-specific advancements, which were publicly available prior to the commencement of the work, and technical problems, which have been overcome in previous projects
<i>Other Activities</i>	
<p>Formulation and design of possible applications for such work</p> <p>Testing in search for, or evaluation of, product, service or process alternatives</p> <p>Design, construction and testing of pre-production prototypes and models and development batches</p> <p>Design of products, processes, services or systems involving new technology or substantially improving those already produced or installed</p> <p>Construction and operation of prototypes and pilot plants</p> <p>New methods of data collection for market and policy researches</p>	<p>Testing analysis either of equipment or product for the purposes of quality or quantity control</p> <p>Periodic alterations to existing products, services or processes even though these may present some improvement</p> <p>Operational research not tied to specific research and development activity</p> <p>Legal and administrative work in connection with patent applications, records and litigation and the sale or licensing of patents</p> <p>Activities, including design and construction engineering, relating to the construction, relocation, rearrangement or start-up of facilities or equipment other than facilities or equipment whose sole use is for particular research and development project</p> <p>Market research</p> <p>Policy research</p>

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2. **R&D Personnel** – all 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 Auxiliary personnel.
 - 2.1. **Scientists and Engineers/Researchers (S&E/R)** – 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
 - 2.2. **Technicians** – persons engaged in that capacity in R&D who had vocational or technical training in any branch of knowledge and technology.
 - 2.3. **Auxiliary 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.
3. **R&D Expenditures** – expenses or costs incurred (based on the “accrual” accounting approach) by a particular R&D 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.
 - 3.1 **R&D Personal Services** – consist of wages, salaries and all related labor costs including fringe benefits such as bonuses, paid holidays, contributions 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.
 - 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 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.
 - 3.3 **R&D Capital Outlay** – consist of all paid and payable expenses and costs of land, buildings and other structures, vehicles, plants, machineries, equipment and other similar capital expenditures incurred in the implementation of the R&D projects/activities during the reference period.