IPCTN21

Inquérito ao Potencial Científico e Tecnológico Nacional EMPRESAS

"Survey of the National Statistical System (Law n. º 22/2008 of 13 May) compulsory, registered in the INE under n. º 10379, valid until December 31 of 2022."

Business Enterprise Sector

The Portuguese BES R&D survey (IPCTN) is the official instrument for collecting information about the human and financial resources allocated to Research and Development (R&D) activities in Portugal.

The results of IPCTN enable the construction of indicators for the characterization and evolution of the national scientific and technological system and the production of statistical R&D data of national (INE) and international organizations (Eurostat, OECD and others).

The Direção-Geral de Estatísticas da Educação e Ciência (DGEEC) is the National Authority responsible for collecting and processing IPCTN data, through delegation of competences from the National Statistical Institute (INE).

The IPCTN is directed to all companies identified as potential R&D performers, being 2021 the reference year of this survey.

DGEEC is obliged to safeguard the statistical confidentiality of the individual information requested. All data is kept in a secure technological environment, on a DGEEC server located in Portugal, with restricted access only to DGEEC employees who are responsible for the management and maintenance of the data.

Personal data are always processing and disclosed in an aggregate form, never revealing the identity of the owners.

Before completing this form please read the concepts and additional information associated with the various sections.

Please fill in this survey at https://ipctn.dgeec.mec.pt/ipctn21e , using the access codes assigned to it.

For any clarification, contact us:
Phone: 213 949 270/361/283/200 | E-mail: ipctne@dgeec.mec.pt

For clarifications related to the privacy of personal data, contact us via e-mail: dpo@dgeec.mec.pt

In situations of doubt or conflict, regarding the use of your personal data not resolved by the respective Data Controller or Data Protection Officer, you can file a complaint or ask the competent authority for clarification:
National Data Protection Commission (CNPD), Av. Dom Carlos I, 134 - 1st, 1200-651 Lisbon. Telephone: 21 392 84 00.

In case of doubt you should use the online form accessible at:
https://www.cnpd.pt/cidadaos/pedidos-de-informacao/

In case of conflict, you should use the online form accessible at:
https://www.cnpd.pt/cidadaos/participacoes/

IMPORTANT: In your interests, retain a copy of the information that you provide.

LEGISLATION
The DGEEC is the delegated agency from INE for the statistics in Science and Technology, integrating the National Statistical System (SEN). As such, is subject to legislation stipulating the operation of SEN (Law n. º 22/2008, of 13 May).

STATISTICAL CONFIDENTIALITY
The DGEEC is obliged to safeguard the statistical information of individual and collective of individuals collected by it. The collection, processing and dissemination of statistical data is made according to Law n. º 22/2008, of 13 May (Law SEN), in particular article 6.º, that establishes the application of the principle of statistical confidentiality of all the information that allows individualized statistical units, as well as the manual application of this principle by the statistical authorities.
The breakdown of statistical confidentiality is punishable not only discipline but also criminally under Article 32.º SEN Law.

MANDATORY RESPONSE
It is mandatory to provide the information requested by DGEEC, as the entity responsible for direct collection of statistical information.

Section IA – Company identification

1. Contact person responsible for the answer:

1.1. Name

1.2. Function

1.3. Phone number

1.4. E-mail address

2. Name of the company:

3. Fiscal identification number:

4. Main activity (NACE 2):

5. Location:

5.1. Address

5.2. Postcode

-

5.3. City

5.4. County

5.5. Phone number

5.6. E-mail address

5.7. Website (www)

Section IB – General information in 2021

1. Distribution of company capital according to its origin:

%	National public capital
%	National private capital
%	Foreign capital
100%	**Total**

2. The company is part of a group of companies?

☐ No

☐ Yes 2.1. Name of the group:

2.2. Country of nationality of the group:

3. Company turnover in 2021

[Data obtained by administrative data (Decree-Law 8/2007, of January 17).]

4. Number of persons employed by the company in 2021

[Data obtained by administrative data (Decree-Law 8/2007, of January 17).]

Section II – Research and Development (R&D) activities in 2021

[It is suggested to read the concepts and examples presented in Annex I (pp. 18-20).]

1. R&D activities of the company in 2021:

[This question can be multiple responses, in the case of the three first options.]

- ☐ The company developed intramural R&D activities
  [Required to answer Sections III, IV and VI, must complete the Individual form and Additional information to finish the questionnaire please.]
- ☐ The company hired R&D services to other institutions or companies
  [Required to answer Section V, must complete the Additional information to finish the questionnaire please.]
- ☐ The company financed R&D activities of other institutions, companies and/or individuals
  [Required to answer Section V, must complete the Additional information to finish the questionnaire please.]
- ☐ The company did not develop, hire or finance R&D activities
  [Required to answer the Additional information and finish the questionnaire please.]

Section III – Personnel in R&D activities in 2021

[To complete this section you should take into account the following procedures:

• Include all persons dedicated to R&D in the company (internal personnel, regardless of the type of employment contract, and external personnel, such as grant holders and individuals paid by other companies or institutions).

• Distinguish between men and women and consider the percentage of time devoted to R&D with reference to person/year. If the R&D activities in the company were developed only part of the year, this should be reflected in the percentages presented here. If the R & D activities took place simultaneously with the company's other activities, it should estimate the proportion of R&D time spent (see examples in Annex II (page 21)).

• Breakdown by level of education, considering the highest completed level obtained by the end of 2021.]

Please note that each individual can only be considered in one of the tables below (1.1.1 to 1.3.2) in order to avoid repetition.]

1.1. Number of personnel engaged in R&D activities in the company in 2021, by qualification, percentage of time and gender, with the following tasks:

- Professionals engaged in the conception or creation of new knowledge
- Conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods
- Collection, processing, evaluating, analyzing, and interpreting research data
- Evaluating the results of investigations and experiments and positing conclusions using different techniques and models
- Applying principles, techniques and processes to develop or improve practical applications
- Planning, directing and coordinating the R&D activities
- Preparing scientific papers and reports

[Note that this group of tasks is a priority over the other two. Thus, the personnel who performed tasks included in this first group should be considered here, regardless of having performed functions inherent to the other groups. The company must indicate at least one individual with these functions.]

Percentage of time in R&D activities during the year 2021	Doctorate degree		Master degree		*University degree*		Bachelor degree		Higher Education Professional Courses (TESP) [See Note 3]		Primary education, or Upper secondary education, complete or incomplete, or post-secondary education		**Total**
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
1.1.1. Internal personnel (Employees, including working proprietors and unpaid family households workers): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
1.1.2. External personnel (non-employees, ex.: self-employed professionals, consultants, grant holders and others): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
Total													

1.2. Number of personnel engaged in technical tasks supporting R&D activities in the company in 2021, by qualification, percentage of time and gender, with the following responsibilities:

- Carrying out bibliographic searches and selecting relevant material from archives and libraries
- Providing technical assistance and support in R&D, or testing prototypes and maintaining and repairing research equipment
- Assisting in analysing data, keeping records and preparing reports
- Carrying out statistical surveys and interviews
- Other technical assistance tasks and support to R&D activities

Percentage of time in R&D activities during the year 2021	Doctorate degree		Master degree		*University degree*		Bachelor degree		Higher Education Professional Courses (TESP) [See note 3]		Primary education, or Upper secondary education, complete or incomplete, or post-secondary education		**Total**
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
1.2.1. Internal personnel (Employees, including working proprietors and unpaid family households workers): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
1.2.2. External personnel (non-employees, ex.: self-employed professionals, consultants, grant holders and others): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
Total													

1.3. Number of personnel engaged in other supporting R&D activities in the company in 2021, by qualification, percentage of time and gender, with the following tasks:

- Administrative and secretarial tasks
- Provision of legal services and other intermediate related services
- Inspection for law enforcement and similar
- Technical assistance in galleries, libraries, archives and museums
- Performing skilled tasks in agriculture, forestry and fisheries
- Execution of plant and machine operation tasks and assembly work
- Management of financial and human resources aspects and administration of general matters

Percentage of time in R&D activities during the year 2021	Doctorate degree		Master degree		*University degree*		Bachelor degree		Higher Education Professional Courses (TESP) [See note 3]		Primary Education, or Upper secondary education, complete or incomplete, or post-secondary education		**Total**
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
1.3.1. Internal personnel (Employees, including working proprietors and unpaid family households workers): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
1.3.2. External personnel (non-employees, ex.: self-employed professionals, consultants, grant holders and others): [See concept in Annex II (pp. 21).]													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
Total													

1.4. Number of total personnel engaged in R&D activities in the company in 2021, by qualification, percentage of time and gender, with the following tasks:

[Sum of the values in tables 1.1 to 1.3.]

Percentage of time in R&D activities during the year 2021	Doctorate degree		Master degree		*University degree*		Bachelor degree		Higher Education Professional Courses (TESP) [See note 3]		Primary Education, or Upper secondary education, complete or incomplete, or post-secondary education		**Total**
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
1.4.1. Internal personnel													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
1.4.2. External personnel													
up to 5%													
6% to 10%													
11% to 20%													
21% to 30%													
31% to 40%													
41% to 50%													
51% to 60%													
61% to 70%													
71% to 80%													
81% to 90%													
91% to 100%													
Subtotal													
Total													

Note 3 - The legal regime of the Higher Education Professional Course is provided for in Decree-Law no. 74/2006, of March 24, amended and republished by Decree-Law no. 63/2016, of September 13. This course does not confer an academic degree and the successful completion of the respective course of study grants the diploma of professional higher technician. This cycle of studies is taught in polytechnic teaching, has 120 credits and its duration is four curricular semesters of student work, consisting of a set of curricular units organized into components of general and scientific training, technical training and training in the context of work, which takes place through an internship.

Section IV - Intramural R&D activities expenditures in 2021

1.Intramural expenditure on R&D activities carried out by the company in 2021, regardless of funding source.

1.1. Current R&D expenditures in 2021:

€	1.1.1. Labour costs with internal R&D personnel
	[Includes costs with the company's employees, family members and working proprietors. See concept in Annex II (page 21).]
€	1.1.2. Labour costs with external R&D personnel
	[Includes costs with non-employees (eg. self-employed professionals, individual contractors, grant holders and others). See concept in Annex II (page 21).]
€	1.1.3. Other current R&D costs
€	Total (a)

1.2. Capital R&D expenditures in 2021:

€	1.2.1. Land and buildings
€	1.2.2. Machinery and equipment
€	Total (b)
€	**Total (a+b)**

Intramural expenditures: all expenditures for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Current costs:
Labour costs: comprise annual wages and salaries and all associated costs or fringe benefits, such as bonus payments, holiday pay, contributions to pension funds and other social security payments, payroll taxes, etc. The labour costs of persons providing indirect services which are not included in the personnel data (such as security and maintenance personnel or the staff of central libraries, computer departments or head offices) should be excluded and included in other current costs.

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, and subscriptions to libraries and 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 licenses 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.

Capital 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 developed in-house or acquired, and should not be registered as an element of depreciation.

Land and buildings: 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.

Machinery and equipment: costs with the acquisition of machinery and equipment for use in the performance of R&D, costs of computer software that is used in the performance of R&D for more than one year. It includes long-term licenses or the acquisition of separately identifiable computer software, including program 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 licenses to use. Software used or licensed for one year or less should be reported under current expenditures (see earlier text on “Other current R&D costs”).

2. Funding of intramural expenditure on R&D activities carried out by the company in 2021, by source of funds:

[Funds that are transferred to other entities by subcontracting R&D should be indicated in R&D extramural expenditure (Section V). In this question 2 only the funds that were spent by the company during 2020 should be considered, with reference to the costs stated in the previous question.]

€	Own enterprise [Includes funds from revenues arising from the sale of products, interest or rent, and from transfers or provision of non R&D related services.]
	Funds from R&D contracts or R&D subsidies, from national institutions
€	National enterprises in the same group
€	Other national enterprises
€	Government: exchange R&D **Exchange R&D** funds are related to the provision of R&D services performed by the company to other public or private entities.
€	Government: transfer R&D **Transfer R&D funds are** related to transfers to R&D from other public or private entities (eg. projects funded by the Portuguese 2020 structural funds, managed in particular by Compete, Regional Operational Programs and the National Innovation Agency, among others; other Government funds for R&D, scholarship funding, EU funded projects, etc.)
€	National higher education institutions
€	National private non-profit institutions
€	Scientific patronage [under Decree-Law nº 74/99, of March 16.]
	Funds from R&D contracts or R&D subsidies, from foreign institutions
€	European Union
€	Foreign enterprises in the same group
€	Other foreign enterprises
€	Foreign government institutions
€	Foreign higher education institutions
€	Foreign private non-profit institutions
€	Other international organizations
€	**Other funds.** Specify:
€	**Total** [Equal to the total (a+b) declared in question 1.]

3. The company develop(ed) or intend to internally develop R&D activities in 2022?

☐ No

☐ Yes 3.1. Estimated expenditure on R&D in 2022:

3.1.1. Percentage change compared to 2021:

☐ Higher than 2021 %

☐ Less than 2021

☐ Equal to 2021

4. Local where the company developed the largest share of expenditure on R&D in 2021:

5. Distribution of R&D activities of the company in 2021, by type of R&D:

%	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.
%	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.
%	Experimental development Is systematic work, drawing on existing knowledge gained from research and/or practical experience, which 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.
100%	**Total**

6. Distribution of R&D activities of the company in 2021, by field of science:

[For a breakdown of each science and technology see Annex III (pp. 22-23).]

	1. Natural Sciences
%	1.1. Mathematics
%	1.2. Computer and information sciences
%	1.3. Physical sciences
%	1.4. Chemical sciences
%	1.5. Earth and related environmental sciences
%	1.6. Biologic sciences
%	1.7. Other natural sciences. Specify:
	2. Engineering and technology
%	2.1. Civil engineering
%	2.2. Electrical, electronic and information engineering
%	2.3. Mechanical engineering
%	2.4. Chemical engineering
%	2.5. Materials engineering
%	2.6. Medical engineering
%	2.7. Environmental engineering
%	2.8. Environmental biotechnology
%	2.9. Industrial biotechnology
%	2.10. Nanotechnology
%	2.11. Other engineering and technologies. Specify:
	3. Medical and health sciences
%	3.1. Basic medicine
%	3.2. Clinical medicine
%	3.3. Health sciences
%	3.4. Medical biotechnology
%	3.5. Other medical science. Specify:

[The list continues on the next page.]

	4. Agricultural and veterinary sciences
%	3.1. Agriculture, forestry, and fisheries
%	3.2. Animal and dairy science
%	3.3. Veterinary science
%	3.4. Agricultural biotechnology
%	3.5. Other agricultural sciences. Specify:
	5. Social sciences
%	5.1. Psychology and cognitive sciences
%	5.2. Economics and business
%	5.3. Educational sciences
%	5.4. Sociology – includes anthropology, demography and ethnology
%	5.5. Law
%	5.6. Political science
%	5.7. Social and economic geography
%	5.8. Media and communications
%	5.9. Other social sciences. Specify:
	6. Humanities and arts
%	6.1. History and archaeology
%	6.2. Languages and literature
%	6.3. Philosophy, ethics and religion
%	6.4. Arts (History of arts, performing arts, music) – includes architectural design
%	6.5. Other humanities. Specify:
100%	**Total**

7. Distribution of R&D activities of the company in 2021, by socio-economic objective:

[According to the nomenclature for the analysis and comparison of scientific programs and programs - NABS2007, Eurostat. For a breakdown of each socio-economic objective see Annex IV (pp. 24).]

%	1. Exploration and exploitation of the earth
%	2. Environment
%	3. Exploration and exploitation of space
%	4. Transport, telecommunication and other infrastructures
%	5.1. Energy efficiency
%	5.2. Fossil fuels: oil, gas and coal
%	5.3. Renewable energy sources
%	5.4. Nuclear fission and fusion
%	5.5. Hydrogen and fuel cells
%	5.6. Other power and storage technologies
%	5.7. Other cross-cutting technologies or research
%	5.8. Other energy domains
%	6. Industrial production and technology
%	7. Health
%	8. Agriculture
%	9. Education

[The list continues on the next page.]

%	10. Culture, recreation, religion and mass media
%	11. Political and social systems, structures and processes
%	12. General advancement of knowledge
%	13. Defense
100%	**Total**

8. Distribution of R&D activities of the company in 2021, by national strategic priority:

[As defined in the National Strategy for Research & Innovation for Intelligent Specialization (EI&I), 2014-2021. For a breakdown see Annex V (pp. 25-28).]

%	1. Energy
%	2. Information and communication technologies
%	3. Materials and raw materials
%	4. Production technologies and process industries
%	5. Production technologies and product industries
%	6. Automotive, Aeronautics and Space
%	7. Transport, mobility and logistics
%	8. Food industry
%	9. Forest
%	10.1. Sea economics - marine food resources (fisheries and aquaculture)
%	10.2. Sea economics - natural systems and renewable energy resources
%	10.3. Sea economics - deep sea resources
%	10.4. Sea economics - ports, logistics, transport, shipbuilding and maritime works
%	10.5. Sea economics - culture, tourism, sport and leisure
%	11. Water and environment
%	12. Health
%	13. Tourism
%	14. Cultural and creative industries
%	15. Habitat
%	16. Other priorities. Specify:
100%	**Total**

9. Distribution of R&D activities of the company in 2021, by product field:

[Refers to the final product that is served by the R&D activities undertaken by the enterprise. See the list of products set out in Annex VI (pp. 29-32).]

Percentage	Product code	Product description
%		
%		
%		
%		
%		
%		
100%	**Total**	

Section V – Extramural R&D activities expenditures in 2021

[Complete only if you have indicated in Section II, hired and /or financed R&D activities.]

1. Extramural expenditure on R&D by the company in 2021 spent with the hiring and/or financing of R&D activities of other institutions or companies.

1.1. R&D contracting	1.2. R&D funding	
€	€	National enterprises in the same group
		Specify:
€	€	Other national enterprises
		Specify:
€	€	Foreign enterprises in the same group
€	€	Other foreign enterprises
€	€	Private non-profit institutions in Portugal
		Specify:
€	€	Technological centers or Interface institutions with enterprises in Portugal
		Specify:
€	€	Private non-profit institutions, Technological centers or Interface institutions with enterprises, abroad
€	€	Higher education institutions in Portugal
€	€	Higher education institutions abroad
€	€	Government institutions in Portugal
		Specify:
€	€	Government institutions abroad
€	€	Other institutions in Portugal
		Specify:
€	€	Other institutions abroad
		Specify:
€	€	**Total**

Extramural expenditure: the amount spent by the research unit (institution or company) by contracting R & D activities and funding/ transfer of funds for R&D activities carried out by other units.

Funds received by the company (from foreign or national entities) that are transferred to other entities for external R&D execution (subcontracting) should be considered as extramural expenditure.

The **contracting** presupposes the provision of an R&D service by an entity external to the company, whose results of the R&D service revert to the company.

The **funding** refers to the transfer of funds for R&D to be developed by others institutions, such as other companies, public or private entities or individuals (for example: granting R&D grants, R&D project awards, etc.) without that there are counterparts or sharing of R&D results with the company it finances.

Section VI - Biotechnology R&D activities in 2021

[This section aims to compile basic information and additional activities on the development of R&D in biotechnology and the application of biotechnology techniques to produce goods or services.]

Biotechnology is the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services. (OCDE, 2005).

1. Has the company developed biotechnology R&D activities in 2021?

☐ Yes

☐ No

[If you answered "No", end here the filling of this section.]

2. Techniques used in biotechnology R&D activities in 2021:

☐ **DNA/RNA**	Genomics, pharmacogenomics, gene probes, genetic engineering, DNA/RNA sequencing/synthesis/amplification, gene expression profiling, and use of antisense technology.
☐ **Proteins and other molecules**	Sequencing/synthesis/engineering of proteins and peptides (including large molecule hormones); improved delivery methods for large molecule drugs; proteomics, protein isolation and purification, signaling, identification of cell receptors.
☐ **Cell and tissue culture and engineering**	Cell/tissue culture, tissue engineering (including tissue scaffolds and biomedical engineering), cellular fusion, vaccine/immune stimulants, embryo manipulation.
☐ **Process biotechnology techniques**	Fermentation using bioreactors, bioprocessing, bioleaching, biopulping, iobleaching, biodesulphurisation, bioremediation, biofiltration and phytoremediation.
☐ **Gene and RNA vectors**	Gene therapy, viral vectors.
☐ **Bioinformatics**	Construction of databases on genomes, protein sequences; modeling complex biological processes, including systems biology.
☐ **Nanobiotechnology**	Applies the tools and processes of nano/microfabrication to build devices for studying biosystems and applications in drug delivery, diagnostics etc.
☐ **Other techniques**	Specify:

3. Field of application of company biotechnology R&D in 2021:

☐	**Human health**	Molecule therapeutics and monoclonal antibodies produced using rDNA technology. Other therapeutics, artificial substrates, diagnostics and drug delivery technology etc.
☐	**Veterinary**	Molecule therapeutics and monoclonal antibodies produced using rDNA technology.
☐	**Agricultural**	New varieties of genetically modified (GM) plants (including fruit trees, flowers, horticultural crops, grains, etc.), animals and micro-organisms for use in agriculture, aquaculture and silviculture, genetically modified (GM). New varieties of non-GM plants (fruit trees, flowers, horticultural crops, grains, etc.), animals and microorganisms for use in agriculture, silviculture, biopest control and diagnostics developed using biotechnology techniques (DNA markers, tissue culture, etc.), non-genetically modified (non-GM).
☐	**Food and beverages processing**	Use of bio-processing or improved crop varieties to improve food quality and characteristics.
☐	**Natural resources**	Applications for mining, petroleum/energy extraction, etc.
☐	**Natural resources**	Diagnostics, soil bioremediation, treatment of water, air and industrial effluents using micro-organisms, clean production processes.
☐	**Industrial processing**	Bioreactors to produce new products (chemicals, food, ethanol, plastics, etc.), biotechnologies to transform inputs (bioleaching, biopulping, etc.)
☐	**Bioinformatics**	DNA/RNA/protein synthesis and databases for humans, plants, animals and microorganisms. Gene identification, gene constructs, etc.
☐	**Non-specific applications**	Research tools, etc.
☐	**Other applications**	Specify:

4. Percentage assumed by the biotechnology in the total R&D activities of the company in 2021:

	%

Additional information

1. Authorization for the disclosure of company data in rankings lists of companies and groups of companies with more expenditure on R&D in 2021 and in the directory of companies with R&D.

[Pursuant to Law n. º 22/2008 of May 13, no. 6, art. 6.]

[This disclosure does not involve any costs (immediate or future) for the companies and does not apply to companies that did not develop R&D activities in 2021 (see answer to question 1.'s Section II).]

Ranking of companies/groups with R&D:

[The ranking lists will be published on the DGEEC website and contain information about the companies whose declared amounts of R&D expenditure position the companies in the rankings.]

Authorize	Not authorize	
☐	☐	The disclosure of the name of the company
☐	☐	The disclosure of the total intramural R&D expenditure
☐	☐	The disclosure of the number of R&D personnel
☐	☐	The disclosure of the number of R&D personnel with higher education degree
☐	☐	The disclosure of the number of R&D personnel with doctoral degree

Directory of companies with R&D:

[In the directory of companies with R&D, only information relating to the name of the company, NIPC, NACE, postal and electronic address and other company contacts will be disclosed.]

Authorize	Not authorize
☐	☐

2. Time spent on completing the questionnaire:

[It should include the time spent collecting the information to answer the questionnaire.]

/ Hours/Minutes

3. Comments / Suggestions:

Annex I – Concepts

Research and Development (R&D)
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. (Frascati Manual, 2015)

The activity must be:

- Novel
- Creative
- Uncertain
- Systematic
- Transferable and/or reproducible.

The R&D activities are classified in three categories:

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

Examples of R&D activities:

1. Scientific and technical activities

Data collection	Investigation of new methods of measuring (e.g. temperature).
	Study and development of new systems and techniques for interpreting the data.
	The collection of data that is part of the R&D process, exclusively or mainly, should be considered as R&D activity (for example, topographical mapping, geological, hydrological, oceanographic or meteorological surveying and astronomical observations). Likewise, in the social sciences, the collection of data by surveys or other, carried out for the purpose of serving R&D projects, should also be considered as R&D activity. Routine collection of data for purposes other than scientific research should not be considered as R&D activity. Market studies are also to exclude from R&D.
Methodology and statistics	Conceptual and methodological work in relation to the development of completely new or substantially modified surveys and statistical systems.
	Work on sampling methodologies, small area statistical estimates.
Feasibility studies and scientific articles	Study of the viability of R&D projects.
	Scientific articles.
Patent and license work	Work connected directly with R&D projects is R&D.
Mining and prospecting	Development of new geological survey methods and techniques. Research on geological phenomena per se undertaken as a subsidiary part of geological surveying and surveying programs.
	Geological surveys undertaken as an essential part of a research project on geological phenomena.
	Research on geological phenomena per se undertaken as a subsidiary part of geological surveying and surveying programs.
Specialized health care	Research on the side effects of certain treatments (e.g. autopsy; research a particular mortality to establish the side effects of certain cancer treatments).
	Research on the effects of new drugs (e.g. special programme of blood tests).

Annex I – Concepts [continuation]

Clinical trials	Systematic testing on human volunteers to ensure the efficacy and safety of new drugs, vaccines or treatments before their placing on the market (Phases 1, 2 and 3).
	Activities related to the testing of medicinal products or treatments, after their production and placing on the market, if they bring scientific and technological advances (Phase 4).
Space exploration	All activities, except the routine placing of orbiting satellites satellites or the establishment of tracking and communication stations.
Software development	**Include as R&D activites:**
	Development of new operating systems or languages;
	Design and implementation of new search engines based on original technologies;
	Effort to resolve conflicts within hardware or software based on the process of re-engineering a system or a network;
	Creation of new or more efficient algorithms based on new techniques;
	Creation of new and original encryption or security techniques.
	Other software-related activities that are not R&D activities:
	Development of business application software and information systems using known methods and existing software tools;
	Adding user functionality to existing application programs (including basic data entry functionalities) ;
	Creation of websites or software using existing tools;
	Use of standard methods of encryption, security verification and data integrity testing;
	Customisation of a product for a particular use, unless during this process knowledge is added that significantly improves the base program;
	routine debugging of existing systems and programs, unless this is done prior to the end of the experimental development process.
2. R&D administration and indirect supporting activities	
Direct management of R&D projects	R&D manager who plans and supervises the scientific and technical aspects of the project or the person who produces the interim and final reports containing the results of the project.
Indirect supporting activities	Management, administration and secretarial activities that contribute directly to the R&D projects. Writing of progress reports and final reports of the R&D projects.
Studies and projects	Studies of prototypes, models, pilot plants, special equipment, structures or tools needed to design and implement a new product, process or service.
Prototypes	Design, construction and testing of original models that feature all the technical qualities and performances of the new product (includes all activities up to the latest modifications to the prototype and after the tests are successful completed).
Pilot plants	Construction and operation of a pilot plant is a part of R&D as long as the principal purposes are to obtain experience and to compile engineering and other data to be used in: evaluating hypotheses; writing new product formula; establishing new finished product specifications; designing special equipment and structures required by a new process; preparing operating instructions or manuals on the process.

Annex I – Concepts [continuation]

Trial production	Activities associated with new design work and engineering in the start-up phase.
"Feedback" R&D	Activities related to the resolution of technical problems that require more R&D, after a new product or process move to the production units.
Industrial design	Plans and drawings aimed at defining procedures, technical specifications and operational features necessary to the conception, development and manufacturing of new products and processes.
Tooling up and industrial engineering	Activities that in the tooling-up and industrial engineering lead to new R&D works, such as developments in the production machinery and tools, changes to the production and quality control procedures or the development of new methods and standards.
Tests and trials	Activities related to testing and final testing of new materials, components, products and processes and others that are framed in R&D projects (even though most of the activities of these projects are developed by other institutions or companies) should be considered as R&D activities.
3. R&D activities in services	
Banking and insurance	Mathematical research relating to financial risk analysis.
	Development of risk models for credit policy.
	Experimental development of new software for home banking.
	Development of techniques for investigating consumer behavior for the purpose of creating new types of accounts and banking services.
	Research to identify new risks or new characteristics of risk that need to be taken into consideration in insurance contracts.
	Research on social phenomena with an impact on new types of insurance (health, retirement, etc.), such as on insurance cover for non-smokers.
	R&D related to electronic banking and insurance, Internet-related services and e-commerce applications.
	R&D related to new or significantly improved financial services (new concepts for accounts, loans, insurance and saving instruments).
	Mathematical research relating to financial risk analysis.
Other service activities	Development of new methods for measuring consumer expectations and preferences.
	Development of tracking and tracing procedures (logistics).
	Research into new travel and holiday concepts.
4. R&D activities in arts	
New tools and technologies	The experimental development to produce new electronic musical instruments.
	The exploration of new technologies for the performance art, for example, to improve of audio/video quality.
Studies of the arts and artistic expression	Basic or applied research that contributes to most of the studies of the arts (musicology, art history, theatre studies, media studies, literature, etc.).
	Artistic performance is normally excluded from R&D. However, higher education institutions that award doctoral degrees to artists as a result of their artistic performance can recognize artistic practice as an R&D activity.
Preservation and restoration	Preservation and restoration activities are considered as R&D if involve specialized technical personnel related to scientific research as grant holders or the publishing of scientific works.

Annex II – R&D personnel and percentage of time dedicated to the R&D activities

Internal personnel (Employees of the company)

Individuals who, during the reference period, participated in the company's R&D activities, regardless of the duration of such participation, under the following conditions: a) personnel linked to the company by a work contract, receiving in return a remuneration; (b) staff connected to the company, who don't have an employment contract with the company, do not receive regular remuneration for the time worked or work provided (eg. Working proprietors, unpaid family members, active members of cooperatives); c) staff from other institutions that worked in the company and are directly paid by it; d) persons under the conditions of the preceding paragraphs, temporarily absent for a period equal to or less than one month for vacation, work conflict, professional training, as well as for illness and accident at work.

The following are not considered as internal personnel: a) employees who have been transferred to other companies/institutions and are paid for them; b) individuals working in the enterprise whose remuneration is borne by other companies / institutions (eg. temporary workers); (c) self-employed professionals (eg. service providers, also known as "*recibos verdes*"). All of these individuals, if they participated in the company's R&D activities, should be considered as external personnel.

External personnel (non-employees of the company)

Individuals who have worked in the company's R&D activities, regardless of the duration of such participation, under the following conditions: a) self-employed professionals (service providers, also known as " *recibos verdes* " or *Atos Únicos*), such as contracted consultants individually; b) PhD students, masters, and/or other students; c) grant holders; d) retired; e) employees of the company displaced to other companies/institutions, being directly remunerated in these companies; f) individuals working in the enterprise whose remuneration is on the payroll of other companies/institutions (eg. temporary workers).
The costs of external personnel may be supported by the company or by other companies or institutions.

Percentage of time dedicated to the R&D activities

Personnel 100% dedicated to R&D

All personnel exclusively performing R&D activities throughout the year (12 months), during normal working hours.

Personnel part-time dedicated to R&D

All personnel that has not only R D activities throughout the year (12 months) or during normal working hours.

It will be considered part-time all personnel in the period under review (year) that:

(ii) Do not perform exclusively R&D activities during the normal working hours on a single company / institution;
(iii) perform exclusively R & D activities in more than one company / institution (and is considered part-time in each of them);
(iv) While performing only R&D activities during the normal working hours on a single company / institution, didn't work for all year (12 months).

Examples of calculating the percentage of time dedicated to R&D activities

- An individual A is 100% dedicated to R&D activities throughout the year (12 months) in company;
- An individual B is 100% dedicated to R&D activities for 6 months (1/2 year) the company;
- An individual C is 25% dedicated to R&D activities throughout the year in company;
- An individual D is 30% dedicated to R&D activities for 4 months (1/3 year) the company;

Individual	Percentage of time in R&D	Percentage of time in R&D in the year
A	100%	100% x 1 year = 100%
B	100%	100% x 1/2 year = 50%
C	25%	25% x 1 year = 25%
D	30%	30% x 1/3 year = 10%

Annex III - Classification of Fields of Research and Development (FORD, 2015)

1. Natural sciences	**1.1. - Mathematics:** Pure mathematics, Applied mathematics; Statistics and probability.
	1.2. - Computer and information sciences: Computer sciences, information science and bioinformatics (hardware development to be 2.2, social aspect to be 5.8).
	1.3. – Physical sciences: Atomic, molecular and chemical physics (physics of atoms and molecules including collision, interaction with radiation; magnetic resonances; Moessbauer effect); Condensed matter physics (including formerly solid state physics, superconductivity); Particles and fields physics; Nuclear physics; Fluids and plasma physics (including surface physics); Optics (including laser optics and quantum optics), Acoustics; Astronomy (including astrophysics, space science).
	1.4. – Chemical sciences: Organic chemistry; Inorganic and nuclear chemistry; Physical chemistry, Polymer science, Electrochemistry (dry cells, batteries, fuel cells, corrosion metals, electrolysis); Colloid chemistry; Analytical chemistry.
	1.5. - Earth and related Environmental sciences: Geosciences, multidisciplinary; Mineralogy; Palaeontology; Geochemistry and geophysics; Physical geography; Geology; Volcanology; Environmental sciences (social aspects to be 5.7); Meteorology and atmospheric sciences; climatic research; Oceanography, Hydrology, Water resources.
	1.6. - Biological sciences: Cell biology, Microbiology; Virology; Biochemistry and molecular biology; Biochemical research methods; Mycology; Biophysics; Genetics and heredity (medical genetics to be 3); reproductive biology (medical aspects to be 3); developmental biology; Plant sciences, botany; Zoology, Ornithology, Entomology, Behavioural sciences biology; Marine biology, freshwater biology, limnology; Ecology; Biodiversity conservation; Biology (theoretical, mathematical, thermal, cryobiology, biological rhythm), Evolutionary biology; other biological topics.
	1.7. - Other natural sciences
2. Engineering and technology	**2.1. - Civil engineering:** Civil engineering; Architecture engineering; Construction engineering, Municipal and structural engineering; Transport engineering.
	2.2. - Electrical engineering, Electronic engineering, Information engineering: Electrical and electronic engineering; Robotics and automatic control; Automation and control systems; Communication engineering and systems; telecommunications; Computer hardware and architecture.
	2.3. - Mechanical engineering: Mechanical engineering; Applied mechanics; Thermodynamics; Aerospace engineering; Nuclear related engineering; (nuclear physics to be 1.3); Audio engineering, reliability analysis.
	2.4. - Chemical engineering: Chemical engineering (plants, products); Chemical process engineering.
	2.5. - Materials engineering: Materials engineering; Ceramics; Coating and films; Composites (including laminates, reinforced plastics, cermets, combined natural and synthetic fibre fabrics; filled composites); Paper and wood; textiles; including synthetic dyes, colors, fibers; (nanoscale materials to be 2.10; biomaterials to be 2.9).
	2.6. - Medical engineering: Medical engineering; Medical laboratory technology (including laboratory samples analysis; diagnostic technologies); (Biomaterials to be 2.9 [physical characteristics of living material as related to medical implants, devices, sensors]).
	2.7. - Environmental engineering: Environmental and geological engineering, geotechnics; Petroleum engineering, (fuel, oils), Energy and fuels; Remote sensing; Mining and mineral processing; Marine engineering, sea vessels; Ocean engineering.
	2.8. - Environmental biotechnology: Environmental biotechnology; Bioremediation, diagnostic biotechnologies (DNA chips and biosensing devices) in environmental management; environmental biotechnology related ethics.
	2.9. - Industrial biotechnology: Industrial biotechnology; Bioprocessing technologies (industrial processes relying on biological agents to drive the process) biocatalysis, fermentation; bioproducts (products that are manufactured using biological material as feedstock) biomaterials, bioplastics, biofuels, bio-derived bilk and fine chemicals, bio-derived novel materials.
	2.10. - Nano-technology: Nano-materials [production and properties]; Nano-processes [applications on nano-scale]; (biomaterials to be 2.9).
	2.11. - Other engineering and technologies: Food and beverages; Other engineering and technologies.

Annex III - Classification of Fields of Research and Development (FORD, 2015) [continuation]	
3. Medical and Health sciences	**3.1. - Basic medicine:** Anatomy and morphology (plant science to be 1.6); Human genetics; Immunology; Neurosciences (including psychophysiology); Pharmacology and pharmacy; Medicinal chemistry; Toxicology; Physiology (including cytology); Pathology.
	3.2. - Clinical medicine: Andrology; Obstetrics and gynecology; Pediatrics; Cardiac and Cardiovascular systems; Peripheral vascular disease; Hematology; Respiratory systems; Critical care medicine and Emergency medicine; Anesthesiology; Orthopedics; Surgery; Radiology, nuclear medicine and medical imaging; Transplantation; Dentistry, oral surgery and medicine; Dermatology and venereal diseases; Allergy; Rheumatology; Endocrinology and metabolism (including diabetes, hormones); Gastroenterology and hepatology; Urology and nephrology; Oncology; Ophthalmology; Otorhinolaryngology; Psychiatry; Clinical neurology; Geriatrics and gerontology; General and internal medicine; other clinical medicine subjects; Integrative and complementary medicine (alternative practice systems).
	3.3. - Health sciences: Health care sciences and services (including hospital administration, health care financing); Health policy and services; Nursing; Nutrition, Dietetics; Public and environmental health; Tropical medicine; Parasitology; Infectious diseases; epidemiology; Occupational health; Sport and fitness sciences; Social biomedical sciences (includes family planning, sexual health, psycho-oncology, political and social effects of biomedical research); Medical ethics; Substance abuse.
	3.4. - Medical biotechnology: Health-related biotechnology; Technologies involving the manipulation of cells, tissues, organs or the whole organism (assisted reproduction); Technologies involving identifying the functioning of DNA, proteins and enzymes and how they influence the onset of disease and maintenance of well-being (gene-based diagnostics and therapeutic interventions (pharmacogenomics, gene-based therapeutics); Biomaterials (as related to medical implants, devices, sensors); Medical biotechnology related ethics.
	3.5. - Other medical sciences: Forensic science; Other medical sciences.
4. Agricultural and veterinary sciences	**4.1. - Agriculture, Forestry, and Fisheries:** Agriculture; Forestry; Fishery; Soil science; Horticulture, viticulture; Agronomy, plant breeding and plant protection; (Agricultural biotechnology to be 4.4).
	4.2. - Animal and Dairy science: Animal and dairy science; (Animal biotechnology to be 4.4); Husbandry; Pets.
	4.3. - Veterinary science
	4.4. - Agricultural biotechnology: Agricultural biotechnology and food biotechnology; GM technology (crops and livestock), livestock cloning, marker assisted selection, diagnostics (DNA chips and biosensing devices for the early/accurate detection of diseases) biomass feedstock production technologies, biopharming; agricultural biotechnology related ethics.
	4.5. - Other agricultural sciences
5. Social sciences	**5.1. – Psychology and cognitive sciences:** Psychology (including human - machine relations); Psychology, special (including therapy for learning, speech, hearing, visual and other physical and mental disabilities).
	5.2. - Economics and Business: Economics, Econometrics; Industrial relations; Business and Management.
	5.3. - Educational sciences: Education, general; including training, pedagogy, didactics; Education, special (to gifted persons, those with learning disabilities).
	5.4. - Sociology: Sociology; Demography; Anthropology, ethnology, Social topics (women's and gender studies; Social issues; Family studies, Social work).
	5.5. - Law: Law, criminology, penology.
	5.6. - Political science: Political science; public administration; organization theory.
	5.7. - Social and economic geography: Environmental sciences (social aspects); Cultural and economic geography; Urban studies (Planning and development); Transport planning and social aspects of transport (transport engineering to be 2.1).
	5.8. - Media and communications: Journalism; Information science (social aspects); Library science; Media and socio-cultural communication.
	5.9 - Other social sciences: Social sciences, interdisciplinary; Other social sciences.
6. Humanities and arts	**6.1. - History and Archaeology:** History (history of science and technology to be 6.3, history of specific sciences to be under the respective headings); Archaeology.
	6.2. - Languages and Literature: General language studies; Specific languages; General literature studies; Literary theory; Specific literatures; Linguistics.
	6.3. - Philosophy, Ethics and Religion: Philosophy, History and philosophy of science and technology; Ethics (except ethics related to specific subfields); Theology; Religious studies.
	6.4. - Arts (history of arts, performing arts, music): Arts, Art history; Architectural design; Performing arts studies (musicology, theater science, dramaturgy); Folklore studies; Studies on Film, Radio and Television.
	6.5. – Other humanities

Annex IV – Socio-economic objectives (NABS 2007), Eurostat

1. Exploration and exploitation of the Earth: Includes R&D related to the exploration of the earth's crust and mantle, seas, oceans and atmosphere, and their exploitation; climatic and meteorological research, polar exploration (under various headings, as appropriate) and hydrology; mineral, oil and natural gas prospecting; exploration and exploitation of the sea-bed; earth's crust and mantle excluding sea-bed; other research on the exploration and exploitation of Earth. Does not include R&D related to pollution (included in 2.); soil improvement (included in 4.); land-use and fishing (included in 8.).

2. Environment: The control of pollution, aimed at the identification and analysis of the sources of pollution and their causes, and all pollutants, including their dispersal in the environment and the effects on man, species (fauna, flora, microorganisms) and biosphere; development of monitoring facilities for the measurement of all kinds of pollution; the elimination and prevention of all forms of pollution in all types of environment; protection of atmosphere and climate; protection of ambient air; solid waste; protection of ambient water; protection of soil and groundwater; noise and vibration; protection of species and habitats; protection against natural hazards; radioactive pollution; other research on the environment.

3. Exploration and exploitation of space: includes R&D related to civil space – with the specific goal, such as the increase of general knowledge (e.g. astronomy), or relates to particular applications (e.g. telecommunications satellites); scientific exploration of space; applied research programmes; launch systems; space Laboratories and space travel; other research on the Exploration and exploitation of space.

4. Transport, telecommunication and other infrastructures: Includes R&D related to infrastructure and land development, including the construction of buildings; the general planning of land-use; protection against harmful effects in town and country planning; transport systems; telecommunication systems; general planning of Land-use; construction and planning of building; civil engineering; water supply; other research on the infrastructure and general planning of land-use. Does not include R&D related to other types of pollution than harmful effects in town (included in 2.).

5. Energy: includes R&D related to the production, storage, transportation, distribution and rational use of all forms of energy; processes designed to increase the efficiency of energy production and distribution; the study of energy conservation; energy efficiency; CO2 capture and storage; renewable energy sources; nuclear fission and fusion; hydrogen and fuel cells; other power and storage technologies. Does not include R&D related to prospecting (included in 1.); vehicle and engine propulsion (included in 6.).

6. Industrial production and technology: Includes R&D related to the improvement of industrial production and technology; industrial products and their manufacturing processes; increasing economic efficiency and competitiveness; all manufactures as defined in the NACE Rev. 2 (codes 10 to 33); recycling waste (metal and non-metal). Does not include R&D related to industrial products and their manufacturing processes where they form an integral part of other objectives (e.g. defense, space, energy, agriculture).

7. Health: includes R&D related to protecting, promoting and restoring human health - broadly interpreted to include health aspects of nutrition and food hygiene. It ranges from preventative medicine, including all aspects of medical and surgical treatment, both for individuals and groups, and the provision of hospital and home care, to social medicine and pediatric and geriatric research; prevention, surveillance and control of communicable and non-communicable diseases; monitoring the health situation; health promotion; occupational health; public health legislation and regulations; public health management; specific public health services; personal health care for vulnerable and high risk populations; other research on the health.

8. Agriculture: includes R&D related to the promotion of agriculture, forestry, fisheries and foodstuff production; chemical fertilizers, biocides, biological pest control and the mechanization of agriculture; the impact of agricultural forestry activities on the environment; the field of developing food productivity and technology; agriculture, forestry, and fishery; animal and dairy science; veterinary science and other agricultural sciences. Does not include R&D related to the reduction of pollution (included in 2.); the development of rural areas, the construction and planning of buildings, the improvement of rural rest and recreation amenities and agricultural water supply (included in 4.); energy measures (included in 5.); the food industry (included in 6.).

9. Education: Includes R&D related to education general including training, pedagogy, didactics; education, special (to gifted persons, those with learning disabilities); pre- and primary school; secondary school; post-secondary non-tertiary education; tertiary education; tertiary education; subsidiary services to education; other research on the educations.

10. Culture, recreation, religion and mass media: Includes R&D related to the social phenomena of cultural activities, religion and leisure activities so as to define their impact on life in society; racial and cultural integration and on socio-cultural changes in these areas; recreational and sporting services; cultural services; broadcasting and publishing services; religious and other community services.

11. Political and social systems, structures and processes: Includes R&D related to the political structure of society, public administration issues and economic policy; regional studies and multi-level governance; social change, social processes and social conflicts; the development of social security and social assistance systems; the social aspects of the organization of work; gender-related social studies including discrimination and familiar problems; the development of methods of combating poverty at local, national and international level; the protection of specific population categories on the social level (immigrants, delinquents, "drop outs" etc.), on the sociological level, i.e. with regard to their way of life (young people, adults, retired people, the handicapped etc.) and on the economic level (consumers, farmers, fishermen, miners, the unemployed etc.); methods of providing social assistance when sudden changes (natural, technological or social) occur in society.

12. General advancement of knowledge: Includes basic research without an defined socio-economic objective.

13. Defense: Includes R&D related to military purposes.

Annex V – National strategic priorities, as defined in the Research & Innovation Strategy for an Intelligent Specialization (EI&I), 2014-2020	
1. Energy	Optimization of energy production and transportation and complementarity in their management (renewable, non-renewable, new fuels and hydrogen, fuel cells, nuclear fusion, CO2 capture and storage, real-time energy system management, energy storage systems).
	Energy efficiency and its impacts (Smart Cities, NZEB Net-Zero Energy Buildings, energy in transport, consumption patterns and consumer behavior, distribution of electricity and natural gas, climate change).
	Applications of new technologies and smart energy networks (ICTs).
	Integration of the European energy market (modeling, planning, new market models, regulation).
2. Information and communication technologies	Promotion of the internet of the future (Internet of Things - IoT, wireless networks, communications and networks and optics, cybersecurity, impact of social networks).
	Electronic base infrastructures (electronics, hardware, files and digital collections).
	Software modeling and simulation.
	Component and sensor engineering.
	Robots - man / machine interaction.
	'Cloud computing' and 'Parallel computing'.
	Digital agenda and e-Government.
	New digital business models.
	Nano and bio-electronics.
	Advanced and complex engineering systems.
	Mobile applications.
	Link to average.
	Connection to tourism and leisure.
3. Materials and raw materials	Development of innovative technologies for sustainable mineral resources (use of new materials, processing of minerals and minerals, eco-innovative technologies, scarce mineral resources, materials for low carbon energy technologies).
	Sustainable production of raw materials and forest-derived materials (pulp, wood, cork, waste reduction and biomass utilization, environmental monitoring, waste reuse).
	Application of advanced technologies to raw materials and materials (resource efficiency through the application of ICT, new materials).
	Application of new materials to traditional industries.
	Efficient, safe and sustainable use of industrial resource production (alternatives to critical raw materials, efficient exploitation and use of raw materials, exploitation of raw materials in land and sea, rare earth exploration).
4. Production technologies and process industries	Increasing the competitiveness of process industries (cement, pulp, chemical, pharmaceutical and other industries, integration of the value chain, more efficient production processes, degradability of products, reduction of emissions and waste, energy efficiency).
	Green Chemistry (reuse of products and raw materials and energy efficiency; efficient chemical processes).
	Industrial biotechnology.
	Pharmaceutical industry.
5. Production technologies and product industries	Promotion of sustainable industrial growth based on products with high added value and technological content (incorporation of design, new materials and ICT, product-service integration, product customization).
	Factories of the Future (production and instrumentation technologies, flexible and reconfigurable production systems, intelligent and adaptive, collaborative and networked and mass customization, new production technologies, technologies for product lifecycle management, energy efficiency And minimization of environmental impacts in industrial production).

Annex V – National strategic priorities, as defined in the Research & Innovation Strategy for an Intelligent Specialization (EI&I), 2014-2020 [continuation]	
6. Automotive, Aeronautics and Space	Sustainability and innovation of automotive production and its components (new means of transport, low carbon and green, new fuels).
	Development of advanced technologies applied to automotive, aeronautics and space (ICT and electronics, optics and lasers, robotics, automation and control, advanced materials, design of automobile and aircraft modules).
	Development of the components industry (technical textiles, rubber, molds and plastics, glass, metal components, new materials, sensors, coatings).
	Intensive knowledge services (acquisition, pre-processing and access to data, telemetry, modeling for information production, design of modules).
	Development of subsystems for the aeronautics and space industry (navigation systems, space hardware, design of modules for the aeronautics industry).
7. Transport, mobility and logistics	Management of port infrastructures (management of aeronautical infrastructures, storage, software, infrastructures, flows of people, exploration of new businesses).
	Development of new sustainable means of transport of goods (via rail, sea, sustainability of road transport).
	Safe and sustainable transport (multi-modal and mobility, safety, construction of clean and quiet vehicles, mobility and urban space).
	Intelligent transport and logistics systems (communications, information and control systems, intelligent interfaces, flow management, payment system, operational research).
	Standardization and certification.
	New public transport policies (safety, modeling, public transport and urban areas).
8. Food industry	Healthy food production based on sustainable agriculture (olive oil, honey, protein production, rural areas, water, wine, biodiversity, energy efficiency and waste reduction and reuse, safety / traceability).
	Ecosystem organization of the rural space (transport and distribution, forest and rural areas, land use and social organization, fires, impacts and combating desertification, waste treatment, biodiversity, intelligent packaging, customized food).
	Food engineering and advanced technologies (biotechnology, synthetic biology, technological engineering).
	Wine.
	Exploration of food links with health, economy of the sea, tourism.
9. Forest	Forest eco-system development (forest species improvement, sustainable management and resource planning, land use, water, fire prevention and detection, monitoring and evaluation of environmental performance, pest and disease prevention and treatment of forest resources, energy efficiency And optimization of the processes of cutting, extraction, preparation or filling and optimization of manufacturing processes).
	Sustainable production of raw materials and materials products derived from the forest (paper pulp, wood, cork, other products: resin, pine nut, nut, carob, essential oils, waste reduction and biomass utilization, environmental monitoring, reuse of waste) .
10.1. Sea economics - marine food resources (fisheries and aquaculture)	Sea economics - marine food resources: fisheries, aquaculture, in-land and off-shore, and fish industry; Salting and food security.
	Ability to predict and model and analyze population dynamics.
	Technological development of fishing gear.
	Analysis of socioeconomic aspects, importance of the sector in the development of regional and local economy, diversification to other economic activities in the community.
	Diversification technologies and processes of the species produced - new types of food; Use of robotics and biotechnology.
	Combating pathogens and diseases (aquaculture).
	Boosting the Green Economy (resource efficiency, appreciation of by-products and intelligent packaging).
	Increasing the value added of products in a market-oriented production (fish industry); Analysis of consumer preference and enhancement of the product image and the origin brand (aquaculture and fish industry); Food security.
	New technologies and services for product and process development.
	Demonstration of innovative business models and behavioral patterns.

Annex V – National strategic priorities, as defined in the Research & Innovation Strategy for an Intelligent Specialization (EI&I), 2014-2020 [continuation]

10.2. Sea economics - natural systems and renewable energy resources	Sea economics - natural systems and renewable energy resources: natural resources (biodiversity and climate, ocean - atmosphere, climate change) and renewable energy resources (wind, waves, salinity, tides, biomass).
	Ecosystem dynamics, modeling, marine biodiversity and Good Environmental Status indicators.
	Monitoring technologies, in-situ and remote sensing by satellite and by airborne platforms, and resource mapping.
	Decision support systems in the event of pollution accidents.
	Enhance the resilience of ecosystems.
	Mitigation and adaptation to climate change.
	New models of governance and designation of marine protected areas in the coastal zone and on the high seas.
	Maritime space planning.
	New socioeconomic models.
	Models of oceanographic prediction and ocean-atmosphere interaction.
10.3. Sea economics - deep sea resources	Sea economy - deep sea resources: marine biotechnology; mining; Deep sea fishing; Non-renewable energy resources (hydrocarbons, natural gas).
	Mapping of biological and mineral resources (seabed mapping).
	Development of monitoring technologies (robotics, sensors, instrumentation, research platforms, nanotechnology).
	Exploration of resources (biomedicine, tissue engineering, pharmaceutical, enzyme production) and patents.
	Development of new services at sea, including ICT.
	Sustainability and resilience of ecosystems.
	Governance models and management tools.
10.4. Sea economics - ports, logistics, transport, shipbuilding and maritime works	Sea economy - ports, logistics, transport, shipbuilding and maritime works: new means of transport; Low carbon transport; Intelligent transport; Ports; Shipbuilding and repair; Management of flows (transport, mobility and logistics); Maritime works.
	Motorways of the sea.
	Multipurpose platforms at sea and reduction of conflicts of use in the marine space.
	Adaptation of vessels to new environmental and other certification requirements.
	Diversification of shipbuilding and ship repair to support the renewable energy sector at sea, ship recycling and life cycle analysis.
	New boats for nautical and market niches.
	Transversal technological development for observation, evaluation, inspection and safety: ICT and robotics, platforms, instrumentation, automatic and autonomous systems.
	Synergies between technological areas, aeronautics and aerospace.
	Certified quality in the transportation and distribution of marine food resources.
	Development of hydraulic infrastructures (use of natural processes) and adaptation of infrastructures to climate change.
	Development of innovative technical solutions adapted to the economic, geophysical and ecological reality of the national coast.
10.5. Sea economics - culture, tourism, sport and leisure	Sea economy - culture, tourism, sport and leisure: sport and leisure; Beach tourism; Health tourism; Cruises; Ecotourism.
	Evaluation of niche markets, development and technological innovation for nautical and marine centers and promotion of future motorizations.
	Networks and clusters - analysis of the enhancement of value added.
	Local and regional development of nautical, ecotourism and connection to endogenous resources.
	Marine protected areas and new management models.
	Literacy of the sea.

Annex V – National strategic priorities, as defined in the Research & Innovation Strategy for an Intelligent Specialization (EI&I), 2014-2020 [continuation]

11. Water and environment	Water resources (state of water bodies, planning, integrated management and governance, water uses, risks associated with extreme events, monitoring, modeling and information systems and decision support).
	Waste (reduction at source, planning, integrated management and governance, treatment and recovery systems and technologies, monitoring and information systems and decision support).
	Soils (systems and technologies for decontamination and recovery, planning, planning and governance, risks associated with use, monitoring and information systems and decision support).
	Ecosystems (evaluation of ecosystem services, restoration and recovery methodologies and technologies, planning, planning and governance, monitoring and information and support systems.
12. Health	Aging and active life (dementia, health care, tourism).
	Diseases (neurodegenerative, autoimmune, rheumatic, infection and diabetes, cardiovascular, cancer, vision, epidemiology and socioeconomic research).
	Biomaterials and nanomedicine.
	Medical technologies (diagnosis and treatment, application of ICT to health).
	Biotechnology and health (microbiology; pharmaceuticals).
	Translational research.
	Health and well-being (food, sports, tourism).
13. Tourism	Exploration of cultural heritage (material and immaterial heritage) (ethnological research and tourism, archaeological research and tourism, built heritage and tourism, lusophone space and tourism, Portuguese diaspora and tourism, creative industries and media).
	Diversification of the offer of tourism and associated services (event tourism, cultural tourism, sports and religious tourism, health tourism, nature tourism: rural areas and biodiversity, housing tourism, tourism induced by scientific activities).
	Integration of the tourism value chain (agri-food, Portuguese Mediterranean cuisine, intelligent public transport systems, health and health policy, development of advanced ICT applications for tourism).
14. Cultural and creative industries	Valuation of products and spaces (fashion: clothing, footwear, technical textiles, jewelery, leather, cork, product customization, architecture, design).
	Production, distribution and promotion of cultural and creative content (music, film and video, radio and TV, editing and literary creation, performing arts and visual arts).
	Preservation and enhancement of cultural heritage, tangible and intangible.
	Advertising.
	ICT: digital content and software services (games, new technologies for the arts and languages, educational software, applications of technology to the preservation and enhancement of cultural heritage, electronic technology and fashion).
	Cultural and creative industries, event and tourism promotion.
15. Habitat	New methods of sustainable and efficient production (waste, reduction of environmental impacts, flexible production).
	Development of innovative materials and applications (cork, new materials / advanced materials, ceramics and glass, cutlery, wood and furniture, construction, paper, ICT, home textiles, paints and coatings, metal products).

Annex VI – List of products

CODE	DESCRIPTION
	A. Products of agriculture, forestry and fishing
01000	Products of agriculture, hunting and related services
02000	Products of forestry, logging and related services
03000	Fish and other fishing products; aquaculture products; support services to fishing
	B. Mining and quarrying
05000	Coal and lignite
06000	Crude petroleum and natural gas
07000	Metal ores
08000	Other mining and quarrying products
09000	Mining support services
	C. Manufactured products
	Food products and tobacco
10000	Food products
11000	Beverages
12000	Tobacco products
	Textiles
13000	Textiles
14000	Wearing apparel
	Leather and related products
15100	Tanned and dressed leather; luggage, handbags, saddlery and harness; dressed and dyed fur
15200	Footwear
	Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials
16000	Wood, sawn and planed
	Paper and paper products
17100	Pulp, paper and paperboard
17200	Articles of paper and paperboard
18000	Printing and recording services
	Coke and refined petroleum products
19000	Coke and refined petroleum products
	Chemicals and chemical products
20100	Basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms
20200	Pesticides and other agrochemical products
20300	Paints, varnishes and similar coatings, printing ink and mastics
20400	Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
20500	Other chemical products
20600	Man-made fibres
	Basic pharmaceutical products and pharmaceutical preparations
21100	Basic pharmaceutical products
21200	Pharmaceutical preparations
	Rubber and plastics products
22100	Rubber products
22200	Plastics products
	Other non-metallic mineral products
23100	Glass and glass products
23200	Refractory products
23300	Clay building materials

Annex VI – List of products [continuation]

CODE	DESCRIPTION
23400	Other porcelain and ceramic products
23500	Cement, lime and plaster
23600	Articles of concrete, cement and plaster
23700	Cut, shaped and finished stone
23900	Other non-metallic mineral products
	Basic metals
24100	Basic iron and steel and ferro-alloys
24200	Tubes, pipes, hollow profiles and related fittings, of steel
24300	Other products of the first processing of steel
24400	Basic precious and other non-ferrous metals
24510	Casting services of iron
24520	Casting services of steel
24530	Casting services of light metals
24540	Casting services of other non-ferrous metals
	Fabricated metal products, except machinery and equipment
25100	Structural metal products
25200	Tanks, reservoirs and containers of metal
25300	Steam generators, except central heating hot water boilers
25400	Weapons and ammunition
25500	Forging, pressing, stamping and roll-forming services of metal; powder metallurgy
25600	Treatment and coating services of metals; machining
25700	Cutlery, tools and general hardware
25900	Other fabricated metal products
	Computer, electronic and optical products
26100	Electronic components and boards
26200	Computers and peripheral equipment
26300	Communication equipment
26400	Consumer electronics
26500	Measuring, testing and navigating equipment; watches and clocks
26600	Irradiation, electromedical and electrotherapeutic equipment
26700	Optical instruments and photographic equipment
26800	Magnetic and optical media
	Electrical equipment
27100	Electric motors, generators, transformers and electricity distribution and control apparatus
27200	Batteries and accumulators
27300	Wiring and wiring devices
27400	Electric lighting equipment
27500	Domestic appliances
27900	Other electrical equipment
	Machinery and equipment n.e.c.
28100	General-purpose machinery
28200	Other general-purpose machinery
28300	Agricultural and forestry machinery
28400	Metal forming machinery and machine tools
28900	Other special-purpose machinery
	Motor vehicles, trailers and semi-trailers
29100	Motor vehicles
29200	Bodies (coachwork) for motor vehicles; trailers and semi-trailers
29300	Parts and accessories for motor vehicles

Annex VI – List of products [continuation]

CODE	DESCRIPTION
	Other transport equipment
30100	Ships and boats
30200	Railway locomotives and rolling stock
30300	Air and spacecraft and related machinery
30400	Military fighting vehicles
30900	Transport equipment n.e.c.
	Furniture
31000	Furniture
	Other manufactured goods
32100	Jewellery, bijouterie and related articles
32200	Musical instruments
32300	Sports goods
32400	Games and toys
32500	Medical and dental instruments and supplies
32900	Manufactured goods n.e.c.
	Repair and installation services of machinery and equipment
33000	Repair and installation services of machinery and equipment
	D. Electricity, gas, steam and air conditioning
35100	Electricity, transmission and distribution services
35200	Manufactured gas; distribution services of gaseous fuels through mains
35300	Steam and air conditioning supply services
	E. Water supply; sewerage, waste management and remediation services
36000	Natural water; water treatment and supply services
37000	Sewerage services; sewage sludge
38100	Waste; waste collection services
38200	Waste treatment and disposal services
38300	Materials recovery services; secondary raw materials
39000	Remediation services and other waste management services
	F. Constructions and construction works
41000	Buildings and building construction works
42100	Roads and railways; construction works for roads and railways
42200	Constructions and construction works for utility projects
42900	Constructions and construction works for other civil engineering projects
43000	Specialised construction works
	G. Wholesale and retail trade services; repair services of motor vehicles and motorcycles
45000	Wholesale and retail trade and repair services of motor vehicles and motorcycles
46000	Wholesale trade services, except of motor vehicles and motorcycles
47000	Retail trade services, except of motor vehicles and motorcycles
	H. Transportation and storage services
49000	Land transport services and transport services via pipelines
50000	Water transport services
51100	Sea and coastal passenger water transport services
51200	Sea and coastal freight water transport services
52000	Warehousing and support services for transportation
53000	Postal and courier services
	I. Accommodation and food services
55000	Accommodation services
56000	Food and beverage serving services
	J. Information and communication services
58100	Publishing services of books, periodicals and other publishing services

Annex VI – List of products [continuation]

CODE	DESCRIPTION
58200	Software publishing services
59000	Motion picture, video and television programme production services, sound recording and music publishing
60000	Programming and broadcasting services
61000	Telecommunications services
62000	Computer programming, consultancy and related services
63100	Data processing, hosting and related services; web portals
63900	Other information services
	K. Financial and insurance services
64000	Financial services, except insurance and pension funding
65000	Insurance, reinsurance and pension funding services, except compulsory social security
66000	Services auxiliary to financial services and insurance services
	L. Real estate services
68000	Real estate services
	M. Professional, scientific and technical services
69000	Legal and accounting services
70000	Services of head offices; management consulting services
71100	Architectural and engineering services and related technical consulting services
71200	Technical testing and analysis services
72110	Research and experimental development services in biotechnology
72190	Research and experimental development services in other natural sciences and engineering
72200	Research and experimental development services in social sciences and humanities
73000	Advertising and market research services
74000	Other professional, scientific and technical services
75000	Veterinary services
	N. Administrative and support services
77000	Rental and leasing services
78000	Employment services
79000	Travel agency, tour operator and other reservation services and related services
80000	Security and investigation services
81000	Services to buildings and landscape
82000	Office administrative, office support and other business support services
	O. Public administration and defence services; compulsory social security services
84000	Public administration and defence services; compulsory social security services
	P. Education services
85000	Education services
	Q. Human health and social work services
86000	Human health services
87000	Residential care services
88000	Social work services without accommodation
	R. Arts, entertainment and recreation services
90000	Creative, arts and entertainment services
91000	Library, archive, museum and other cultural services
92000	Gambling and betting services
93000	Sporting services and amusement and recreation services
	S. Other services
94000	Services furnished by membership organisations
95000	Repair services of computers and personal and household goods
96000	Other personal services

INQUÉRITO AO POTENCIAL CIENTÍFICO E TECNOLÓGICO NACIONAL 2021

Individual form

[This form must be completed by each individual holding a university degree, dedicated to R&D activities in the company in 2021, including fellows and other individuals whose main salary was paid by another institution or company. If the R&D activities took place simultaneously with the company's production activities, it should estimate the time spent on R&D activities.]

1. Name of the company:

2. Full name of the individual:

3. Identification number:

[Indicate, preferably, the citizen's card number.]

4. Birth date: Y Y Y Y M M D D

5. Sex: ☐ Female ☐ Male

6. Country of nationality:

7. Level of education:

[Indicate the highest completed level of schooling achieved by the end of 2021.]

- ☐ Doctorate degree
- ☐ Master degree
- ☐ University degree
- ☐ Bachelor degree
- ☐ Higher Education Professional Courses (TESP)

[The legal regime of the Higher Education Professional Course is provided for in Decree-Law no. 74/2006, of March 24, amended and republished by Decree-Law no. 63/2016, of September 13. This course does not confer an academic degree and the successful completion of the respective course of study grants the diploma of professional higher technician. This cycle of studies is taught in polytechnic teaching, has 120 credits and its duration is four curricular semesters of student work, consisting of a set of curricular units organized into components of general and scientific training, technical training and training in the context of work, which takes place through an internship.]

8. Percentage of time spent in R&D activities or direct tasks supporting R&D in the company in 2021:

[It should be made an estimate of the percentage of the time you spent on R&D activities in the company, based on the person/year. If you have been dedicated to R&D activities in the company only part of the year, this should reflect on the percentage presented here. If R&D activities were developed simultaneously with the company's production activities, it should estimate the time spent on R&D (it is suggested to consult the examples presented in Annex II of IPCTN20 - Business Sector.)]

- ☐ Up to 5%
- ☐ 6% to 10%
- ☐ 11% to 20%
- ☐ 21% to 30%
- ☐ 31% to 40%
- ☐ 41% to 50%
- ☐ 51% to 60%
- ☐ 61% to 70%
- ☐ 71% to 80%
- ☐ 81% to 90%
- ☐ 91% to 100%

9. Professional situation in the context of your R&D activities in the company in 2021:

- ☐ Internal personnel
  [Includes working proprietors and unpaid family households workers.]

External personnel

- ☐ Integrated in another company or institutions staff
- ☐ Integrated in a public administration career
- ☐ Self-employed professionals
- ☐ Grant holder
- ☐ Students
- ☐ Other professional situation

10. Main function performed in company R&D activities in 2021:

[Note that the first group of tasks is a priority over the other two. Thus, the individuals who performed tasks included in this group should select this option regardless of having performed functions inherent to the other groups. Each person should tick only option.]

☐
. Professionals engaged in the conception or creation of new knowledge
. Conduct research, improve or develop concepts, theories, models, techniques instrumentation, software or operational methods
. Collect, process, evaluate, analyze, and interpret research data
. Evaluate the results of investigations and experiments; draw conclusions using different techniques and models
. Apply principles, techniques and processes to develop or improve practical applications
. Plan, direct and coordinate the R&D activities
. Prepare scientific papers and reports

☐
. Carrying out bibliographic searches and selecting relevant material from archives and libraries
. Provide technical assistance and support in R&D, or test prototypes and maintaining and repairing research equipment
. Prepare computer programs
. Operate, maintain and repair research equipment
. Assisting in analysing data, keeping records and preparing reports
. Carrying out statistical surveys and interviews
. Other technical assistance tasks and support to R&D activities

☐
. Administrative and secretarial tasks
. Provision of legal services and other intermediate related services
. Inspection for law enforcement and similar
. Technical assistance in galleries, libraries, archives and museums
. Perform skilled tasks in agriculture, forestry and fisheries
. Execution of plant and machine operation tasks and assembly work
. Management of financial and human resources aspects and administration of general matters

11. Time spent filling this form:

☐ Minutes