

The science system in the Netherlands

an organisational overview

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1. Introduction and contents of the memorandum

The basis for this memorandum describing the science system in the Netherlands was a question put to the Minister of Education, Culture and Science in the Lower House of Parliament during general consultations on research policy.¹ It was remarked that "... all the organisations and institutes for basic research making up the world of science in the Netherlands are for outsiders an extremely complicated and not transparent system". The Minister was asked to come up with an easily understandable flowchart making clear "which organisations have which functions and how they relate to one another". The memorandum requested was sent to the Lower House of Parliament in December 2007.² The present memorandum is based on that memorandum of December 2007 but has been revised in the light of contributions by a number of scientific organisations (VSNU, NWO, KNAW, TNO).

The purpose of this memorandum is to provide an overall understanding of the science system in the Netherlands. Section 2 begins with a description of the main points of current science policy. Section 3 gives a general idea of the way the system is organised; this is worked out in greater detail in Section 4. The memorandum concludes with a number of factsheets.

¹ Parliamentary Documents [*Kamerstukken*] 29 338, no. 61

² Appendix to Parliamentary Document 29 338, no. 69 (5 December 2007)

2. Main points of Dutch science policy

November 2007 saw the publication of *The Highest Good. Strategic Agenda for Higher Education, Research, and Science Policy* [*Het Hoogste goed. Strategische agenda voor het hoger onderwijs-, onderzoek- en wetenschapsbeleid*].³ Amongst other things, this document sets out the ambitions and intentions of the Dutch Government in its science policy. The Government's aim is to create an excellent climate for research, consisting of:

- an ambitious climate in which innovative researchers achieve scientific breakthroughs, with the Netherlands being a leader in areas with interesting developments, and excelling in those areas in which the country has a strong position;
- self-management within scientific fields by reinforcing independent and pure scientific research, with talented researchers being given a more central role and choices being made on the basis of scientific developments; this will create "nuclei" of top-class pioneering research;
- attention to talent and the development of talent by retaining talent on the basis of stronger national selection, providing facilities for outstanding research based on stable direct government funding (the "first flow of funds"), and allowing freedom of choice as regards the location with the most encouraging climate;
- accents on scientific fields, with the choices made between fields needing to link up to the agendas of government, business and industry, and civil-society organisations;
- solid anchoring of research in civil society, including full-scale introduction of the demand-driven approach at TNO and the Large Technological Institutes; strengthening of practice-oriented research at universities of professional education [*hogescholen*] in order to reinforce the relationships between knowledge institutes and professional practice; and attention to intellectual property and scientific and technical communication.

These ambitions are the basis for the measures to be implemented.

³ <http://www.minocw.nl/documenten/52658a.pdf>,
<http://www.minocw.nl/documenten/52658b.pdf> and
<http://www.minocw.nl/documenten/52658c.pdf>

3. Organisation of the science system (main outlines)

Producing an easily understandable flowchart that does full justice to the structure of the world of science in the Netherlands and the relationships between its components is by no means a straightforward matter. An example of such a flowchart is that produced by the Rathenau Institute (**Figure 1**), but this omits the institutional relationships so as not to make the diagram too complicated. Nevertheless, this overview gives a good idea of the structure of the science system in the Netherlands.

If we attempt to provide a description of that system, we can distinguish between a number of different levels:

- 1) Politics and government
- 2) Advisory bodies
- 3) Bodies funding research
- 4) Intermediary organisations and “Temporary Task Forces”
- 5) Institutions that carry out research
- 6) Other (supporting) institutions.

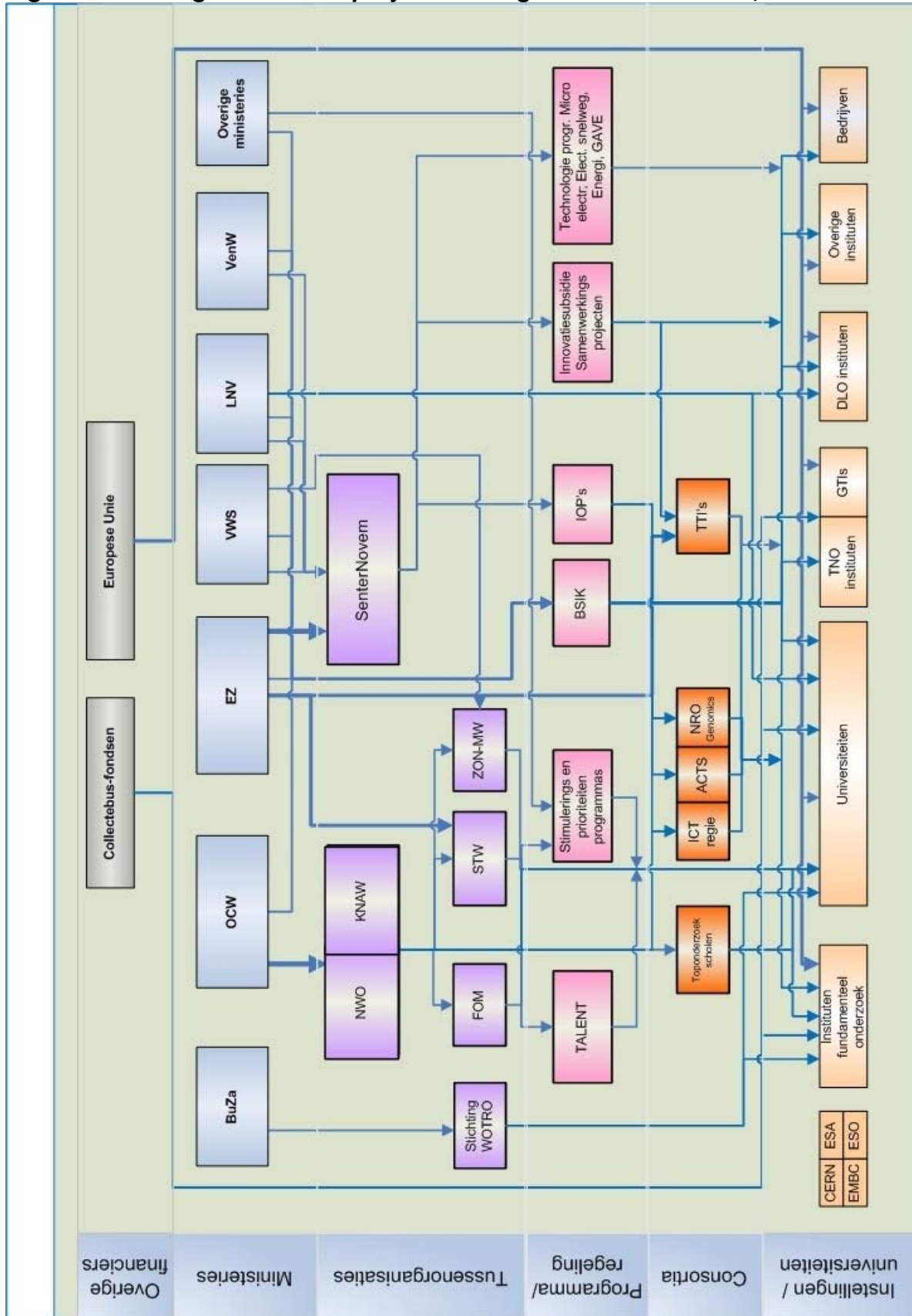
One can then fill in these levels with institutions and organisations that have tasks and responsibilities at the level concerned. Some institutions operate at more than one level because they have more than one function within the science system. Two examples are the Netherlands Organisation for Scientific Research (NWO) and the Royal Netherlands Academy of Arts and Sciences (KNAW). NWO is an intermediary organisation but also an organisation with institutes that carry out research; the Academy is an intermediary, an advisory body, and an organisation with institutes that carry out research).

The connections between the various different levels take the form of a variety of flows of funds, legislation and regulations, policy memorandums and advisory reports, formal consultations, and a large number of personal contacts. The flows of funds consist of institutional funding and the many programmes and projects for carrying out research. There are direct relationships between the ministries (as providers of funds) and research institutions, but also indirect relationships in which intermediary organisations are the link between ministries and research institutions.

The following section describes the various different levels of the science system in the Netherlands, focusing on tasks and responsibilities. It deals not only with public-sector research but also with financing and implementation of research by the private sector, although in a more restricted form. This description is followed by a number of factsheets giving more specific information.

The figures in this memorandum are taken from statistics provided by Statistics Netherlands (CBS), the Association of Universities in the Netherlands (VSNU), and the various institutions within the science system. Up-to-date figures have been used as far as possible.

Figure 1: The organisation of project funding in the Netherlands, 2005



Source: Versleijen, A. (ed.), *Dertig jaar publieke onderzoeksfinanciering in Nederland 1975–2005*, The Hague, Rathenau Institute, SciSa report 0703 (figure adapted)

4. The various levels of the science system

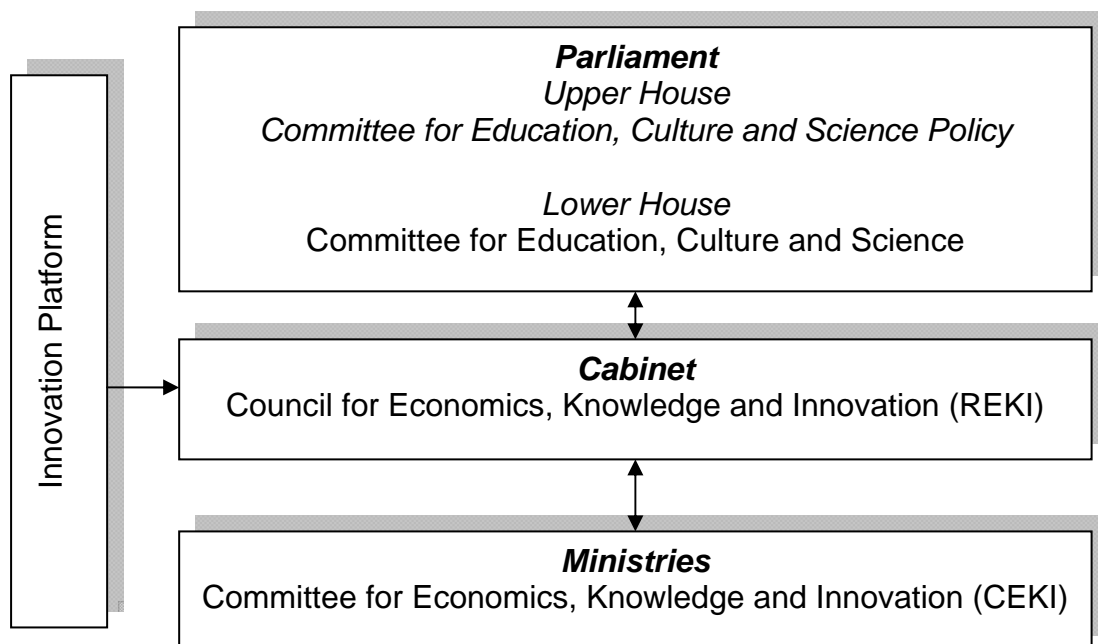
This section gives a description of the various different levels of the science system in the Netherlands.

4.1 Politics and government

This level of the Dutch science system is made up of Parliament, the Cabinet itself, and the various ministries. The Netherlands has two coordination mechanisms at this level (**Figure 2**):

- The various Cabinet councils, which are based on the six basic priorities underlying the 2007 coalition agreement. One of the councils concerns itself with issues in the field of economics, knowledge, and innovation,⁴ and consists of the ministers most directly involved (REKI).
- These subcommittees have their counterpart at the level of the ministries (CEKI).

Figure 2: The system of science and scholarship at the level of politics and government



In general, issues in the field of science policy are brought up within the Council for Economics, Knowledge and Innovation (REKI), which prepares the decision-making for the Cabinet as a whole. Preparations for effective decision-making within the REKI are made at ministry level by the Committee for Economics, Knowledge and Innovation (CEKI).

⁴ This is basic priority 2 of the coalition agreement.

For consultations between Parliament and the Cabinet, the Lower House has a Committee for Education, Culture and Science, while the Upper House has a Committee for Education, Culture and Science Policy.

The Cabinet set up the Innovation Platform in 2003 to advise it on issues in the field of higher education, research, and innovation. A second Innovation Platform was then set up as a successor early in 2007. (See also Section 3.2.)

4.2 Advisory bodies

The Dutch science landscape includes a number of advisory bodies.

AWT

The Advisory Council for Science and Technology Policy (AWT) is an independent body set up to advise the Government and Parliament on policies relating to scientific research, technological development, and innovation. It advises both on request and at its own initiative. The AWT produces an annual overview of the matters to be advised on in that year in the form of the AWT Programme of Action.

The members of the Advisory Council are taken from various sections of society, for example research institutes and business and industry. Members are appointed in a private capacity. The Advisory Council is supported in its work by a bureau, which prepares its advisory reports.

The AWT was set up by law in 1990. Its official task is formulated as follows in the Advisory Bodies Framework Act [*Kaderwet Adviescolleges*]: “The Advisory Council advises the Government and the Dutch parliament on science and technology policy, in both a national and an international context. The subject of the provision of scientific and technological information is included.”

The AWT makes use of the input of parties active in the fields of science and innovation. When preparing advisory reports, it also makes use of contacts with policymakers and politicians. In addition to advisory reports and advisory memoranda, it produces background studies.

The Civil Service Innovation Memorandum [*Nota Vernieuwing Rijksdienst*] of September 2007 makes proposals for reorganising the advisory infrastructure and for a more flexible approach. These proposals no longer provide for a continuing role for the AWT. The Government is still discussing the system of Advisory Councils with Parliament.

Royal Netherlands Academy of Arts and Sciences (KNAW)

The Royal Netherlands Academy of Arts and Sciences has long provided advice to government. Its advisory role is laid down in the Higher Education and Research Act [*Wet op het hoger onderwijs en wetenschappelijk onderzoek, WHW*]: the Academy is to advise the Government, either on request or at its own initiative, on matters in the

field of scientific endeavour. For this advisory task, the Academy has a number of Advisory Councils (**see box**). These are made up of leading experts, who may be members of the Academy or other scientists. The Advisory Councils receive substantive support from the Academy's Bureau.

Box: The Academy's broad disciplinary Advisory Councils (with year of formation)

- Biology Council (1923)
- Social Sciences Council (1959)
- Committee for Biochemistry and Biophysics (1963)
- Academy Committee for Chemistry (1975)
- Council for Medical Sciences (previously the Committee for Medicine) (1984)
- Council for the Humanities (1987)
- Council for Earth and Climate (previously Academy Council for Earth Sciences) (1991)
- Academy Council for Mathematics (1994)
- Council for Physics and Astronomy (2000)
- Council for Technical Sciences (2001)

With effect from 1 January 2008, a number of the councils were combined to form five Advisory Councils:

- Council for the Humanities
- Council for Medical Sciences
- Social Sciences Council
- Council for Technical Sciences, Mathematical Sciences and Informatics, Physics and Astronomy and Chemistry
- Council for Earth and Life Sciences

The Academy also has advisory committees in such specific fields as ethics, animal experiments, global change, science and art, etc.

The Advisory Councils also play an important role in the Academy's science foresight studies by broaching the topics which they consider merit such studies. The Academy's foresight studies form part of its advisory work; their primary purpose is to give direction to thinking regarding scientific developments, thus providing a basis for the policy to be pursued and the priorities to be selected.

Innovation Platform

The Innovation Platform was set up by the then Cabinet in 2003 and continued by the current Cabinet in 2007. Its task is to create the conditions, make the connections, and develop the vision needed to promote innovation and entrepreneurship in the Netherlands. In order to do all this, the Innovation Platform takes a critical look at the way the knowledge and innovation system functions.

The platform is made up of various key players within the knowledge-based economy, namely experts from the fields of politics, business and industry, science, and education. It is chaired by the Prime Minister; the ministers of Education, Culture

and Science and Economic Affairs are also members. The Innovation Platform is supported by a project office, which implements projects and provides advice.

Knowledge Chambers

In the light of discussions regarding the knowledge and advice function within government, virtually all the ministries have set up a “Knowledge Chamber” [*kenniskamer*]. Knowledge Chambers are intended to promote the interaction between the top echelons of the ministry on the one hand and knowledge institutions on the other. This works both ways: a ministry formulates topics where it has a demand for knowledge, as regards both current and future policy, and the knowledge institutions then indicate whether they can meet that demand. In that sense, the knowledge institutions reflect the development of policy. In addition, scientists and scientific institutions are apprised of the questions posed in policy fields, allowing them to take account of those questions in the research in their particular discipline. All the ministries now have some form of Knowledge Chamber, whether or not based on existing facilities.

Sector councils

Starting in 1987, there was a system of sector councils whose task it was to provide advice in specific fields to the ministers responsible for those particular areas of policy. The sector councils were made up of representatives of the relevant civil-society groupings, the world of science, and government. The umbrella body for the sector councils was the Consultative Committee of Sector Councils for Research and Development (COS). The system of sector councils was done away with as of 1 February 2008.

Other

The Netherlands Scientific Council for Government Policy (WRR), the Social and Economic Council (SER), and the Planning Agencies can also advise on topics relating to aspects of the knowledge-based economy that are in line with their work, which is not specifically concerned with the knowledge-based economy.

4.3 Bodies funding research

The amount of funding provided for scientific research in the Netherlands was estimated in 2006 at some EUR 9 billion; most of this (approximately half) is provided by businesses. Government is the second-largest provider of funds, accounting for more than a third. Over the years, the proportion of funding derived from foreign sources has increased substantially, now accounting for more than 10%, with most of that coming from foreign companies.

Table 3 provides an overview of the statistics for funding of R&D in the Netherlands.

Table 3: Expenditure on R&D in the Netherlands, by source of funds, 2006

Government	Companies	Other national sources	Foreign
the various ministries	- large - medium - small	- own funds of public institutions - private non-profit funds	- EU - businesses
EUR 3.3 billion = 37%	EUR 4.4 billion = 49%	EUR 0.1 billion = 1%	EUR 1.1 billion = 12%
Total: EUR 8.9 billion			

Source: Statistics Netherlands (CBS), supplemented by an estimate by the Ministry of Education, Culture and Science

Government

A large proportion of Dutch research is financed by central government, with the Minister of Education, Culture and Science being responsible for coordinating science policy on science and scholarship.⁵ In the international context, that responsibility is shared by the ministers of Economic Affairs and Education, Culture and Science. Up to now, science policy has been based on the Science Budget (until 2000, a Science Budget was published annually; since then it has been published every four years). In 2007, the policy documents for science policy and higher education⁶ were combined in the Strategic Agenda for Higher Education, Research, and Science Policy.

The coordination task of the Minister of Education, Culture and Science finds expression in the responsibility for the functioning, extent, quality, and innovative capacity of the system of research and science. The Minister consults with the Lower House of Parliament on behalf of the Cabinet. The other ministries have their own responsibilities, specifically for the research that they commission themselves, and in some cases they are also responsible for research institutions in their own policy field.

Government funding for scientific research carried out in the Netherlands is provided in a number of different ways:

- a) provision of a fixed contribution to institutions (“institutional funding” or “basic funding”), for which there may or may not be management responsibility;
- b) funding of research via intermediary organisations (such as NWO, KNAW, and SenterNovem);
- c) funding of research via the ministry’s own knowledge institutes, for example at the Ministry of Justice and the Ministry of Health, Welfare and Sport;
- d) direct funding of policy-oriented research.

⁵ In that capacity, the Minister also collects data annually on the expenditure on R&D by the various different ministries. Based on these budgetary figures, the Ministry of Education, Culture and Science draws up the Total Research Financing (TOF) survey; this is submitted to the Lower House of Parliament each year.

⁶ The Higher Education and Research Plan (HOOP) comprises the policy intentions in the area of higher education.

In addition, part of the government budget, some EUR 200 million, goes to international organisations (CERN, ESA, ESO, EMBL, and EMBC) or to foreign researchers, specifically from the Ministry of Foreign Affairs (Department for Development Cooperation).

Besides financial instruments, the Government has available the instruments of legislation/regulation and consultation at managerial level.

Factsheet 1 provides a description for each ministry of the financing modalities and the specific relationships between the departments and the research institutes.

Companies

Companies finance primarily their own internal research (82% of private-sector research is financed by companies; the figure is as high as 95% when financing by foreign companies is included), but they also finance research at universities and semi-public institutions.

Other national sources

These sources of funds are relatively minor and are derived from the internal resources of public institutions (universities and research institutions) and funds provided by charities that raise funds from the public (private non-profit institutions). The Netherlands has had a number of such charities since the mid-twentieth century, focusing on particular disorders or groups of disorders. These organisations act as a sounding board for particular groups of patients and they consequently devote a significant amount of money not only to providing information but also to scientific research (some EUR 80 million a year).⁷

Foreign

Funding from abroad has increased enormously over the years, from 2% in 1990 to almost 15% in 2005. This source consists on the one hand of private funding, namely funding of companies by companies, and on the other hand of funding by the EU via the EU Framework Programmes. The Framework Programmes were set up in mid 1980s and are increasing significantly in their extent.

4.4 Intermediary organisations and “Temporary Task Forces”

Intermediary organisations carry out some of the tasks of government as regards funding research in the Netherlands. The most important organisations at this level are NWO, the KNAW, and SenterNovem. NWO also accommodates a number of “Temporary Task Forces” [regieorganen].

⁷ The two largest charities are the Queen Wilhelmina Fund (funding cancer research) and the Dutch Heart Foundation.

Netherlands Organisation for Scientific Research (NWO)

NWO – the Dutch “research council” – has a budget of more than EUR 500 million and works to promote quality and innovation in scientific research. NWO also initiates and promotes new developments in scientific research and the dissemination of the results of the research it initiates and fosters for the benefit of society.

NWO is an independent administrative body under the responsibility of the Ministry of Education, Culture and Science. The Minister approves NWO’s budget and responds to its strategic plan. The basis for NWO’s work is to be found in the NWO Act. NWO operates primarily by allocating funding. Funds are distributed, on the basis of programme and project proposals, to the universities (the “second flow” of funds, i.e. indirect public funding) and to the nine NWO institutes, but also to other research institutes. NWO finances primarily basic scientific research but also, through the STW Technology Foundation, research of a more application-oriented nature (technical-scientific). Medical research is financed via the Netherlands Organisation for Health Research and Development (ZonMw), which is a combination of Netherlands Care Research [*Zorgonderzoek Nederland*] and the medical sciences division of NWO.

At the instigation of the government, NWO comprises a number of “Temporary Task Forces”, temporary bodies that direct matters in specific fields and finance research in areas that are important from the point of view of government policy. Temporary Task Forces have been set up in the areas of genomics (2002) and ICT (2005). NWO has also had another Temporary Task Force for a considerable time: Advanced Chemical Technologies for Sustainability (ACTS), a platform which operates in the field of catalysis.

See **Factsheet 3** for more information about NWO and its institutes.

Royal Netherlands Academy of Arts and Sciences (KNAW)

Within the Dutch research infrastructure, the Royal Netherlands Academy of Arts and Sciences, an association of scientists elected to membership on the basis of their achievements, has the role of an independent advisory body of the highest quality. The Academy acts as a forum for science within society, monitors the quality of science, advises on scientific endeavour, and promotes national and international scientific cooperation. It is also the umbrella organisation for seventeen institutes that carry out scientific work and that build up collections in the field of the humanities, social sciences, and life sciences. The Academy has a budget of some EUR 130 million, most of which (84% in 2006) is devoted to scientific research and the management of collections by the institutes, as well as to enabling access to collections.

The Academy has the following mission: *“As the forum, conscience, and voice of the arts and sciences in the Netherlands, the Academy promotes the quality of scientific and scholarly work and strives to ensure that Dutch scholars and scientists make the best possible contribution to the cultural, social, and economic development of Dutch society.”*

To promote contacts and interaction with young researchers, the organisation set up the “The Young Academy” [*De Jonge Akademie* (DJA)] in 2005. The Young Academy is intended for up-and-coming researchers who have already distinguished themselves and who have a wide interest in science. Ten new members are selected each year. The aim of the Young Academy is to bring promising young scientists into active contact with disciplines outside their own area of specialisation and with the options for interdisciplinary research, to encourage them to develop their views on the future of their own and related disciplines and of science policy, to have them communicate their scientific findings to the general public, and to support their own scientific development.

See **Factsheet 4** for more information about KNAW and its institutes.

SenterNovem

SenterNovem acts as an intermediary between national government on the one hand and companies, knowledge institutes, and local government on the other. The organisation was set up on 1 May 2004 by merging Senter and Novem, two agencies of the Ministry of Economic Affairs. SenterNovem brings together knowledge regarding innovation, energy, climate, the natural environment, and the living environment. The organisation’s main activities are:

- management of programmes and arrangements for research, development, demonstration, and market introduction;
- evaluation and monitoring of results and effects;
- knowledge dissemination, information, and advice on policy.

In 2006, the budget managed by SenterNovem came to about EUR 1.5 billion (only part of this concerns programmes for research and development). Most of the funding for SenterNovem is provided by the Ministries of Economic Affairs and Housing, Spatial Planning and the Environment.

4.5 Organisations carrying out research

The Netherlands has a large number of organisations that carry out research, either as their main task or in support of their main task. A distinction is generally made at this level between three sectors:⁸

- universities (including university hospitals);
- research institutes, including private non-profit (PNP) institutes;⁹
- companies.

Table 4: Expenditure on R&D, by type of research organisation, 2006

⁸ This categorisation is based on agreements between the countries that are members of the OECD, laid down in the Frascati Manual (2002), which comprises the international arrangements for the harmonised collection and use of statistics about research and development (R&D).

⁹ This is a fairly small sector in the Netherlands, which is why Statistics Netherlands includes it with research institutes.

Universities		Research institutes		Companies	
EUR 2.5 billion = 28%		EUR 1.3 billion = 15%		EUR 5.1 billion = 57%	
Sources of funds		Sources of funds		Sources of funds	
- Government	87%	- Government	68%	- Government	3%
- Companies	7%	- Companies	16%	- Companies	82%
- PNP	2%	- PNP	5%	- PNP	0%
- Foreign	4%	- Foreign	11%	- Foreign	15%
Total: EUR 8.9 billion					

Source: Statistics Netherlands; categorisation by sources of funds based on Statistics Netherlands' figures for 2003

Research is a broad concept and there are various different types. **Basic research** is driven primarily by curiosity and has no predefined objective; **applied research** is based on social issues or problems and therefore does have a particular context for application; and **development work** focuses on producing new materials, aids, processes, or products.¹⁰ Basic research is carried out primarily by universities and the para-university institutes that fall within the remit of NWO and KNAW. Applied research is focused at the research institutes, while development work mainly takes place within companies.

Universities and university hospitals

The Netherlands has fourteen publicly funded universities, which form part of the system of scientific research.¹¹ Beside carrying out research, the universities' tasks are to teach and to disseminate knowledge to society as a whole.

There are also eight university medical centres (UMCs), two in Amsterdam, and one each in Groningen, Leiden, Maastricht, Nijmegen, Rotterdam, and Utrecht. Since 1999, these medical centres have become somewhat more independent, with integration of each university's medical faculty and the medical centre. The core tasks of the UMCs are research and innovation, teaching and training, and treating patients.

Within the science system, the universities enjoy a considerable measure of autonomy. As in many countries, university research is financed by three different flows of funds:

- The first flow of funds: direct government funding on the basis of lump-sum financing;
- The second flow of funds: government funding via NWO and KNAW;

¹⁰ International agreements on how to quantify these types of research are laid down in the Frascati Manual. It should be noted that Statistics Netherlands does not distinguish between these three types when collecting data on research.

¹¹ One of these fourteen is the Dutch Open University (OU), but its tasks are very different to those of the other thirteen universities.

- The third flow of funds: funding in return for contract research carried out for third parties, including authorities, companies and charitable funds, and foreign subsidies.

To an increasing extent, the research carried out at universities is organised within a variety of institutional structures such as university institutes, research schools, graduate schools, and focus areas.

Research institutes

The research institutes group consists of a mix of institutes, subdivided into seven smaller groupings:

- the para-university institutes that fall within the remit of NWO and KNAW and which carry out basic research in a variety of scientific disciplines;
- TNO, the Dutch organisation for applied research serving government and businesses;
- the Large Technological Institutes (GTIs), which carry out research with a more application-directed focus in specific fields;
- the institutes that carry out agricultural research under the flag of Wageningen University and Research Centre;
- institutes that are part of a ministry;
- Leading Institutes (technological and societal);
- other institutes.

More information about these institutes is given in ***Factsheets 3 to 8***.

Companies

The majority of research in the Netherlands takes place within companies. In 2005, there were approximately 3700 companies with more than 10 employees that carried out R&D. Most of these (55%) have between 10 and 50 employees, a third have between 50 and 250, and 12% have more than 250 employees.

Eight companies each spend more than EUR 100 million on R&D: Akzo Nobel, ASML, DSM, NXP, Océ, Philips, Shell, and Unilever.¹² Together, these account for some three quarters of the expenditure on R&D by all companies in the Netherlands.

4.6 Other (supporting) institutions

There are various institutions and organisations that support and facilitate research in the Netherlands without actually carrying out research themselves. SenterNovem has already been mentioned. Part of SenterNovem is *EG Liaison*, the country's centre of expertise for the European Framework Programme, which supports potential applicants by providing information and advice, and by organising information days, training courses, and partner search programmes. Another example is the foundation *Stichting SURF*, which unites research universities, universities of professional

¹² Source: NOWT report *Wetenschappen- en Technologie Indicatoren 2008* (March 2008), available at www.nowt.nl.

education, and research institutions in creating pioneering ICT innovations. Their efforts enable these institutions to exploit the many opportunities offered by ICT in order to improve the quality of education and research.

Another category is made up of the country's *scientific libraries and the National library of the Netherlands (KB)*. The KB is the national library of the Netherlands but it also has the specific duties of enabling researchers and students to access scientific information and fostering the national infrastructure for such information.

Factsheet 1: Ministries

Table 5: Budgeted expenditure on R&D, by Ministry, 2008

	Millions of euros	in %
Total	4117.1	100
General Affairs	0.7	0.0
Foreign Affairs and Development Cooperation	76.1	1.8
Justice	21.1	0.5
Interior and Kingdom Relations	1.7	0.0
Education, Culture and Science	2716.5	66.0
Defence	81.6	2.0
Housing, Spatial Planning and the Environment	70.8	1.7
Transport, Public Works and Water Management	107.8	2.6
Economic Affairs	704.6	17.1
Agriculture, Nature and Food Quality	205.2	5.0
Social Affairs and Employment	3.6	0.1
Health, Welfare and Sport	127.6	3.1

Source: TOF survey 2006–2012; the survey is based on the ministries' budgets for 2008

1) The figures for the Ministry of Education, Culture and Science include the contribution made by the Ministry of Agriculture, Nature and Food Quality to the research component at Wageningen University; the figures for the latter ministry exclude this contribution (estimated at approximately EUR 90 million for 2008).

2) The figures for the Ministry of Education, Culture and Science include the contributions to financing TNO made by the Ministries of Housing, Spatial Planning and the Environment; Transport, Public Works and Water Management; Agriculture, Nature and Food Quality; Social Affairs and Employment; and Health, Welfare and Sport.

Ministry of General Affairs (AZ)

All the research carried out for the Ministry of General Affairs takes the form of contract research. This runs via the Scientific Council for Government Policy (WRR), which is part of the Ministry. The advice provided by the WRR is often supported by external research. In the past, the Netherlands Government Information Service (RVD) also contracted out research.

Ministry of Foreign Affairs/Development Cooperation (BuZa)

A small part of the budget of this Ministry finds its way in the form of fixed grants to three institutes: the Netherlands Institute of International Relations (Clingendael Institute), the African Studies Centre, and the Royal Tropical Institute (KIT).

The other available funds for research are provided – whether or not via the various Dutch embassies – in the form of grants for projects and programmes of institutes.

Ministry of Justice

The Ministry has its own internal research institute, the Research and Documentation Centre (WODC). The WODC is responsible both for implementing internal research

at the Ministry of Justice and for contracting research out to universities and research institutes. Programming for WODC research takes the form of a two-year plan approved by top officials of the Ministry. In addition, the Netherlands Forensic Institute (NFI), which is also part of the Ministry, carries out some of the Ministry's R&D work.

Ministry of the Interior and Kingdom Relations (BZK)

This ministry does not apply institutional funding, and its knowledge function has been decentralised. Besides a number of decentralised departments focusing on knowledge and research, the Ministry has a central Strategic Knowledge Generation Unit (SKO), which draws up the Strategic Knowledge Agenda and promotes knowledge generation by and with the various components of the Ministry. The knowledge function at the Ministry is in the process of being centralised. The new unit will focus in particular on strategic knowledge management and research programming for the whole of the Ministry.

Ministry of Education, Culture and Science (OCW)

The Ministry of Education, Culture and Science has broad political-administrative and financial responsibility for public-sector research in the Netherlands. Most of its budget is in the form of institutional or basic funding. The Ministry finances and is responsible for the policy of the major research organisations in the Netherlands and abroad, and coordinates the science policy of the national government.

Within the national government, this Ministry has the largest budget for research (approximately two thirds of the total). An important part of this budget takes the form of institutional funding or funding through intermediary organisations, with the Ministry having administrative responsibility:

- first flow of funds for the universities, as part of lump-sum funding;
- NWO and its institutes, KNAW and its institutes, and TNO (Education, Culture and Science is the coordinating ministry; other ministries also assist in funding TNO on the basis of demand-driven management and funding);
- institutes in the cultural field: the Netherlands Institute for Cultural Heritage (ICN), the Netherlands Institute for Art History (RKD), and the National Service for Archaeology, Cultural Landscape and Built Heritage (RACM).¹³

There is also institutional funding for:

- the Large Technological Institutes (GTIs);
- the Boekman Foundation (a study centre for arts, culture and related policy);
- the international research organisations CERN, ESA, ESO, and EMBL/BC (contributions are based on international conventions).

In addition, some of the funding provided by the Ministry takes the form of earmarked programme funding (FES funds, Innovational Research Incentives Scheme,

¹³ Created in 2006 by merging RDMZ (Netherlands Department for Conservation) and ROB (State Service for Archaeological Investigations).

genomics). To a restricted extent, research in support of the Ministry's own policy is contracted out in the form of project funding.

Ministry of Defence

The Ministry of Defence provides structural institutional funding to two institutes, TNO and the National Aerospace Laboratory (NLR). The special relationship between the Ministry and TNO is laid down in the TNO Act. The Ministry of Defence also provides project funding for sections of the Armed Forces and the central organisation; this primarily concerns procurement of materiel.

Ministry of Housing, Spatial Planning and the Environment (VROM)

Research expenditure by the Ministry of Housing, Spatial Planning and the Environment involves funding for the two Planning Agencies that fall within the Ministry's remit (the Netherlands Institute for Spatial Research and the Netherlands Environmental Assessment Agency), contributions to independent organisations, contracting by the Ministry itself, and programmatic research via intermediary organisations such as NWO, SenterNovem and the National Institute for Public Health and the Environment (RIVM). The Ministry contributes to funding TNO via the Ministry of Education, Culture and Science.

Ministry of Transport, Public Works and Water Management (V&W)

Research by the Ministry of Transport, Public Works and Water Management is intended both to support the knowledge infrastructure in the Ministry's policy fields and to generate knowledge in support of the Ministry's core tasks. The Ministry has three internal knowledge institutions: the four national services (formed in 2007 from the specialised services of the Directorate General for Public Works and Water Management [*Rijkswaterstaat*]): the Royal Netherlands Meteorological Institute (KNMI), the national institute dealing with the weather, climate, and seismology, and the Netherlands Institute for Transport Policy Analysis (KiM), which was set up in 2006 as an independent institute within the Ministry.

The Ministry also has relationships with

- the four Planning Agencies, with input being produced for the work programmes;
- most research universities and universities of professional education; for the research universities, this takes the form of subsidies for professorial chairs and assignment-based funding;
- TNO, by contributing to demand-driven programming and institutional funding;
- the Large Technological Institutes: institutional funding of "Deltares" (a partnership involving WL | Delft Hydraulics, GeoDelft, parts of TNO, and the specialised services of the Directorate General for Public Works and Water Management), the National Aerospace Laboratory (NLR), and the Maritime Research Institute Netherlands (MARIN);
- various other knowledge institutions on a variable basis (including WRR, SWOV, Connekt, CROW).

A major proportion of the Ministry's research involves project funding. Some of this is contracted out by the national services (previously the specialised services) and

some by the various directorates general. Since the reorganisation of the Directorate General for Public Works and Water Management, the national services have been responsible for providing advice and support and no longer for generating new knowledge. They therefore play an important role within the Ministry as regards knowledge, but not the role of research institute.

Ministry of Economic Affairs (EZ)

The Ministry of Economic Affairs makes fixed contributions to a number of institutes: NMI, MARIN, WL | Hydraulics, TNO, ECN, NIVR, NLR, the Leading Technological Institutes, NWO's STW Technology Foundation, the Holst Centre, NML, and ESA. The Ministry's budget includes two agencies whose task is not primarily research but where a certain amount of institute-related research takes place, namely Statistics Netherlands (CBS) and the Netherlands Bureau for Economic Policy Analysis (CPB).

A large number of the Ministry's projects and programmes are implemented via intermediary organisations such as SenterNovem, the NIVR and NWO/STW. Some of these programmes – those focusing on promoting innovation – have been included in the “omnibus” system. This is a legal framework whereby a wide range of varied initiatives receive financial support, for example Leading Institutes, research programmes, development credits, and feasibility studies. The omnibus system ensures that the financial support provided for programmes and projects is in line with the European, legal, and financial support frameworks.

Ministry of Agriculture, Nature and Food Quality (LNV)

Research by the Ministry of Agriculture, Nature and Food Quality is in part carried out at Wageningen University & Research Centre (WUR) and in part elsewhere. The Ministry finances the first flow of funds for Wageningen University and also the knowledge base, policy-supporting research, and statutory research tasks of WUR's specialised institutes (the institutes of the Agricultural Research Service (DLO)). The Ministry contributes to funding TNO via the Ministry of Education, Culture and Science.

Ministry of Social Affairs and Employment (SZW)

Research for the Ministry of Social Affairs and Employment is mainly contract research in support of policy. The Ministry contributes to funding TNO via the Ministry of Education, Culture and Science.

Ministry of Health, Welfare and Sport (VWS)

The Ministry of Health, Welfare and Sport provides institutional funding for a number of independent institutes such as the Netherlands Cancer Institute (NKI), the Netherlands Institute for Health Services Research (NIVEL), and the Trimbos Institute (the Netherlands Institute of Mental Health and Addiction). The Ministry contributes to funding TNO via the Ministry of Education, Culture and Science. The Ministry has two institutes of its own, namely the National Institute for Public Health and the Environment (RIVM) and the Social and Cultural Planning Office (SCP). RIVM can in part be seen as an internal knowledge centre at the Ministry. The Social

and Cultural Planning Office plays less of a role in that respect because it also has an interministerial purpose. On the basis of programme expenditure, some of the research in the field of care takes the form of research in support of policy. Some care research is carried out via the intermediary organisations, namely the Netherlands Organisation for Health Research and Development (ZonMw). Research in the field of welfare is contracted out.

Factsheet 2: Universities

Mission

The Netherlands has thirteen public-sector research universities, as well as the Dutch Open University, which provides distance learning. The universities focus on providing scientific education and carrying out scientific research, much of it basic research. They all provide initial programmes of scientific education, carry out scientific research, train scientific researchers or technological designers, and disseminate knowledge to society as a whole. The tasks of the universities are set out in the Higher Education and Research Act [*Wet op het hoger onderwijs en wetenschappelijk onderzoek, WHW*].

Funding for all university tasks

The universities have the following sources of funds available for all their tasks:

- *First flow of funds:* Each university receives a lump sum from the government (the Ministries of Education, Culture and Science and Agriculture, Nature and Food Quality) for all its activities, which can be categorised internally as teaching and research. There are no hard figures on how the lump sum is divided up within the universities for teaching or research, meaning that that division has to be estimated. The lump sum is based on a funding model comprising various teaching and research parameters, with the aim of distributing the sum total of funds to the universities. Some of these parameters are based on the universities' performance as regards teaching (degrees) and research (PhDs).
- *Second flow of funds:* This flow of funds is made up of the funding that the universities receive from NWO and the Royal Netherlands Academy of Arts and Sciences. In the case of NWO, this is primarily in the form of subsidies for appointing researchers; in the case of the Academy, it takes the form of funding for Academy Professors. The second flow of funds focuses specifically on the research activities of the universities and research facilities.
- *Third flow of funds:* This flow of funds comprises additional funding from public and private sources, both national and international. It comes from contract work for both research and teaching.
- *Tuition fees*, which are paid directly by students.

Within the framework laid down in the Higher Education and Research Act, the universities enjoy a large measure of autonomy. They are responsible themselves, for example, for the policy pursued on terms and conditions of employment and quality assurance regarding teaching and research. They maintain financial-administrative relationships with the Ministry of Education, Culture and Science, while the Ministry of Agriculture, Nature and Food Quality maintains these relationships with the Wageningen University and Research Centre.

Classification of research according to flows of funds

Most of the income Dutch universities receive for research comes from government (the first flow of funds directly, the second via NWO, and the third from contract

research). Other income is derived from companies, charities that raise funds from the public, and foreign (EU) sources.

Based on figures provided by Statistics Netherlands and NWO, it is possible to arrive at an overall estimate of how much research funding is derived from the three different flows of funds (figures for 2005):

- First flow of funds: EUR 1549 million, i.e. 63%;
- Second flow of funds: EUR 289 million, i.e. 12%;
- Third flow of funds: EUR 616 million, i.e. 25%.

Where the classification of research staff is concerned, there is an extensive dataset comprising staffing details that is assembled annually by the Association of Universities in the Netherlands (VSNU).¹⁴ The following table shows the trends over a number of years, categorised according to the various different flows of funds. It shows that there are shifts in the ratios between the flows of funds, namely in favour of the second flow of funds.

Table 6: Trends in flows of funds, in full-time equivalents (FTEs) and percentages

	1990	1995	2000	2005	2006
Academic research staff (total) (FTEs)	13,935	14,545	15,000	17,353	17,397
Academic research staff 1 st flow of funds (%)	58.0	56.4	52.5	48.4	48.2
Academic research staff 2 nd flow of funds (%)	15.3	16.8	20.3	24.1	23.8
Academic research staff 3 rd flow of funds (%)	26.8	26.9	27.1	27.5	28.0

Source: Education, Culture and Science (1990) and VSNU/KUOZ (the other years)

The following table provides some key figures for the individual universities. It shows the total income for each university and some key figures on research income (from the second flow of funds) and research staff.

¹⁴ The Association coordinates the collection of a variety of types of data on the universities: teaching, staffing, and research.

Table 7: Key figures for individual universities, 2006

	Income for teaching and research		Income from 2 nd flow of funds		Research staff	
	millions of euros	%	millions of euros	%	FTEs	%
Total	5306.2	100	293.6	100	17,397	100
UU	695.1	13.1	39.5	13.5	2166	12.4
UvA	568.4	10.7	29.4	10.0	1868	10.7
RUG	514.9	9.7	25.8	8.8	1473	8.5
TUD	487.6	9.2	29.5	10.1	1558	9.0
RU	472.8	8.9	35.6	12.1	1736	10.0
EUR	461.4	8.7	13.3	4.5	1275	7.3
VU	421.1	7.9	21.1	7.2	1532	8.8
LEI	404.7	7.6	29.5	10.1	1783	10.2
UM	311.6	5.9	8.1	2.8	911	5.2
UT	268.3	5.1	21.9	7.5	976	5.6
TUE	264.7	5.0	15.7	5.3	903	5.2
WUR	224.3	4.2	17.9	6.1	754	4.3
UvT	149.8	2.8	6.1	2.1	368	2.1
OU	61.5	1.2			95	0.5

Source: Income for teaching and research from universities' annual accounts, processed by CFI (agency of the Ministry of OCW); 2nd flow of funds from the annual report of NWO; research staff from VSNU/KUOZ. The order in which the universities are listed is based on the size of their income.

Knowledge dissemination

The third task of the universities involves the dissemination of knowledge to society at large. The universities carry out various activities focusing on making the results of their research useful for society. Besides training students as bearers of knowledge and publishing articles in scientific and scholarly periodicals, universities are involved in the development of spin-off businesses by providing advice and assistance. They also apply for patents, carry out contract research, and concern themselves with entrepreneurship. University staff may also hold positions at companies and in civil-society organisations.

Factsheet 3: Netherlands Organisation for Scientific Research (NWO) and its institutes

Mission

The Netherlands Organisation for Scientific Research (NWO)

- has the task of promoting quality and innovation in scientific research and initiating and promoting new developments in scientific research;
- carries out its task by allocating funds;
- promotes the dissemination of research results;
- focuses primarily on university research.

NWO activities

NWO invests in knowledge. The organisation is responsible for distributing the second flow of funds, i.e. government funding for outstanding research in the Netherlands. NWO distributes funding on a “competition” basis to the best researchers and research groups. These are selected by independent experts/scientists by means of peer review. NWO only provides assistance in the case of the best research proposals, with a pioneering and innovative character.

Personalised NWO grants – for example the Innovational Research Incentive Scheme, Rubicon, Top Talent, Aspasia, and Mosaic – and free competition enable talented researchers to carry out research on subjects they have chosen themselves. Working with scientists, companies, and other organisations outside the field of science, NWO also identifies social issues and arranges for thematic research programmes to contribute to tackling them. The organisation also provides funds to develop high-quality research equipment and for international exchanges. Finally, NWO gives the scientific community access to large-scale research facilities, including via the nine NWO institutes and through participation in international research facilities. It also ensures that the results of the research that it finances are shared with professionals within companies and other organisations and with the general public by means of accessible publications and meetings, books, periodicals, lectures, and special one-day conferences.

Some 5000 researchers at Dutch universities, institutes, and research centres carry out their work with financial support from NWO. NWO approves some 1500 research applications each year and has an annual budget of more than EUR 500 million, deriving mainly from the Ministry of Education, Culture and Science.

NWO strategy

In its strategic plan for the period from 2007 to 2010 – *Science valued! [Wetenschap gewaardeerd!]* (May 2006) – NWO focuses on three main “lines of action”:

- Opportunities for researchers: focusing on attracting and retaining talented researchers and promoting top-class, pioneering research;
- Consolidating strengths: focusing on the concentrated deployment of people and funds;

- Science for society: focusing on better harmonisation between social challenges and pioneering research.

NWO has also defined thirteen themes to focus on: Conflict and Security; Creative Industry; Cultural Dynamics; Sustainable Earth; Dynamics of Complex Systems; Use of Nanosciences and Nanotechnology; Brain and Cognition; Knowledge Base for ICT Applications; Quality of Life: Dynamics of Life Courses; Responsible Innovation; New Instruments for Healthcare; New Methods for Production, Storage, Transport and Use of Energy; and Systems Biology.

The NWO organisation

The NWO organisation consists of:

- **Eight divisions:** Earth and Life Sciences (ALW), Chemical Sciences (CW), Physical Sciences (EW), Humanities (GW), Social Sciences (MaGW), Physics (N), Technical Sciences (via the STW Technology Foundation), and Medical Sciences (via ZonMW);
- **Two foundations:** Netherlands National Computing Facilities Foundation (NCF), and WOTRO Science for Global Development;
- **Three “Temporary Task Forces”:** these direct matters and finance research in scientific areas that are important from the point of view of government policy: Advanced Chemical Technologies for Sustainability (ACTS), Netherlands Genomics Initiative (NGI), National ICT Research and Innovation Authority (ICTRegie);
- **Nine research institutes:** Centre for Mathematics and Computer Science (CWI), FOM Institute for Atomic and Molecular Physics (AMOLF), FOM Institute for Plasma Physics “Rijnhuizen”, National Institute for Subatomic Physics (NIKHEF), Institute for Dutch History (ING), Netherlands Institute for the Study of Crime and Law Enforcement (NSCR), Institute for Astronomical Research in the Netherlands (ASTRON), Royal Netherlands Institute for Sea Research (NIOZ), SRON Netherlands Institute for Space Research.

Most of NWO’s budget comes from the Ministry of Education, Culture and Science and the majority of it goes to the universities.

Table 8: NWO income, by source, 2006

Source of funds	Income (millions of euros)	as %
Total income	504.6	100
- Government funding from Ministry of Education, Culture and Science	308.1	61
- Specific subsidies from Ministry of Education, Culture and Science	102.8	20
- Subsidy from Ministry of Economic Affairs	34.6	7
- Subsidies and contributions from other ministries*	12.8	3
- Income from companies	10.4	2
- Subsidies and contributions from other third parties	25.5	5

- Other income	10.2	2
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* Contributions from the ministries of Justice; Interior and Kingdom Relations; Foreign Affairs/Development Cooperation; Agriculture, Nature and Food Quality; Housing, Spatial Planning and the Environment; Transport, Public Works and Water Management; Health, Welfare and Sport; and Social Affairs and Employment

Table 9: NWO spending, by category of recipient, 2006

Category of recipient	Spending (millions of euros)	as %
Total spending	522.9	100
- Universities	293.6	56.1
- NWO institutes	124.8	23.9
- Other	70.0	13.3
- Administration costs	34.8	6.7

Source: NWO Annual Report 2006

Some of this funding is distributed in the form of project and programme subsidies. Some goes to the nine NWO institutes in the form of a lump sum; the nine institutes can also compete for project and programmes subsidies.

Table 10: NWO institutes, 2006

NWO institutes	Staff (FTEs)		Expenditure (x EUR 1000)
	Total	Academic staff	
Total	1787.2	1001.7	124.8
Institute for Astronomical Research in the Netherlands (ASTRON)	203.7	63.9	13.7
Centre for Mathematics and Computer Science (CWI)	207.3	155.7	15.9
Foundation for Fundamental Research on Matter (FOM) institutes	918.4	584.6	53.8
Institute for Dutch History (ING)	40.7	20.8	3.0
Royal Netherlands Institute for Sea Research (NIOZ)	198.1	81.8	19.7
Netherlands Institute for the Study of Crime and Law Enforcement (NSCR)	19.4	13.8	1.6
SRON Netherlands Institute for Space Research	200.0	81.2	17.0

Source: NWO Annual Report 2006

Factsheet 4: Royal Netherlands Academy of Arts and Sciences (KNAW) and its institutes

The management and structure of the Royal Netherlands Academy of Arts and Sciences are laid down in the Regulations governing the Academy (2006); these are based on the Higher Education and Research Act (WHW). The Act endows the Academy with legal personality. The statutory tasks of the Academy are set out in Section 1.5 of the Act:

“The Royal Netherlands Academy of Arts and Sciences operates in the field of scientific research. It in any case:

- *promotes the exchange of ideas and information between its members and others engaged in scientific endeavour and scientific organisations;*
- *advises the government, either on request or at its own initiative, on matters in the field of scientific endeavour; and*
- *promotes scientific endeavour by carrying out activities in that field, or causing such activities to be carried out.”*

These duties mean that the Academy is involved in a variety of different activities: it acts as a forum for science within society, monitors the quality of science, advises on scientific endeavour, and promotes national and international scientific cooperation. It is also the umbrella organisation for seventeen institutes that carry out scientific work and build up collections in the field of the humanities, social sciences, and life sciences.

As a *scientific society*, the Academy derives its authority from its members, who are selected because of the high quality of their work. The two hundred members in fact represent less than one percent of the total number of scientists working in the Netherlands. Its members work at universities and other scientific institutions both in the Netherlands and abroad. This means that the Academy is in a good position to critically supervise scientific endeavour in this country. In order to do this, it calls upon its network of members. The advice provided by the Academy is of acknowledged quality. It aims to operate with increasing speed and effectiveness and to deal with fundamental matters.

The *Academy Institutes* have three core tasks: 1) to carry out outstanding scientific research; 2) to add to, manage, and provide access to unique scientific collections; and 3) to provide services for science and society. Although the various Academy Institutes developed in different ways, they were all set up because there was a scientific and/or public need for knowledge and/or collections to be consolidated. This made it possible, sometimes on the basis of the collections, for outstanding research to be carried out with a longer perspective and – to a large extent – free of teaching obligations. The range of Academy Institutes is in part historically and politically determined, without always having been the product of actual scientific considerations. In recent years, there have been numerous developments in the organisation of the institutes in order to create scope for scientific innovation and for

exploring new avenues of research. This has resulted in a number of institutes being merged or discontinued, with a number of new institutes also being set up.

The Academy works closely with a large number of national and international scientific institutions, advisory bodies, and interest groups. It conducts frequent consultations and/or cooperates with other organisations such as NWO, VSNU, AWT, TNO, WRR, and the rectors and executive boards of universities. Key figures within these organisations are also often members of the Academy's Advisory Councils and committees. To an increasing extent, the Academy has strategic alliances with other civil-society organisations (for example the Teleac educational broadcasting organisation) and companies (for example Heineken).

Most of the Academy's budget comes from the Ministry of Education, Culture and Science and the majority of it is devoted to scientific research and the management and accessibility of collections (at the 17 Academy Institutes).

Table 11: KNAW income, by source, 2006

Source of funds	Income (millions of euros)	as %
Total income	133.7	100
- Government funding from Ministry of Education, Culture and Science	89.2	67
- Work for third parties	30.3	23
- Other income	14.2	11

Table 12: KNAW spending, by category of recipient, 2006

Category of recipient	Spending (millions of euros)	as %
Total spending	128.3	100
- KNAW institutes	108.2	84.3
- Internationalisation	4.8	3.7
- Forum function	2.5	1.9
- Quality	5.6	4.4
- Advisory services	1.1	0.9
- Management/administration	6.1	4.8

Source: KNAW Annual Report 2006

Table 13: KNAW institutes, 2006

KNAW institutes	Discipline	Staff (FTEs)	Budget (x EUR 1000)
Total		1092.6	95.9
Humanities and social sciences			
<i>Data Archiving & Networked Services (DANS)</i>	Data archiving	15.8	3.1
<i>Fryske Akademy</i>	Frisian language, culture, and history	41.9	1.5
<i>Huygens Institute</i>	History of literature and science	38.4	2.5
<i>International Institute of Social History (IISG)</i>	Social and economic history	115.6	8.7
<i>Royal Netherlands Institute of Southeast Asian and Caribbean Studies (KITLV)</i>	Language, culture, and history of Southeast Asia, the Pacific, and the Caribbean	45.9	4.4
<i>Meertens Institute</i>	Dutch language and culture	48.1	3.4
<i>Netherlands Institute for War Documentation (NIOD)</i>	History of the Second World War	63.8	4.0
<i>Netherlands Interuniversity Demographic Institute (NIDI)</i>	Demography	46.5	5.3
<i>Netherlands Institute for Advanced Studies (NIAS)</i>	Support	15.1	2.6
<i>Roosevelt Study Center (RSC)</i>	History and culture of the United States and Dutch-American relations	5.0	0.3
<i>Virtual Knowledge Studio (VKS)</i>	E-science humanities and social sciences	9.8	1.2
Life sciences			
<i>Fungal Biodiversity Centre (CBS)</i>	Research on fungi	49.6	4.3
<i>Hubrecht Institute</i>	Developmental biology and stem cell research	143.6	13.2
<i>Interuniversity Cardiology Institute of the Netherlands (ICIN)</i>	Cardiovascular system	71.5	6.4
<i>Netherlands Institute of Ecology (NIOO)</i>	Ecology and biodiversity	200.6	14.8
<i>Netherlands Institute for Neuroscience (NIN)</i>	Neurosciences	149.9	15.6
Other			
<i>Rathenau Institute</i>	Science and technology assessment	31.5	4.6

Source: KNAW Annual Report 2006

1) Both staff employed by the Academy and staff employed by an external organisation but working for the Academy; both permanent and temporary staff are concerned.

- 2) The Fryske Akademy and the Roosevelt Study Center are institutes affiliated with the Academy; for these institutes, only the Academy's share of the budget is shown.
- 3) The budget comprises both the Academy's contribution and income acquired externally.

Factsheet 5: Netherlands Organisation for Applied Scientific Research (TNO)

Mission of TNO

TNO's mission is to apply scientific knowledge with the aim of strengthening the innovative power of industry and government. TNO is an independent organisation for contract research. With its research and other activities, the organisation aims to make a major contribution to the competitiveness of businesses and organisations, to the economy, and to the quality of life in general.

TNO strategy

TNO's strategy focuses on relevant social and economic issues, on actual innovations and concrete applications, and on extra attention to SMEs and new businesses ("starters"). The organisation concentrates on twelve central research themes that concern economic and social issues in the Netherlands. Those themes are public safety, defence, healthy living, food, dealing with a changing society, work participation and ageing, accessibility, construction and spatial development, living with water, energy management, the natural and built environment, high-tech systems, processes and materials. Each of these twelve themes interface with different core areas.

TNO organisation

TNO's activities – some 75% of which consist of research – take place within five core areas. Within these core areas, there are a number of business units. TNO also collaborates with the universities (but also companies) at some 30 knowledge centres – centres of innovation – in order to generate knowledge in carefully selected fields.

With some 4000 employees, TNO receives part of its funding from government, but a larger proportion comes from assignments acquired within the market. In the light of the report by the Wijffels Committee on the "Bridging Function of TNO and the Large Technological Institutes" (May 2004), and the Cabinet's position paper on the same subject, TNO's government funding will gradually come to be based on demand-driven management and funding by the ministries. This system will therefore replace that of basic and target funding.

Table 14: TNO income, by source, 2006

	Income (millions of euros)	as %
Total	499.7	100
Basic funding from Ministry of Education, Culture and Science	72.8	15
Target/demand funding by other ministries	123.0	25
Public assignments (Netherlands)	74.1	15
Private assignments (Netherlands)	137.5	27
Private assignments (foreign)	70.0	14
International assignments	22.3	4

Source: information from TNO; relates to the TNO organisation

Note: From 2006, demand-driven management and funding will gradually replace basic and target funding.

The categorisation of TNO's turnover according to core area is shown in Table 15.

Table 15: TNO turnover, by core area, 2006

	Income (millions of euros)	as %
Total	525.1	100
Quality of Life	115.8	22.1
Defence, Security and Safety	138.1	26.3
Science and Industry	135.2	25.8
Built Environment and Geosciences	92.9	17.7
Information and Communication Technology	43.1	8.2

Source: TNO annual report 2006; relates to consolidated annual accounts

The relationship between TNO and government is laid down in the TNO Act. Education, Culture and Science is the coordinating ministry.

Factsheet 6: Large Technological Institutes

The Large Technological Institutes are five institutes that carry out applied research and related activities, for example advising industry and government in specific fields. They have two main functions: 1) they act as centres of technological information for companies and government; 2) they develop technology and make it available to companies and government.

The Large Technological Institutes are:

- Energy Research Centre of the Netherlands (ECN): research in the field of nuclear energy and other types of energy;
- GeoDelft: research and advice in the fields of soil mechanics, technology of foundations, and geo-ecology;
- Maritime Research Institute Netherlands (MARIN): research on shipbuilding, offshore technology, and oceanography;
- National Aerospace Laboratory (NLR): activities in the field of aeronautical and space technology.
- WL | Delft Hydraulics: water-related matters.

Since January 2008, GeoDelft, WL | Hydraulics, divisions of TNO Built Environment and Geosciences, and divisions of the Directorate General for Public Works and Water Management (DWW, RIKZ and RIZA) have been combined into “Deltares”, a new independent institute for applied research and specialist advice in the field of water and the subsurface.

The Large Technological Institutes generate most of their turnover on the market (both in the public and private sectors). In the light of the report by the Wijffels Committee on the “Bridging Function of TNO and the Large Technological Institutes” (May 2004), and the Cabinet’s position paper on the same subject, their government funding will gradually come to be based on demand-driven management and funding by the ministries. This system will therefore replace that of target funding.

Table 16: Income of Large Technological Institutes, by source, 2006

	Income (millions of euros)	as %
Total	276.3	100
Basic funding and target/demand funding	79.9	29
Total from assignments	194.8	71
Other income	1.6	1

Source: information from the Large Technological Institutes

Note: From 2006, demand-driven management and funding will gradually replace target funding.

The Ministry of Economic Affairs is the coordinating ministry for ECN and MARIN; the Ministry of Transport, Public Works and Water Management has the same task for NLR, GeoDelft and WL | Delft Hydraulics.

Factsheet 7: Agricultural Research Institutes (DLO)

The institutes making up the Agricultural Research Service [*Stichting DLO*] used to be divisions of the Ministry of Agriculture, Nature and Food Quality but in the second half of the 1990s, they joined Wageningen Agricultural University within the Wageningen University and Research Centre (Wageningen UR, or WUR).¹⁵ They are still separate entities, but they cooperate in various fields in expertise groups. There are nine institutes making up the Agricultural Research Service Foundation. Through the Foundation, the DLO institutes have close links to the Ministry of Agriculture, Nature and Food Quality.

A large part of the DLO's budget (some 50%) is provided by the Ministry of Agriculture, Nature and Food Quality; in 2006 it amounted to more than EUR 300 million. Some 34% of this income comes from contract research (some of which is again for the Ministry of Agriculture, Nature and Food Quality).

Table 17: DLO income, by source, 2006

Source of funds	Income (millions of euros)	as %
Total	316.2	100
Ministry of Agriculture, Nature and Food Quality – in accordance with subsidy arrangement	162.5	51
Contract research	106.9	34
Other	46.9	15

Source: WUR Annual Report 2006

Table 18: DLO institutes

AFSG	Agrotechnology & Food Sciences Group
Alterra	Alterra (the “research institute for our green living environment”)
ASG	Animal Sciences Group
LEI	Agricultural Economics Research Institute
Plant Research International	Plant Research International
PPO	Applied Plant Research
Wageningen IMARES	Institute for Marine Resources & Ecosystem Studies
RIKILT – Institute of Food Safety	RIKILT – Institute of Food Safety
CIDC-Lelystad	Central Veterinary Institute Lelystad

¹⁵ The Van Hall Larenstein university of professional education [*hogeschool*] is also part of Wageningen University and Research Centre.

Factsheet 8: Other institutions and institutes

Ministerial institutes

A number of ministries still have their own knowledge institutes:

Ministry of Justice	Research and Documentation Centre (WODC) and Netherlands Forensic Institute (NFI)
Ministry of Education, Culture and Science	a number of cultural institutes with a research function: the National Service for Archaeology, Cultural Landscape and Built Heritage (RACM), the Netherlands Institute for Cultural Heritage (ICN), and the Netherlands Institute for Art History (RKD)
Ministry of Housing, Spatial Planning and the Environment	Netherlands Institute for Spatial Research (RPB) and the Netherlands Environmental Assessment Agency (MNP)
Ministry of Transport, Public Works and Water Management	Royal Netherlands Meteorological Institute (KNMI) (an agency), Directorate General for Public Works and Water Management (Rijkswaterstaat) (with the four national services in the fields of water, traffic and infrastructure, construction, and ICT and data management), and the Netherlands Institute for Transport Policy Analysis (KiM)
Ministry of Economic Affairs	Statistics Netherlands (CBS) and the Netherlands Bureau for Economic Policy Analysis (CPB)
Ministry of Health, Welfare and Sport	National Institute for Public Health and the Environment (RIVM) and the Social and Cultural Planning Office (SCP)

Leading Technological Institutes

The late 1990s saw the formation of a new category of institutes, the “Leading Institutes”, which are public-private partnerships. The first were the *Leading Technological Institutes* (TTIs), which were set up in 1997 as virtual institutes aiming to bring about collaboration between knowledge institutions and businesses in fields that are relevant to the economy and society. Four of these institutes were set up in 1997 to operate in the fields of nutrition, metals, polymers, and telematics. Since 2005, they have been joined by four new Leading Technological Institutes in the fields of pharmacology, translational molecular medicine, green genetics, and water technology.

The Leading Technological Institutes were initially financed by the Ministry of Economic Affairs, but with the arrival of the new institutes, government funding has been broadened in scope. Funding also comes from businesses, universities, and public research institutions.

In addition to the technology institutes, three *Leading Societal Institutes* were set up in 2006 to focus on major social priorities.

Table 19: Leading Institutes

<i>Leading Technological Institutes</i>		
DPI	Dutch Polymer Institute	long-term research on polymers
NIMR	Netherlands Institute for Metals Research	applied research on metals and materials using metals
TI	Telematica Institute	research on ICT breakthroughs
WCFS	Wageningen Centre for Food Sciences (TI Food and Nutrition)	food and health food
TI Pharma	Top Institute Pharma	development of medication
CTMM	Centre for Translational Molecular Medicine	molecular medicine
TTIW	TTI Water Technology	water
TTI GG	TTI Green Genetics	crop improvement and plant diseases
<i>Leading Societal Institutes</i>		
NICIS	Netherlands Institute for City Innovation Studies	research on urbanism
NETSPAR	Network for Studies on Pensions, Aging and Retirement	aging
HIIL	The Hague Institute for the Internationalisation of the Law	internationalisation of national legal systems

Other

Besides the institutes mentioned above, there is also a category of “other institutes”, a number of which carry out medical or social sciences research. Some examples are: Research for Policy, EIM, NIGZ, NKI and NYFER. A full list can be found on the website of the Royal Netherlands Academy of Arts and Sciences:

<http://www.onderzoekinformatie.nl/nl/oi/nod/onderzoeksinstelling/>.

Abbreviations

Abbreviation	English name	Dutch name
ACTS	Advanced Chemical Technologies for Sustainability	<i>Advanced Chemical Technologies for Sustainability</i>
AFSG	Agrotechnology & Food Sciences Group	<i>Agrotechnology & Food Sciences Group</i>
ASG	Animal Sciences Group	<i>Animal Sciences Group</i>
ASTRON	Institute for Astronomical Research in the Netherlands	<i>Stichting Astronomisch Onderzoek in Nederland</i>
AWT	Advisory Council for Science and Technology Policy	<i>Adviesraad voor het Wetenschaps- en Technologiebeleid</i>
BSIK	Decree regarding Subsidies for Investment in the Knowledge Infrastructure	<i>Besluit Subsidies Investerings Kennisinfrastructuur</i>
BuZa/OS	Ministry of Foreign Affairs and Development Cooperation	<i>Ministerie van Buitenlandse Zaken en Ontwikkelingssamenwerking</i>
BZK	Ministry of the Interior and Kingdom Relations	<i>Ministerie van Binnenlandse Zaken en Koninkrijksrelaties</i>
CBS	Statistics Netherlands	<i>Centraal Bureau voor de Statistiek</i>
CBS (KNAW)	Fungal Biodiversity Centre (CBS)	<i>Centraal Bureau voor Schimmelcultures</i>
CEKI	Committee for Economics, Knowledge and Innovation	<i>Commissie voor Economie, Kennis en Innovatie</i>
CERN	European Organization for Nuclear Research	<i>European Organization for Nuclear Research</i>
CIDC	Central Veterinary Institute Lelystad	<i>Centraal Instituut voor Dierziektecontrole Lelystad</i>
COS	Consultative Committee of Sector Councils for Research and Development	<i>Commissie Overleg Sectorraden</i>
CPB	Netherlands Bureau for Economic Policy Analysis	<i>Centraal Planbureau</i>
CWI	Centre for Mathematics and Computer Science	<i>Centrum voor Wiskunde en Informatica</i>
DANS	Data Archiving and Networked Services	<i>Data Archiving and Networked Services</i>
DLO	Agricultural Research Service	<i>Dienst Landbouwkundig Onderzoek</i>
DPI	Dutch Polymer Institute	<i>Dutch Polymer Institute</i>
DWW	Road and Hydraulic Engineering Institute	<i>Dienst Weg- en Waterbouwkunde</i>
ECN	Energy Research Centre of the Netherlands	<i>Energie-onderzoek Centrum Nederland</i>
EMBC	European Molecular Biology	<i>European Molecular Biology Conference</i>

	Conference	
EMBL	European Molecular Biology Laboratory	<i>European Molecular Biology Laboratory</i>
ESA	European Space Agency	<i>European Space Agency</i>
ESO	European Organisation for Astronomical Research in the Southern Hemisphere	<i>European Organisation for Astronomical Research in the Southern Hemisphere</i>
EU	European Union	<i>Europese Unie</i>
EUR	Erasmus University Rotterdam	<i>Erasmus Universiteit Rotterdam</i>
EZ	Ministry of Economic Affairs	<i>Ministerie van Economische Zaken</i>
FA	Frisian Academy	<i>Fryske Akademy</i>
FES	Economic Structure Enhancing Fund	<i>Fonds Economische Structuurversterking</i>
FOM	Foundation for Fundamental Research on Matter	<i>Stichting voor Fundamenteel Onderzoek der Materie</i>
FOM-AMOLF	Institute for Atomic and Molecular Physics	<i>Instituut voor Atoom- en Molecuulfysica</i>
FOM-NIKHEF	National Institute for Nuclear Physics and High Energy Physics	<i>Nationaal Instituut voor Kernfysica en hoge Energie Fysica</i>
FOM-Rijnhuizen	Institute for Plasma Physics	<i>Instituut voor Plasmafysica</i>
GTI's	Large Technological Institutes	<i>Grote Technologische Instituten</i>
HILL	The Hague Institute for the Internationalisation of the Law	<i>The Hague Institute for the Internationalisation of the Law</i>
HOOP	Higher Education and Research Plan	<i>Hoger Onderwijs en Onderzoek Plan</i>
ICIN	Interuniversity Cardiology Institute of the Netherlands	<i>Interuniversitair Cardiologisch Instituut Nederland</i>
ICN	Netherlands Institute for Cultural Heritage	<i>Instituut Collectie Nederland</i>
ICT	Information and Communication Technology	<i>Informatie- en Communicatietechnologie</i>
IISG	International Institute of Social History	<i>Internationaal Instituut voor Sociale Geschiedenis</i>
ING	Institute for Dutch History	<i>Instituut voor Nederlandse Geschiedenis</i>
IOP's	Innovation-Oriented Research Programmes	<i>Innovatiegerichte Onderzoeksprogramma's</i>
KB	National library of the Netherlands	<i>Koninklijke Bibliotheek</i>
KiM	Netherlands Institute for Transport Policy Analysis	<i>Kennisinstituut Mobiliteitsbeleid</i>
KITLV	Royal Netherlands Institute of Southeast Asian and Caribbean Studies	<i>Koninklijk Instituut voor Taal-, Land- en Volkenkunde</i>

KNAW	Royal Netherlands Academy of Arts and Sciences	<i>Koninklijke Nederlandse Akademie van Wetenschappen</i>
KNMI	Royal Netherlands Meteorological Institute	<i>Koninklijk Nederlands Meteorologisch Instituut</i>
KUOZ	Key Figures University Research	<i>Kengetallen Universitair Onderzoek</i>
LEI	Agricultural Economics Research Institute	<i>Landbouw Economisch Instituut</i>
LNv	Ministry of Agriculture, Nature and Food Quality	<i>Ministerie van Landbouw, Natuurbeheer en Voedselkwaliteit</i>
NETSPAR	Network for Studies on Pensions, Aging and Retirement	<i>Network for Studies on Pensions, Aging and Retirement</i>
LEI	Leiden University	<i>Universiteit Leiden</i>
MARIN	Maritime Research Institute Netherlands	<i>Maritiem Research Instituut Nederland</i>
NFI	Netherlands Forensic Institute	<i>Nederlands Forensisch Instituut</i>
NIAS	Netherlands Institute for Advanced Studies	<i>Netherlands Institute for Advanced Studies</i>
NICIS	Netherlands Institute for City Innovation Studies	<i>Netherlands Institute for City Innovation Studies</i>
NIDI	Netherlands Interuniversity Demographic Institute	<i>Nederlands Interuniversitair Demografisch Instituut</i>
NIGZ	Netherlands Institute for Health Promotion and Disease Prevention	<i>Nationaal Instituut voor Gezondheidsbevordering en Ziektepreventie</i>
NIOD	Netherlands Institute for War Documentation	<i>Nederlands Instituut voor Oorlogsdocumentatie</i>
NIOO	Netherlands Institute of Ecology	<i>Nederlands Instituut voor Ecologie</i>
NIOZ	Royal Netherlands Institute for Sea Research	<i>Koninklijk Nederlands Instituut voor Onderzoek der Zee</i>
NIMR	Netherlands Institute for Metals Research	<i>Netherlands Institute for Metals Research</i>
NIN	Netherlands Institute for Neuroscience	<i>Nederlands Instituut voor Neurowetenschappen</i>
NIVEL	Netherlands Institute for Health Services Research	<i>Nederlands Instituut voor Onderzoek van de Gezondheidszorg</i>
NIVR	Netherlands Agency for Aerospace Programmes	<i>Nederlands Instituut voor Vliegtuigontwikkeling en Ruimtevaart</i>
NKI	Netherlands Cancer Institute	<i>Nederlands Kanker Instituut</i>
NLR	National Aerospace Laboratory	<i>Nationaal Lucht- en Ruimtevaartlaboratorium</i>
NMI	Netherlands Metrology Institute	<i>Nederlands Meetinstituut</i>
NML	Dutch Maritime Network Foundation	<i>Stichting Nederland Maritiem Land</i>
NCSR	Netherlands Institute for the Study of Crime and Law	<i>Nederlands Studiecentrum Criminaliteit en Rechtshandhaving</i>

	Enforcement	
NWO	Netherlands Organisation for Scientific Research	<i>Nederlandse Organisatie voor Wetenschappelijk Onderzoek</i>
NXP	NXP Semiconductors	<i>NXP Semiconductors</i>
OCW	Ministry of Education, Culture and Science	<i>Ministerie van Onderwijs, Cultuur en Wetenschap</i>
OECD	Organisation for Economic Co-operation and Development	<i>Organisatie voor Economische Samenwerking en Ontwikkeling</i>
OU	Open University	<i>Open Universiteit</i>
PPO	Applied Plant Research	<i>Praktijkonderzoek Plant & Omgeving</i>
RACM	National Service for Archaeology, Cultural Landscape and Built Heritage	<i>Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten</i>
R&D	Research and Development	<i>Research and Development</i>
RDMZ	Netherlands Department for Conservation	<i>Rijksdienst voor de Monumentenzorg</i>
REKI	Council for Economics, Knowledge and Innovation	<i>Raad voor Economie, Kennis en Innovatie</i>
RIKZ	National Institute for Coastal and Marine Management	<i>Rijksinstituut voor Kust en Zee</i>
RIZA	National Institute for Inland Water Management and Wastewater Treatment	<i>Rijksinstituut voor Integraal Zoetwaterbeheer en Afvalwaterbehandeling</i>
RKD	Netherlands Institute for Art History	<i>Rijksbureau voor Kunsthistorische Documentatie</i>
ROB	State Service for Archaeological Investigations	<i>Rijksdienst voor Oudheidkundig Bodemonderzoek</i>
RIVM	National Institute for Public Health and the Environment	<i>Rijksinstituut voor Volksgezondheid en Milieuhygiëne</i>
RU	Radboud University Nijmegen	<i>Radboud Universiteit Nijmegen</i>
RUG	University of Groningen	<i>Rijksuniversiteit Groningen</i>
SciSa	Science System Assessment	<i>Science System Assessment</i>
SCP	Social and Cultural Planning Office	<i>Sociaal Cultureel Planbureau</i>
SER	Social and Economic Council	<i>Sociaal Economische Raad</i>
SKO	Strategic Knowledge Generation Unit	<i>Bureau Strategische Kennisontwikkeling</i>
SRON	SRON Netherlands Institute for Space Research	<i>SRON Netherlands Institute for Space Research</i>
STW	STW Technology Foundation	<i>Stichting Technische Wetenschappen</i>
SZW	Ministry of Social Affairs and Employment	<i>Ministerie van Sociale Zaken en Werkgelegenheid</i>
TI	Telematica Institute	<i>Telematica Instituut</i>
TOF	Total Research Financing	<i>Totale Onderzoek Financiering</i>
TNO	Netherlands Organisation for	<i>Nederlandse Organisatie voor</i>

	Applied Scientific Research	<i>Toegepast Natuurwetenschappelijk Onderzoek</i>
TTI	Leading Technological Institute	<i>Technologisch Top Instituut</i>
TUD	Delft University of Technology	<i>Technische Universiteit Delft</i>
TUE	Eindhoven University of Technology	<i>Technische Universiteit Eindhoven</i>
UM	Maastricht University	<i>Universiteit Maastricht</i>
UMC	University Medical Centre	<i>Universitair Medisch Centrum</i>
UT	University of Twente	<i>Universiteit Twente</i>
UU	Utrecht University	<i>Universiteit Utrecht</i>
UvA	University of Amsterdam	<i>Universiteit van Amsterdam</i>
UvT	Tilburg University	<i>Universiteit van Tilburg</i>
V&W	Ministry of Transport, Public Works and Water Management	<i>Ministerie van Verkeer en Waterstaat</i>
VKS	Virtual Knowledge Studio	<i>Virtual Knowledge Studio</i>
VROM	Ministry of Housing, Spatial Planning and the Environment	<i>Ministerie van Ruimtelijke Ordening en Milieubeheer</i>
VSNU	Association of Universities in the Netherlands	<i>Vereniging van samenwerkende Nederlandse Universiteiten</i>
VU	VU University Amsterdam	<i>Vrije Universiteit Amsterdam</i>
VWS	Ministry of Health, Welfare and Sport	<i>Ministerie van Volksgezondheid, Welzijn en Sport</i>
WCFS	Wageningen Centre for Food Sciences	<i>Wageningen Centre for Food Sciences</i>
WHW	Higher Education and Research Act	<i>Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek</i>
WODC	Research and Documentation Centre	<i>Wetenschappelijk Onderzoek- en Documentatiecentrum</i>
WRR	Scientific Council for Government Policy	<i>Wetenschappelijke Raad voor het Regeringsbeleid</i>
WUR	Wageningen University & Research Centre	<i>Wageningen Universiteit & Researchcentrum</i>
ZON-Mw	Netherlands Organisation for Health Research and Development	<i>Nederlandse Organisatie voor Gezondheidsonderzoek en Zorginnovatie</i>