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STATISTICAL SERVICE
1444 Nicosia

FOR OFFICIAL USE						
Serial Number			Activity			Size

SURVEY ON SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (R&D), 2018

Name of enterprise/organisation: .....

Address: .....

Telephone: ..... Telefax: .....

Legal status of enterprise/organisation: .....

Type of activity (describe fully): .....

.....

Number of persons employed in 2018: .....

Name of person who completed the questionnaire: .....

..... Position in the enterprise: .....

General Instructions

1. The purpose of this questionnaire is the collection of data relating to expenditures devoted to and personnel engaged in scientific research and experimental development (R&D) activities. **Data refer to the year 2018.** To facilitate international comparisons, the definitions, concepts and methodology of the "Frascati Manual", developed by the Organisation for Economic Co-operation and Development (OECD), are being used.
2. The survey is carried out in accordance with the Statistics Law, No.15(I) of 2000. Refusal to provide the relevant information or the provision of false, inaccurate or incomplete information renders the respondent liable to the consequences of the Law.
3. The Statistical Service is obliged, under the provisions of the Statistics Law, to treat all the information collected as confidential. Your replies will be used solely for statistical purposes. No data for any individual enterprise/organisation may be published or disclosed to either public bodies or private individuals.
4. You are required to answer all questions with the highest degree of accuracy. If you are unable to provide precise figures, you may give the nearest possible estimates.
5. Please study carefully all definitions and instructions provided in the following pages, before proceeding to the completion of the questionnaire.

Stavros Karagiorgis
Director
Statistical Service

October, 2019.

DEFINITION OF SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT

Scientific research and experimental 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 devise new applications.

R&D may be distinguished into three categories, as follows:

(a) Basic Research

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

(b) Applied Research

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

(c) Experimental Development

Experimental development is systematic work, drawing on existing knowledge gained from research and practical experience, that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

ACTIVITIES TO BE EXCLUDED FROM R&D

For the purposes of this survey, R&D must be distinguished from a wide range of related activities with a scientific and technological base. These other activities are very closely linked to R&D, both through flows of information and in terms of operations, institutions and personnel, but they should, as far as possible, be excluded when measuring R&D.

Examples of activities which should be excluded from R&D, except where carried out solely or primarily for the purposes of an R&D project, are provided herebelow:

(a) All education and training of personnel.

(b) The general purpose data collection undertaken to record natural, biological or social phenomena (e.g., market surveys, quarterly sampling of unemployment,

routine topographical mapping, routine geological, hydrological and meteorological surveying, etc.). The same reasoning applies to the processing and interpretation of the data.

(c) The carrying out of projects for consultancy purposes.

(d) The undertaking of studies using solely existing knowledge and techniques, such as investigation of proposed engineering projects, feasibility studies, etc.

(e) The provision of specialised scientific and technical information services, such as bibliographic services.

(f) Testing and standardisation, i.e., the maintenance of national standards, the calibration of secondary standards and routine testing and analysis of materials, components, products, processes, etc.

(g) Purely quality control-related processes.

(h) Routine investigation and normal application of specialised medical knowledge.

(i) All administrative and legal work connected with patents and licences.

(j) Routine software development and other software-related activities, such as supporting existing systems, converting and/or translating computer languages, adaptation of existing software, de-bugging of systems and the preparation of user documentation.

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of **novelty** or **innovation** with regard to the field studied and the methodology used.

One aspect of this criterion is that a particular project may be R&D if undertaken for one reason, but if carried out for another reason, will not be considered as R&D. This is shown in the following examples:

(a) In the field of medicine, routine autopsy on the causes of death is simply the practice of medical care and not R&D; special investigation, however, of a particular mortality in order to establish the side effects of certain cancer treatments is R&D. Similarly, routine tests such as blood and bacteriological tests carried out for doctors are not R&D, but a special programme of blood tests in connection with the introduction of a new drug can be considered as R&D.

(b) The keeping of daily records of temperatures or of atmospheric pressure is not R&D; the investigation of new methods of measuring temperature is R&D, as are the study and development of new systems and techniques for interpreting the data.

(c) If calculations, designs, working drawings and operating instructions are made for the setting up and operating of pilot plants and prototypes, they should be included in R&D. If they are carried out for the preparation, execution and maintenance of production standardisation or to promote the sale of products (e.g., offers, leaflets, spare parts' catalogues), they should be excluded from R&D.

(d) In the industrial sector, activities aiming at bringing about further technical improvements to a product or process should be considered as R&D. But, if the product, the process or the technique are basically standard and the main aim is market development, preproduction design or the establishment of a system of production or control, they should be excluded from R&D.

(e) The social sciences and humanities draw on disciplines and techniques beyond their own areas to support their research activities. In particular, mathematics and statistics are used in almost all social and economic research, but they can only be included in R&D if they are undertaken as an integral part of a specific research project. The following are examples of work which can not on their own be regarded as R&D:

- interpretative commentary on the probable economic effects of a change in the tax structure, using existing economic data,

- forecasting future changes arising from an altered demographical structure in the patterns of the demand for social services within a given area,

- operations research as a contribution to decision making, e.g., planning the optimal distribution system for a factory,

- the use of standard techniques in applied psychology to select and classify, for example, students or military personnel and to test children with reading or other disabilities.

(f) In the systems software area, individual projects may not be considered as R&D but their aggregation into a larger project may qualify for inclusion. For example, changes in file structure and user interfaces in a language processor may be made necessary by the introduction of new technology. The individual changes may not be considered R&D if viewed in their own right, but the whole modification project may result in the resolution of scientific and/or technological uncertainty and thus be classified as R&D.

1 PERSONNEL ENGAGED IN R&D ACTIVITIES

The following questions aim at measuring only the personnel employed in R&D activities **during 2018**. We are interested not only in the number of persons who are engaged in R&D activities, but also the amount of time that these persons are devoting to R&D. To estimate this amount of time, the concept of Full-time Equivalence (F.T.E.) is being used.

The **Full-time Equivalent (F.T.E.)** expresses the total time devoted to research by a person **during one year**. One F.T.E. may be thought of as one **person-year** which corresponds to **one person working full-time on R&D during one year**. Thus, a person who normally spends 30% of his time on R&D and the remaining 70% on other activities should be considered as 30/100 = 0,3 person-years. Three persons who spend 30%, 50% and 80% of their time on R&D activities correspond to 0,3 + 0,5 + 0,8 = 1,6 person-years.

1.1 CLASSIFICATION OF PERSONNEL BY OCCUPATION

Instructions

As personnel engaged in R&D activities we consider **not only** the researchers, **but also all other persons who directly contribute** to the realisation of a research project (e.g. technicians, unskilled labour, secretarial and clerical staff, laboratory assistants, computer programmers, etc.), without the participation of whom an R&D activity could not be completed. Consequently, R&D personnel is classified into three categories, on the basis of the type of work being performed, as follows:

(a) **Researcher**: The professional engaged in the conception and the creation of new knowledge, products, processes, methods and systems and in the management of the projects concerned.

(b) **Technician**: The person who participates in R&D by performing scientific and technical tasks, normally under the supervision of researchers, e.g. computer programmer, laboratory assistant, designer, etc.

(c) **Other supporting staff**: The persons who participate in R&D projects by performing various tasks indispensable for their completion, e.g. secretarial and clerical staff, labourers, administrators, etc.

Note that all persons providing indirect services, such as canteen and security staff, gardeners and cleaners, should be excluded.

On the basis of the classification given, please complete the following table:

Category of Personnel	Head Count		Employment in Full-time Equivalent (FTE) (in person-years)	
	Male	Female	Male	Female
Researchers				
Technicians				
Other Supporting Staff				
TOTAL				

1.2 CLASSIFICATION OF PERSONNEL BY LEVEL OF QUALIFICATION

Please complete the following table, by classifying both the total personnel engaged in R&D activities and the researchers separately on the basis of their level of formal qualification and sex. Take into consideration the level of highest qualification held.

Level of Formal Qualification	TOTAL PERSONNEL				RESEARCHERS ONLY			
	Head Count		Employment in FTE (person-years)		Head Count		Employment in FTE (person-years)	
	M	F	M	F	M	F	M	F
Holders of PhD Degrees								
Holders of Postgraduate Degrees								
Holders of basic University Degrees								
Holders of other Post-secondary Diplomas								
Secondary Education Graduates								
Primary Education Graduates								
TOTAL								

Note: The column aggregates must correspond to the totals given in paragraph 1.1.

1.3 CLASSIFICATION OF PERSONNEL BY FIELD OF SCIENCE AND TECHNOLOGY

Instructions

This classification concerns both the total personnel engaged in R&D activities, as well as the researchers separately. Personnel should be classified in the field of science and technology which corresponds to the R&D activity performed and not in the field of their formal qualification. Science and technology is distinguished into six major fields:

(a) Natural Sciences: mathematics, computer science, astronomy, physics, chemistry, geology, mineralogy, meteorology, oceanography, biology, microbiology, genetics, biochemistry.

(b) Engineering and Technology: civil engineering, municipal & structural engineering, architecture engineering, mechanical engineering, shipbuilding, electrical engineering, chemical engineering, metallurgical engineering, electronics, communication engineering and systems, computer engineering.

(c) Medical Sciences: medicine, dentistry, pharmacology, nursing, epidemiology.

(d) Agricultural Sciences: agriculture, forestry, veterinary medicine.

(e) Social Sciences: psychology, economics, educational sciences, anthropology, ethnology, demography, geography, town and country planning, law, linguistics, political sciences, sociology.

(f) Humanities: history, archaeology, languages and literature, philosophy, fine arts, theology.

Field of Science and Technology	TOTAL PERSONNEL				RESEARCHERS ONLY			
	Head Count		Employment in FTE (person-years)		Head Count		Employment in FTE (person-years)	
	M	F	M	F	M	F	M	F
Natural Sciences								
Engineering & Technology								
Medical Sciences								
Agricultural Sciences								
Social Sciences								
Humanities								
TOTAL								

Note: The column aggregates must correspond to the totals given in paragraph 1.1.

2 EXPENDITURES DEVOTED TO R&D

The following questions aim at measuring the expenditures devoted to R&D activities **during 2018**. Note that actual expenditure and not budgeted expenditure should be given.

Only amounts **spent** during 2018 must be reported.

2.1 ANALYSIS OF EXPENDITURE BY TYPE

Instructions

Expenditure can be distinguished into three types:

(a) **Labour costs of R&D personnel**: These comprise all kinds of gross allowances made to the personnel which is directly engaged in R&D activities (wages and salaries, overtime pay, bonus payments, contributions to pension funds and other social security payments, payroll taxes, etc.). For an employee who earns an annual salary of €10.000 and spends 30% of his time on R&D, you should report labour costs amounting to €3.000 (= 30% x €10.000).

(b) **Capital expenditure**: These comprise land acquired for R&D and the purchase or construction (including major improvements, modifications and repairs) of buildings, instruments and equipment (or any instalments paid for these purposes during 2018). In measuring actual capital expenditure, small tools and instruments will normally be excluded. If the buildings or the equipment are used for more than one activity and neither the R&D nor the non-R&D activities predominate, only the portion attributed to R&D should be reported.

(c) **Other current costs**: These comprise non-capital purchases of materials, supplies and equipment, books and journals, travel expenses for R&D purposes, expenses on indirect services and all other expenditure that does not fall in the two previous categories.

On the basis of the above, please provide information on your R&D expenditures during 2018 in the following table:

Type of Expenditure	Amount (in €)
Labour Costs of R&D Personnel	
Capital Expenditure	
Other Current Costs	
TOTAL	

2.2 ANALYSIS OF EXPENDITURE BY R&D PROJECT

The distribution of your total R&D expenditure by research project will allow us to construct sector indices. Please describe as fully as possible each R&D project you have undertaken and give the corresponding research expenditures incurred during 2018.

No.	Description of R&D Project	Amount (in €)
1		
2		
3		
4		
5		
6		
7		
TOTAL		

Note: The column aggregate must correspond to the total given in paragraph 2.1.

2.3 ANALYSIS OF EXPENDITURE BY FIELD OF SCIENCE AND TECHNOLOGY

Please distinguish your R&D expenditure during 2018 by field of science and technology, in accordance to the classification given in paragraph 1.3.

Field of Science and Technology	Amount (in €)
Natural Sciences	
Engineering and Technology	
Medical Sciences	
Agricultural Sciences	
Social Sciences	
Humanities	
TOTAL	

Note: The column aggregate must correspond to the total given in paragraph 2.1.

2.4 ANALYSIS OF CURRENT EXPENDITURE BY R&D CATEGORY

On the basis of the breakdown of R&D activities into three categories (basic research, applied research and experimental development) according to the definitions given on page 2, please distinguish your **current R&D expenditures** (i.e., labour costs of R&D personnel and other current costs) during 2018 accordingly.

Category of R&D	Amount (in €)
Basic Research	
Applied Research	
Experimental Development	
TOTAL	

Note: The column aggregate must correspond to the total (excluding capital expenditure) given in paragraph 2.1.

2.5 ANALYSIS OF EXPENDITURE BY SOURCE OF FUNDS

Instructions

We are interested in the source of funds: who provides the money for the realisation of a research activity and how much he contributes. As a source of funds we consider the body which offers the money for research, irrespective of who utilises the results of the research carried out. Loans granted to an enterprise should not be regarded as a source of funds (since they are going to be repayed, they should actually be considered as self-financing).

Source of Funds	Amount (in €)
Self-financing	
Government budget and other government sources	
Public sector enterprises *specify*: …….…….....	
Private sector local enterprises *specify*: …….…….....	
Research and Innovation Foundation (former RPF) *specify*: …….…….....	
Other private non-profit institutions *specify*: …….…….....	
European Union / 7th Framework Programme for Research and Technological Development and "Horizon 2020" Programme for Research and Innovation (only the EU contribution should be included)	
European Union / other programmes *specify*: …….…….....	
Other sources from abroad (international organisations, enterprises, educational institutions, etc.) *specify*: …….…….....	
TOTAL	

Note: The column aggregate must correspond to the total given in paragraph 2.1.

COMMENTS - REMARKS

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Enumerator: ..... Date:.....

Examined by: ..... Date: .....

Coded by: ..... Date: .....

Final checking of questionnaire by:

..... Date: .....