Instructions for Research and Development in Non-Profit Organisations

Introduction

Your contribution is important. A high response rate is necessary for the statistics to provide a fair and accurate description of the R&D funded and conducted by organisations in Sweden.

Aim of the survey

The survey aims to describe resources allocated to research and development (R&D) in non-profit organisations in Sweden. The results of the survey are also used to calculate Swedish GDP. The survey is based on the international guidelines set out in the Frascati Manual, produced by the OECD.

Dissemination of results

Results from the survey are published in Statistics Sweden's website: Research and development in Sweden (scb.se/en).

Example questionnaire

On the respondent website (https://www.scb.se/en/fou-pnp) you can find an example questionnaire including instructions for each question. This document is a complement to the example questionnaire with additional explanations and examples.

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Definitions and explanations

Research and experimental development (R&D) [1]

Research and experimental development (R&D) comprises creative and systematic work undertaken in order to increase the stock of knowledge and to devise new applications of available knowledge in all fields of science.

To be defined as R&D, an activity must be:

- **Novel**: An R&D activity undertaken in order to generate new knowledge and to devise new applications of available knowledge.
- **Creative**: R&D activities based on original concepts or hypotheses.
- **Uncertain**: The final outcome of R&D activities is generally uncertain. There is also uncertainty related to the cost or time needed to achieve the expected results.
- **Systematic**: R&D activities are performed systematically and are planned and budgeted.
- **Transferable and/or reproducible**: An R&D activity should lead to results that could possibly be transferable and/or reproducible.

There are three different types of R&D[2]:

- **Basic research** is systematic work undertaken in order to increase the stock of knowledge without a particular application or use in view.
- **Applied research** is systematic work undertaken in order to increase the stock of knowledge with a particular application or use in view.
- **Experimental development** is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new materials, goods, services, processes, systems, methods, or significant improvements of such that already exist.

R&D can be conducted in any part of an organisation, and it is independent of the level of education of the personnel involved. The fact that a project is located in an R&D unit or department does not automatically make it and R&D project. R&D can be conducted by personnel without a doctoral degree.

An organisation's R&D can consist of intramural and/or extramural R&D

Intramural R&D refers to all activities that satisfy the definition of R&D activities and are carried out in Sweden by the organisation's own personnel or by consultants in a R&D project led by the organisation, in as part of the organisation's own R&D activities. Intramural R&D also includes R&D carried out by commission.

Extramural R&D refers to all activities that satisfy the definition of R&D activities and are performed by another party in Sweden or abroad, funded by your organisation. Include contributions that the organisation made to R&D at, for example, universities or other institutions of higher education.

Distinguishing between R&D and non-R&D activities

It can be difficult to distinguish between R&D and other activities. Furthermore, there are additional challenges associated with the distinction between R&D and innovation, where R&D is often seen as a component of innovation, but innovation is not necessarily R&D.

[1] OECD, *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development (FM15)*, 44.

[2] FM15, 50.

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The fundamental criterion for distinguishing R&D from related activities is the presence in R&D of **an appreciable element of novelty and the resolution of scientific and/or technological uncertainty**, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of common knowledge and techniques for the area concerned.

Normal engineering or examination that follows established procedures are not considered to be R&D, even if conducted by researchers with a doctoral degree. Also, the introduction of new methods, systems or processes previously used in the same manner by other organisations is not R&D.

In serial production the development and construction of the prototype is R&D work, but the production of the first series is not.

In the social sciences and humanities R&D work focuses on further processing and the development of research and ideas based on previous results.

When does product development constitute R&D?
Product development is the process of turning an idea or a need into a new or improved product (good or service). In order for the product development process to constitute R&D there has to be an appreciable element of novelty, even to someone familiar with the basic stock of common knowledge and techniques for the area concerned.

Examples of R&D activities:

- Research activities that are conducted within the organisation funded by direct government funds or research grants.
- Research conducted jointly with universities or other higher education institutions as well as research contributions to universities.
- Research projects contracted out to universities or other higher education institutions.
- Evaluations based on scientific methods or using a scientific approach.
- Development within social sciences or the humanities focused on further processing and development of research and ideas based on previous results.
- Clinical trials, phase I-III.

Examples of non-R&D activities:

- Training and education.
- Processing of cases.
- Competence training or development.
- Routine quality assessment and testing.
- Routine gathering of data and statistics for general purposes.
- Routine compiling of literature without the aim of generating new knowledge
- Making data available.
- Spreading of information on finalised R&D projects.
- Routine software development. Normally, not all development conducted in the organisations IT-department meets the criteria of R&D.
- Clinical trials, phase IV.

The questionnaire has five sections (A-E), each with a number of questions. Aspects that are important to consider when responding to each section are described below.

A. Funding of extramural R&D

The information reported in this section of the questionnaire is important in order to give a fair picture of the R&D system in Sweden and your contribution to the research and development that is financed by organisations in Sweden. The aim is to provide a comprehensive picture of the extramural R&D in all sectors of society, the economic flows between sectors and the directionality of the R&D.

It is voluntary to report on section A, but your contribution is very important.

In this section, report on R&D that has been conducted by a second party, in Sweden or abroad, that your organisation is funding. *Data can be estimated.*

A2. Extramural R&D by recipient

In this question, report your organisation's total expenditures on extramural R&D allocated by recipient. Extramural R&D is R&D that is funded by your organisation but conducted by a second party. Include contributions that the organisation made to R&D at, for example, universities or other institutions of higher education. **Specify amounts in SEK thousands.** *Data can be estimated.*[Källa]

A3. Extramural R&D by type of funds

In this question, report your organisation's total expenditures on extramural R&D allocated by type of funds; transfers and exchanges respectively. **Specify the allocation in percent.** *Data can be estimated.*

Exchange R&D funds are funds that your organisation commissions others (in Sweden or abroad) to perform R&D for. The funding party, your organisation, retains the right to the results.

Transfer R&D funds are funds granted to others (in Sweden or abroad) for their R&D activities. The recipient of the funds retains the right to the results.

A4. Extramural R&D by socioeconomic objective

In this question, report your organisation's total expenditures on extramural R&D allocated by socioeconomic objective[3]. If a project has multiple objectives, allocate expenditures proportionately if possible. R&D that cannot be related to a specific socioeconomic objective should be reported as general advancement of knowledge. **Specify amounts in SEK thousands.** *Data can be estimated.*

Exploration and exploitation of the Earth

Refers to R&D related to the exploration of the Earth's crust and mantle, seas, oceans and atmosphere, and their exploitation.

This includes R&D related to:

- Climatic and meteorological research, polar exploration, and hydrology
- Mineral, oil, and natural gas prospecting
- Exploration and exploitation of the seabed

This does not include R&D related to:

- Pollution (included in Environment)
- Soil improvement (included in Transport, telecommunication and ither infrastructures)

[3] FM15, 334.

- Land-use and fishing (included in Agriculture)

Environment
Refers to R&D related to 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 effects on man, species (fauna, flora, microorganisms) and biosphere. Furthermore, development of monitoring facilities for the measurement of all kinds of pollution and the elimination and prevention of all forms of pollution in all types of environments is also included.

This includes R&D related to:

- Protection of the atmosphere and climate
- Protection of ambient air
- Solid waste
- Protection of ambient water
- Protection of soil and ground water
- Noise and vibration
- Protection of species and habitats
- Protection against natural hazards
- Radioactive pollution

Exploration and exploitation of space
Refers to R&D related to scientific exploration of space, applied research programmes, launch systems, space laboratories and space travel.

This does not include R&D related to:

- Exploration and exploitation of space for military purposes (included in Defence)

Transport, telecommunication and other infrastructures
Refers to R&D related to infrastructure and land development, including the construction and planning of buildings, general planning of land-use and protection against harmful effects in town and country planning.

This includes R&D related to:

- Transport systems
- Telecommunication systems
- Water supply

This does not include R&D related to:

- Other types of pollution than harmful effects in town and country planning (included in Environment)

Energy
Refers to R&D related to the production, storage, distribution and rational use of all forms of energy. R&D related to processes designed to increase the efficiency of energy production and distribution is also included.

This includes R&D related to:

- Energy efficiency
- CO2 capture and storage

- Renewable energy sources
- Nuclear fission and fusion
- Hydrogen and fuel cells
- Other power and storage technologies

This does not include R&D related to:

- Prospecting (included in Exploration and exploitation of the Earth)
- Vehicle and engine propulsion (included in Industrial production and technologies)

Industrial production and technology
Refers to R&D related to the improvement of industrial production and technology as well as industrial products and their manufacturing processes.

This includes R&D related to:

- Increasing economic efficiency and competitiveness
- Recycling waste

This does not include R&D related to industrial products and their manufacturing processes where they form an integral part of other objectives, e.g. defence, energy or agriculture.

Health
Refers to R&D related to protecting, promoting, and restoring human heath, including the health aspects of nutrition and food hygiene. It ranges from preventative medicine, including all aspects of medical and surgical treatment, and the provision of hospital and home care, to social medicine and paediatric and geriatric research.

This includes R&D related to:

- 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

Agriculture
Refers to R&D related to the promotion of agriculture, forestry, fisheries, and foodstuff production. This includes chemical fertilizers, biocides, biological pest control, and the mechanisation of agriculture. Furthermore, it includes the impact of agricultural forestry on the environment as well as the field of developing food productivity and technology.

This includes R&D relate to:

- Animal and diary science
- Veterinary science and other agricultural sciences

This does not include R&D relate to:

- The reduction of pollution (included in Environment)
- 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 Transport, telecommunication, and other infrastructures)
- Energy measures (included in Energy)
- The food industry (included in Industrial production and technology)

Education
Refers to R&D related to general education including training, pedagogy, didactics, and special education (for gifted persons and those learning with disabilities).

This includes R&D related to:

- Pre- and primary school
- Secondary school
- Post secondary non-tertiary education
- Tertiary education
- Subsidiary services to education

Culture, recreation, religion and mass media
Refers to R&D related to the social phenomena of cultural activities, religion, and leisure activities so as to define their impact on life in society. This includes racial and cultural integration, the sociology of science, religion, art, sport, and leisure as well as R&D on the media, the mastery of language and social integration, libraries, archives, and external cultural policy.

This includes R&D related to:

- Recreational and sporting services
- Cultural services
- Broadcasting and publishing services
- Religious and other community services

Political and social systems, structures and processes
Refers to R&D related to societies political structure and questions regarding public administration issues and economic policy. This includes regional studies and multi-level governance, social change, social processes and social conflict, the development of social security and social assistance systems and the social aspects of the organisation of work.

This includes R&D related to:

- 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.), 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

This does not include R&D related to:

- Industrial health, the health control of communities from the organisational and socio-medical point of view, pollution at the place of work, prevention of industrial accidents and the medical aspects of the causes of industrial accidents (included in Health)

Defence
Refers to R&D related to military purposes. This includes basic, nuclear and space R&D financed by the Ministry of Defence or defence agencies.

This does not include R&D related to:

- Meteorology (included in Exploration and exploitation of the Earth), telecommunication (included in Transport, telecommunication and other infrastructures), and health (included in Health) even if it is financed by the Ministry of Defence of defence agencies.

General advancement of knowledge
Refers to R&D that aims to advance the level of knowledge in a certain field of science but that is not assignable to a specific socioeconomic objective. Expenditures allocated to this objective needs to be further specified by fields of research and development. This follows the classification Standard för svensk indelning av forskningsämnen 2011[4] where the first digit specifies the field of research and development, e.g. Civil engineering has the three-digit code 201 and belongs to the field 2 Engineering and Technology.

Note that research that is interdisciplinary should be classified to its major field of research and development.

B. Expenditure on intramural R&D

In this section, report on R&D that has been conducted by your organisation. Intramural R&D also includes R&D carried out by commission under the management of your personnel. *Data can be estimated.*

B2. Intramural R&D by type of cost

In this question, report your organisation's total expenditures on intramural R&D allocated by type of cost. The organisation's internal accounting is not necessarily adapted to reporting on R&D costs, therefore various inputs or templates may be necessary. **Specify amounts in SEK thousands.** *Data can be estimated.*

Operating expenses[5]
Operating expenses include employee renumeration, consulting fees and other operating expenses.

Employee renumeration refers to renumeration for the proportion of working hours that employees dedicate to intramural R&D. This includes salaries and wages, other compensation such as travel allowances and benefits in-kind, bonuses and stock-options. Furthermore, this includes statutory payroll taxes, other collective charges, contributions to pension funds and other social security payments. Renumerations for management of R&D is also included.

Consultant fees refer to costs of personnel that are formally employed by another party, but who carry out work in your intramural R&D. Consultant fees should be included in operating expenses if:

- The R&D project is managed by your organisation, and

[4] Standard för svensk indelning av forskningsämnen 2011 (scb.se).

[5] FM15, 113.

- The consultants are fully integrated into your organisation's R&D activities

If one or both of the criteria above are not met, then the R&D project is to be considered extramural R&D and the costs should be reported in section A.

Other operating expenses include costs for materials, equipment and services used in your R&D activities. Examples include costs of heating, power, cleaning services, repair and maintenance of your own premises and cost of leased premises. Other examples include consumables, insurance, telephones, books, and office supplies. Further, this includes costs of small prototypes or models developed by a second party, laboratory supplies, lease of machinery or equipment, as well as royalties and licences for the use of software and other intellectual property rights. Include the R&D proportion of administration costs.

Exclude depreciation costs[6] relating to buildings, machinery/equipment, software, and other assets. The reasons for this as set out in the Frascati Manual (OECD) are as follows:

- Including depreciation and amortisation costs would result in double counting when calculating total R&D expenditure as the sum of operating expenses and investments.
- Tax regulations on depreciation and amortisation costs vary between countries.

Investments[7]

Investments include investments in buildings, land and real estate, machinery and inventory, software, and other intangible fixed assets.

Investments should refer to the annual gross amount paid for the acquisition of fixed assets. Include investments in assets both used exclusively for R&D and a share of general assets acquired. An estimation of the R&D share of a general asset can, for example, be based on R&D personnel using the assets as a share of total personnel.

If government or EU grants have been provided to cover part of or all investments for an asset, report the gross amount paid, do not deduct the amount of the grant.

Investments for land and buildings include costs regarding land acquired for R&D use, construction of buildings and major improvements, modifications, and repairs. Ongoing construction should be included.

Investments for machinery and equipment include purchases of or costs incurred for plants, major machinery, other fixtures and fittings, tools, and equipment acquired for use in the performance of R&D.

Investments for software include purchase of or costs incurred for software that is used in the performance of R&D.

Other intangible fixed assets refer to investments in purchases of patents, long-term licences, and other intangible assets that are used in R&D. Exclude marketing assets and goodwill.

B3. Intramural R&D by source of funds

In this question, report your organisation's total expenditures on intramural R&D allocated by source of funds. It is mandatory to report on the main categories, while subcategories are voluntary to report. **Specify amounts in SEK thousands.** *Data can be estimated.*

[6] FM15, 118.

[7] FM15, 119.

B4. Intramural R&D by type of R&D

In this question, report your organisation's total expenditures on extramural R&D allocated by type of R&D. The types of R&D are basic research, applied research and experimental development (see Definitions and explanations on page 2 of this document). **Specify the allocation in percent.** *Data can be estimated.*

B5. Intramural R&D by fields of research and development

In this question, report your organisation's total expenditures on extramural R&D allocated by fields or research and development. This follows the classification Standard för svensk indelning av forskningsämnen 2011[8] where the first digit specifies the field of research and development, e.g. Civil engineering has the three-digit code 201 and belongs to the field 2, Engineering and Technology. **Specify amounts in SEK thousands.** *Data can be estimated.*

C. R&D personnel

In this section, report on R&D personnel in your own R&D projects and activities. *Data can be estimated.*

R&D personnel[9] refers to personnel that are directly involved in R&D activities, regardless of whether they are employed by your organisation or external personnel that is fully integrated in your R&D activities. Include personnel providing direct support to R&D (such as R&D managers, administrators, technicians, and other office personnel).

Exclude personnel that only provides indirect support to R&D such as canteen, maintenance, or security personnel.

C1. Number of persons in intramural R&D

In this question, report your organisations R&D personnel in intramural R&D as of 31 December in headcounts. Information is required for men and women respectively and by type of personnel. It is mandatory to report on the main categories, while subcategories are voluntary to report. Only include persons performing R&D corresponding to at least 10 percent of a full-time. *Data can be estimated.*

Researchers, product developers or equivalent[10] refers to professionals engaged in the conception or creation of new knowledge and the application of products, processes, methods and systems. Persons involved in managing R&D projects are also included in this group.

PhD students engaged in R&D activities also belong to this group. Normally, they hold a degree from an institution of higher education and perform research as a part of their doctoral education.

Examples of titles held by researchers, product developers or equivalent:

- Biologist
- Civil engineer
- Data specialist
- Doctoral student
- Pharmacologist
- Researcher
- PhD student
- R&D manager

[8] Standard för svensk indelning av forskningsämnen 2011 (scb.se).

[9] FM15, 151.

[10] FM15, 162.

- Physicist
- Chemist
- Doctor
- System designer or programmer
- Development manager

Other supporting staff consists to both technical staff and administrative personnel.

Technical staff[11] or equivalent refers to persons whose main tasks require technical knowledge and experience in one or more fields of engineering, the physical and life sciences, or the social sciences, humanities and the arts. They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods and the use of research equipment, normally under the supervision of researchers.

Tasks performed by technical staff include:

- Carrying out bibliographical searches and selecting relevant material from archives and libraries
- Preparing computer programs
- Carrying out experiments, tests, and analyses
- Preparing materials and equipment for experiments, tests, and analyses
- Recording measurements, making calculations, and preparing charts and graphs
- Carrying out statistical surveys and interviews

Examples of titles held by technical staff or equivalent:

- Biomedical analyst
- Data operator
- Computer technician
- Laboratory assistant
- Engineer
- Research assistant
- Technician

Other supporting staff[12] refers to administrative, secretarial, and clerical staff participating in R&D projects or directly associated with such projects. Managers and administrators dealing mainly with financial and personnel matters and general administration, insofar as their activities are a direct service to R&D are included in this group.

Examples of titles held by other supporting staff:

- Administrative assistant
- Data logger
- Financial assistant
- Clerk
- Secretary

[11] FM15, 163.

[12] FM15, 164.

C2. Number of full-time equivalents in intramural R&D

In this question, report your organisations R&D personnel in intramural R&D during 2023 in full-time equivalents allocated by function It is mandatory to report on the main categories, while subcategories are voluntary to report. Only include persons performing R&D corresponding to at least 10 percent of a full-time. *Data can be estimated.*

One full-time equivalent[13] is defined as the number of hours conventionally worked by a full-time employee over one year. Thus, a full-time spending 50% of their working hours on R&D spends 0.5 FTEs on R&D. One person can never perform more than one FTE, even if the person works overtime.

Examples of R&D FTE calculations:

- A full-time employee spending 30% of their time on R&D over one year: (1 x 1 x 0.3) = 0.3 FTE.
- A full-time employee spending 100% of their time on R&D over half of the year (the person is only active for 6 months per year): (1 x 0.5 x 1) = 0.5 FTE.
- A full-time employee spending 40% of their time on R&D over half of the year (the person is only active for 6 months per year): (1 x 0.4 x 0.5)) = 0.2 FTE.
- A part-time employee working 40% of a full-time year spending 60% of their time on R&D over half of the year (the person is only active for 6 months per year): (0.4 x 0.5 x 0.6) = 0.12 FTE.

D. R&D activities forecast

In this section, report on intramural R&D that is being or will be conducted during the current calendar year. *Data can be estimated.*

In **question D2**, report a prognosis of total intramural R&D expenditure, the sum of operating expenses and investments.

In **question D3**, report a prognosis of R&D personnel in full-time equivalents allocated by function.

E. Other information

In this section you can leave a comment on the survey. It is also possible to leave information regarding the time it has taken to submit the information requested in the questionnaire. Include the time it took to compile any documents or information necessary to be able to answer the questionnaire. *It is voluntary to report on this section.*

Thank you for your participation!

[13] FM15, 166.

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