



## Research and development (R&D) in business enterprises, 2022

**N.B.!** This form shows the questions in the survey.

Layout and design differ somewhat from the electronic form in the web-portal Altinn.

Log on to <https://www.altinn.no/> to answer the survey.

If you need help completing the form, please contact by:

- e-mail: [datafangst@ssb.no](mailto:datafangst@ssb.no)
- telephone: 62 88 51 90

Open on weekdays between 09–15.

For more information on the survey, see the guidelines at the end of this document

**Only report for the listed enterprise. If the enterprise belongs to a conglomerate (enterprise group), do not report for other enterprises within the conglomerate.**

### What shall be considered as research and development (R&D)?

Both research and development (R&D) are creative work undertaken on a systematic basis to increase the stock of knowledge, and to devise new applications of available knowledge. For an activity to be considered R&D, it must satisfy five core criteria. The activity must have an appreciable element of novelty, it must be creative, there must be some uncertainty about the outcome, it must be systematic and lead to results that could possibly be reproduced.

- Research is systematic work in order to increase the stock of knowledge.
- Development is systematic or experimentally work drawing on existing knowledge to develop new or significantly improved products or processes.

For more information, we refer to the guidelines given on the last page.

### 1. Did your enterprise engage in intramural research and development (R&D) in Norway during 2022?

R&D activity can be performed by own personnel or contracted personnel.

R&D activity can be performed by a R&D department/-center or by other departments in the enterprise.

Also include R&D performed on behalf of others and R&D that is a part of deliveries to customers. (?)

Yes

No → Go to question 11

(?) The following activities shall not be defined as R&F (except when they are an integral part of an R&D project):

- Routine testing and quality control.
- Technical service, problem solving in production and engineering projects using existing technology.
- Pre-planning and other routine work at the start of production.
- Adoption of known, established technology in business.
- Ordinary upgrade or use of software and system software in a new area of use or for a new purpose.

The next questions are about persons employed in the enterprise that took part in the enterprises' own R&D activity in 2022.

Include:

- both full time and part time employees.
- employees in a R&D department/-center; in case your company has such a department/center.
- employees that worked with R&D in other departments.
- employees in administration, and persons in supporting functions that have been involved in R&D.

Do not include contracted personnel.

**2. How many persons employed in your enterprise where involved in intramural R&D activities in 2022?**

If the number of persons that worked with R&D varied much over the year, please give an average. (?)

(?) R&D-persons should spend at least 0,1 man-years (i.e. 10 % of their work time) on R&D activities.

	Number of R&D persons	Of which women
With PhD.....		
With higher degree education (Master's degree or similar).....		
With lower degree or no education (?).....		
Number of employed R&D persons in total.....		

(?) By lower degree or no higher education is meant an intermediate subject, bachelor's degree or vocational school or lower.

**2.1 How many R&D man-years were performed in 2022?**

A full-time employee working 50 % on R&D has performed 0,5 R&D man-years (full-time equivalent).

	R&D man-years	
[X] With PhD.....		
[X] with higher degree education (Master's degree or similar)...		
[X] with lower degree or no education.....		
R&D man-years performed in total .....		

**2.2 Were any of the [X] R&D persons with PhD or higher degree education foreign nationals?**

Yes

No → Go to question 2.3.

**How many were foreign nationals?**

R&D persons

**2.3 What type of tasks did the R&D persons employed in the enterprise perform in 2022?**

	Number of R&D persons	Of which women
<b>Product- or process developers, researchers and project managers</b> ..... Have developed new knowledge, products, processes, methods or systems, and/or planned and managed R&D projects	<input type="text"/>	<input type="text"/>
<b>Other R&amp;D personnel (including technicians)</b> ..... Support personnel for R&D, including technicians that execute R&D tasks defined by researchers/developers. For example, machinists, laboratory personnel, administration directly engaged in an R&D project.	<input type="text"/>	<input type="text"/>
Not distributed .....	<input type="text"/>	<input type="text"/>
In total (collected from question 2).....	<input type="text"/>	<input type="text"/>

**2.4 How many R&D man-years were performed in these tasks?**

	R&D man- years performed
<b>[X] product- or process developers, researchers and project managers</b> ..... Have developed new knowledge, products, processes, methods or systems, and/or planned and managed R&D projects.	<input type="text"/> , <input type="text"/>
<b>[X] other R&amp;D personnel (including technicians)</b> .....	<input type="text"/> , <input type="text"/>
Not distributed.....	<input type="text"/> , <input type="text"/>
In total (collected from question 2.1).....	<input type="text"/> , <input type="text"/>

**3. Were contracted persons (beyond own employees) involved in the enterprise's R&D activity in 2022?**

Contracted R&D persons have to be integrated in the enterprises' intramural R&D activity. This means that they have worked together with the enterprises' own R&D personnel and have been subject to the enterprises' direct management. It could for example be consultants.

Acquired/purchased R&D-services should not be listed here, but under question 13. (?)

(?) Acquired R&D services is when others perform R&D on behalf of the enterprise without being integrated into the enterprises' own R&D activity. External persons performing such R&D should therefore not be counted as contracted R&D personnel. R&D services acquired from others could for example be outsourced.

- Yes
- No → Go to question 4

**How many were contracted?**

Contracted R&D persons

**How many R&D man-years did the contracted persons perform?**

R&D man-years

**A question regarding 2023:**

**4. How many employed persons and man-years do you estimate that the enterprise will use for intramural R&D activity in 2023?**

Include only own employees, do not include contracted personnel.

R&D-persons

R&D man-years

**5. Specify the expenditures for R&D performed within the enterprise in 2022.**

All costs shall be specified without VAT. Example: NOK 1.2 million must be entered as 1200.

For more information, we refer to the guidelines given on the last page.

**Intramural current costs for R&D**

Compensation of the [X] R&D man-years (x: specified in question 2.1).....	<input type="text"/>	000 NOK
Cost of the [X] R&D man-years performed by contracted personnel (x: specified in question 3).....	<input type="text"/>	000 NOK
Other current costs to R&D (without depreciation).....	<input type="text"/>	000 NOK

- Acquisition of R&D services shall not be specified here, but in question 11

**Investment costs for R&D (purchase value), without depreciation**

Buildings, property, etc. for R&D.....	<input type="text"/>	000 NOK
Machinery, equipment, instruments, etc. for R&D.....	<input type="text"/>	000 NOK
Total intramural R&D expenditure .....	<input type="text"/>	000 NOK

**A question regarding 2023.**

**6. How much do you estimate that the enterprise will use for intramural R&D in 2023?**

000 NOK

## 7. How was the R&D expenditure distributed on the following technological fields in 2022?

Biotechnology (?).....		%
Nanotechnology (?).....		%
New materials, excluding nanotechnology (?).....		%
Information- and communication technology (ICT) (?).....		%
Other fields of technology.....		%
Please specify other fields of technology .....		
<b>Not distributed</b> .....	<b>100</b>	%

(?) **Biotechnology:** Use of natural sciences and technology on living organisms and parts, as well as products and models of these, so that living- and non-living material is altered to achieve knowledge, products and services. The definition of biotechnology does not include separate subjects, including ethical, juridical and societal aspects.

(?) **Nanotechnology:** New techniques developed for synthesis and processing for the design of functional and structural materials, components and systems, where dimensions and tolerance in the spectrum 0,1 to 100 nanometers is of crucial importance. Ethical, juridical, societal or health/environment/safety aspects with nanotechnology.

(?) **New materials, except nanotechnology:** Functional materials (materials with certain chemical, physical or biological traits). Materials where the traits purposefully change when using nanotechnologies should be listed under nanotechnology.

(?) **Information- and communication (ICT):** ICT-technology such as artificial intelligence, robotics and automation, smart components, hardware, communication technology, the internet of things, software and user interface. Digital security, such as e.g. encryption, biometry and privacy. Digital transformation/implementation of ICT in the transfer between technology and humans, organizations and/or society; use of digital processes to simplify, streamline and optimize business models, organizations, products, services and processes.

## 8. Did the enterprise have any R&D activity in some of the following thematic fields in 2022?

Please mark all the relevant fields. If your R&D activity overlaps between fields, mark all of these.

### A. Energy

- Renewable energy: Water, wind, bio energy, sun, geothermic, waves, etc.
- Energy efficiency and change: Energy saving in general, such as within construction, manufacturing, transport, petroleum production, power production and energysupply, as well as within the energy system. Includes also energy carriers such as battery and hydrogen.
- Petroleum: Offshore exploration and extraction of petroleum resources, field development, production and transportation, as well as HMS in the oil- and gas industry. Maritime operations linked to petroleum should be reported under Maritime. Energy efficiency improvement/Environment is to be reported under, in turn, Energy efficiency improvement- and restructuring and Environment.
- Other energy: Nuclear power and energy production from coal.

### B. Climate

- CO<sub>2</sub> handling: Capture, transport and storing of CO<sub>2</sub>.
- Climate technology and other emission restrictions: Technology for reduction of climate gas emissions and other climate drivers. Social framework conditions and instruments for emission reductions.
- Climate and climate change adaption: The climate system, climate changes and consequences of, and adaption, of these (do not include climate technology/emission reductions).

### C. Environment

- Environmental technology: Technologies that directly and indirectly improve the environment, except fields mentioned above. Includes technologies for minimizing pollution with help from cleansing, more environmentally friendly products and production processes, more efficient resource management, noise reduction and technological systems for reducing environmental impact.

- Onshore environment and society: Biological diversity, ecosystems and ecosystem services, pollution (except climate related), waste and recycling economy, onshore use, cultural monuments and -environments.

**D. Other fields**

- Agriculture: Production, processing and market for agricultural products (agriculture, including livestock farming and forestry).
- Fishery: Fishing and harvest, processing and market for marine organisms. (Research on management shall be reported under Marine.
- Aquaculture: Production, processing and market for aquaculture products .
- Marine: Marine ecosystems. Surveillance, management, and impact on the sea and coastal area resources and environment. Includes possibilities for new bioresources.
- Maritime: Design, construction, and operation of ships for sea transport and all types of maritime operations, as well as services related to this.
- Health and care: Health and health promotion conditions, prevention, causal mechanism of diseases, reduction and treatment of diseases and functional reductions. Organizing and efficiency improvement of services in the health and care sector. Clinical and pharmaceutical R&D.
- The enterprise did not have any R&D on any of the fields above.**    → Go to question 9

**8.1 Please specify the percentage share of intramural R&D expenditure in 2022 that falls into the fields you marked above.**

The main areas (energy, climate, environment etc.) can overlap. The under areas within each main area should not overlap.

A. Renewable energy .....		%
A. Energy efficiency and change .....		%
A. Petroleum .....		%
A. Other energy.....		%
B. CO2-handling.....		%
B. Climate technology and other emission restrictions		%
B. Climate and climate change adaption .....		%
C. Environmental technology .....		%
C. Onshore environment and society.....		%
D. Agriculture.....		%
E. Fishery .....		%
F. Aquaculture .....		%
G. Marine.....		%
H. Maritime.....		%
I. Health and care .....		%

In question 5 you reported that the enterprise had intramural expenditures to R&D in 2022 amounting to NOK [X] 000.

**9. How were the intramural R&D expenditures funded in 2022?**

**Own funding:**

Own sources (sales, new equity).....  000 NOK

If any of this was venture capital, please specify amount.....  000 NOK

Loan from financial institutions or Innovation Norway  000 NOK

**External private funding:**

Norwegian enterprises in your enterprise group.....  000 NOK

Foreign enterprises in your enterprise group.....  000 NOK

Other Norwegian enterprises/ institutions.....  000 NOK

Other foreign enterprises/ institutions.....  000 NOK

**Public funding:**

The Norwegian Research Council.....  000 NOK

SkatteFUNN (tax reduction of intramural R&D, including disbursement).....  000 NOK

Support from Innovation Norway.....  000 NOK

Ministries, directorates, counties, municipalities or others.  000 NOK

Please specify:.....

**Other funding (from abroad):**

Funding from EU institutions (not national authorities).....  000 NOK

Other foreign funding.....  000 NOK

Not distributed.....  000 NOK

Expenditures in total (collected from question 5).....  000 NOK

**10. Did your enterprise sell or deliver R&D services to others in 2022?**

- Yes, to enterprises within your enterprise group
- Yes, to other enterprises, institutes, public authorities, etc. (contracts/commercial sale)
- No → Go to question 11

**10.1 What was the value of R&D services delivered to enterprises within your enterprise group?**

Units in Norway  000 NOK

Units abroad  000 NOK

**10.2 What was the value of R&D services delivered to other enterprises, institutes, public authorities, or others?**

Units in Norway  000 NOK

Units abroad  000 NOK



## 11. Did your enterprise acquire R&D services from others during 2022?

Acquired R&D is performed by others on behalf of the enterprise. It could be parts of an R&D project, or an entire R&D project.

- Include R&D services acquired from external actors, also R&D acquired from enterprises within the enterprise group.
- Do not include contracted personnel integrated in the enterprises' own R&D activity. (This is to be reported in question 3 and 5).

Yes

No → Go to question 12

(?) Acquired or purchased R&D includes R&D performed by other entities, for example:

- Other companies, both within or and outside their own group.
- Research institutes.
- Universities and colleges.

Also include support for R&D performed by others, even if the company itself does not directly benefit from it.

### 11.1 What was the value of the acquired R&D services from others in 2022?

Specify all costs without VAT. Example: NOK 1.2 million must be entered as 1200.

Do not include the expenditures for contracted personnel or intramural R&D costs specified in question 5.

Norwegian enterprises in your enterprise group.....		000 NOK
Foreign enterprises in your enterprise group.....		000 NOK
Other Norwegian enterprises.....		000 NOK
Other foreign enterprises.....		000 NOK
Research institutes and universities in Norway.....		000 NOK
Research institutes and universities abroad.....		000 NOK
Professional institutes etc. (e.g. contingents, fees, licenses, grants, etc.).....		000 NOK
Total extramural R&D expenditures .....		000 NOK



If you have any comments to the information you have given, you can write them here:

The information below is the information SSB has about your enterprise's contact person.

If the information is incorrect or insufficient, please update in the relevant fields below:

Name

Phone

E-mail

Not for reporting

# Guidelines

This is an abridged version of the guidelines that can be found on the reporting page <https://www.ssb.no/innrapportering/forskning-og-utvikling>

## What do we mean by research and development (R&D)?

R&D comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge or to devise new applications of available knowledge.

**Research** is systematic work aimed at collecting new knowledge. **Development** is systematic or experimental work that uses existing knowledge to develop new or improved materials, products or processes. R&D does not need to be located in specific R&D departments, it could also be organized in a different manner, or be a part of the enterprise's other activities.

It can be difficult to distinguish R&D activity from more ordinary activities. In order for an activity to be defined as an R&D activity, it must fulfil five basic criteria:

1. **Novelty:** The objective of R&D activity is to obtain new knowledge or find new applications of knowledge in the enterprise's industry.
2. **Uncertainty:** The solution, use of resources and results of the R&D activity are not obvious in advance, even for a person with basic knowledge in the field
3. **Creative:** The R&D activities use or develop original ideas, hypotheses and concepts.
4. **Systematic:** R&D activity is planned and budgeted, often organised as a project, but can also be targeted activity carried out by a person or a group.
5. **Transmissibility/reproducibility:** R&D activity should increase the knowledge base in its field, and therefore it should potentially be able to be transferrable and reproducible by others.

## What is R&D activity?

"R&D activity" is the sum of actions that an R&D actor deliberately performs to generate new knowledge or new products/processes. The R&D concept encompasses three types of activities:

- **Basic research** is experimental or theoretical activity that is primarily carried out to obtain new knowledge without a view to special application or use.
- **Applied research** is also activity of an original nature that is carried out to obtain new knowledge. Applied research is primarily aimed at specific practical goals or applications.
- **Experimental development work** is a systematic or experimental activity that uses available knowledge from research or practical experience, and which is aimed at:
  - manufacturing new or improved materials, products or devices.
  - developing new or improved processes, systems or services.

In most cases, R&D activities can be grouped into "R&D projects". Each R&D project consists of different R&D activities that are organised and managed for a specific purpose and have their own objectives and performance expectations associated with them. It can also be targeted activity carried out by a person or a group.

The R&D activities may be:

- **product-oriented**, i.e., to develop new or improved goods and services with regard to quality and mode of use (not cosmetic changes or product differentiation).
- **process-oriented**, i.e., creating new or improved production techniques in the form of improved inputs (materials, equipment, energy and labour) and systems for managing production and administrative routines.

## R&D integrated in development work for others

R&D can be carried out for the enterprise's own use, or it can be included as an integral part of a development contract for customers. In such projects, there is often a need for new knowledge and new solutions, and technological development and problem solving often require R&D. Although it may be difficult to demarcate the R&D part of this type of contract, you must also report such R&D work.

## How to distinguish R&D activity from other activities?

### Examples of non-R&D activities:

- Normal construction and planning work.
- Adoption of known, established technology in business.
- Ordinary upgrading (e.g., of equipment, materials).
- Ordinary upgrade or use of software and system software in a new area of use or for a new purpose.
- Routine testing and quality control.
- Technical service, problem solving in production and engineering projects using existing technology.
- Pre-planning and other routine work at the start of production.
- After Sales Service and Troubleshooting/Error Correction.
- Courses and competence enhancement outside R&D projects.

### Border cases between R&D activity and other activities:

- Construction of prototypes and test facilities, industrial design, equipment installation and full-scale test production with subsequent development is counted as R&D. If testing is complete, the first units in a test production are not considered R&D.
- When software and system software are part of an R&D project, they are classified as R&D. The same applies to software and system hardware research and development. It is not classified as R&D if it is an ordinary upgrade or custom of software and system hardware in new use or for new purpose.
- Industrial design is considered R&D if the design is necessary to run the R&D project.
- Industrial technology and equipment installation associated with the development of new products and new processes is counted as R&D. If it is part of the ordinary production process, it is not considered R&D.
- Sample production is R&D if the production involves full-scale testing with additional design and technology development. All other related activities are not considered R&D.
- Patent and licensing work is not considered R&D, unless this work is directly linked to R&D. Do not include administrative and legal work in connection with patents or licenses.
- Data collection is not to be regarded as R&D, except when it is an integral part of an R&D project.

## What do we mean by costs for intramural and purchased R&D?

- **Intramural R&D:** R&D activities performed by own or contracted personnel. Include the R&D activity regardless of if the work is performed in their own R&D department or not. Do not include work carried out in your own R&D department that is not of an R&D nature. Include R&D that is performed on assignment for others, or as part of a delivery to customers.
  - Compensation of employees includes earned salary, employer's National Insurance contributions and other benefits. Do not use approved hourly rates in the SkatteFUNN scheme. Compensation of employees shall correspond to the man-years of the R&D personnel.
  - Costs of contracted personnel includes costs for persons directly engaged in the enterprise's R&D project(s) but who are not employed by the enterprise. Purchase of R&D which is exclusively performed by others, must be reported under purchased R&D services.
  - Other operating expenses includes direct costs to materials, equipment, travel, meeting and course costs for own R&D personnel. Also includes share of shared rent, light, fuel and office services. Do not include depreciation.
  - Investments are acquisitions minus annual sales of fixed assets (excluding depreciation) utilized in R&D activities, both capitalised and directly expensed. Tangible assets are plants, buildings, transport equipment, machinery, inventory, instruments and equipment with a useful life of more than one year. Also includes proportionate share of tangible property, plant and equipment. Do not include depreciation.

**Purchased R&D services:** Purchased R&D services are when others perform R&D on behalf of the enterprise without being integrated into the enterprise's own R&D activity. External persons performing such R&D shall therefore *not* be considered contracted persons. Purchased R&D can, for example, be outsourced. Include support for R&D performed by others, even if the enterprise itself does not benefit directly from it. Do not include deductible VAT.