NWO

Annual Report 2007

Netherlands Organisation for Scientific Research

NWO Annual Report 2007

Including Indicators of Accountability

The Hague, August 2008
Netherlands Organisation for Scientific Research

Credits

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Ries van Wendel de Joode, Rotterdam
Shutterstock
with thanks to Prof. Freek J. Beekman, UMC Utrecht, for the mouse in U-SPECT
(Photographs from *Op onderzoek – Wetenschap in Nederland* (In search – Science in the Netherlands), the book for the general public about results from research in 2007, published by Uitgeverij Boom, Amsterdam, ISBN 978 90 8506 512 8)

Digital printing

Ipskamp PrintPartners, Enschede

Translation

Native Speaker Translations, Kampen

Publisher

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Scientific Research (NWO)
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The Hague, August 2008

ISBN/EAN 978-90-77875-28-5
ISSN 0167-6792

Further information

This Annual Report 2007 contains the formal administrative account of the NWO Governing Board for the year 2007. It is based on the indicators of accountability and the annual accounts. The Annual Report is particularly intended for NWO's clients and administrative relations in the world of science.

In addition to this formal Annual Report for 2007 (the Financial Report is available in Dutch only), NWO will also produce two annual publications for other target groups:

- for a broad circle of professional contacts in science and society NWO publishes a special issue, in an edition of approximately 13,000 copies, of its publication "Hypothese", entitled Synthese, NWO jaaroverzicht 2007. This contains highlights from developments in NWO divisions, foundations, institutes and taskforces. This publication includes a CD-ROM containing information about research projects that were approved, in progress or completed during 2007. In addition, it contains NWO's Social Annual Report, the 2007 issues of Hypothese, and the NWO Strategy Paper 2007-2010 *Wetenschap gewaardeerd!* (Science valued!).
- To inform the general public of scientific developments, NWO publishes a book for a wider readership in the series *Wetenschap in Nederland* (Science in the Netherlands). It is available in bookshops (due to appear in mid-October 2008).

Preface

Curiosity and passion, the desire to know, the quest for fresh knowledge; that is what science is all about. Here in the Netherlands we can congratulate ourselves that there are many talented researchers who devote themselves anew to this quest every day. And we are proud that, as NWO, we are able to support these outstanding people directly.
In 2006, NWO presented its strategy for the period 2007-2010: Science Valued! In this document NWO noted, together with its partners in science and society, that in the Netherlands we are struggling with a number of bottlenecks in the knowledge system. These bottlenecks must be tackled if we, as a country, wish to continue to perform optimally in the future. To do this, NWO formulated an approach along three lines of action.
With 'Opportunities for researchers' we targeted the increase and retention of young scientific talent and the stimulation of excellent, groundbreaking research. With 'Consolidating strengths' we aim to use people and resources in a concentrated fashion in order to prevent fragmentation and to continue to compete internationally. Through the line of action 'Science for society' NWO strives for better coordination between social requirements and groundbreaking scientific research. To carry out the plans underlying these three lines of action, the indirect government funding budget will need to be by 433 million euro. In the course of 2007, NWO gained a clearer picture of the financial prospects for the coming period.

The Ministry of Education, Culture and Science (subsequently OCW – Ministerie van Onderwijs, Cultuur en Wetenschap) pledged 150 million euro for NWO's talent policy. With these funds we will once again be able to finance many fantastic projects involving young scientific talents through the successful Innovational Research Incentives Scheme. The other two lines of action can also count on support, although the total amount of money is less than we had hoped for. The Netherlands Genomics Initiative (NGI) received a total follow-up financing of 271 million euro for the period 2008-2012. OCW also pledged annual structural funds of 10 million euro, rising to 16 million, for investment in large research facilities.
Unfortunately no additional OCW structural budgets have, as yet, been made available for thematic programmes. This does not mean, however, that the thematic linking of science with social issues will come to an end. In the interim, NWO has made 14 million euro of its own funds available for thematic programmes. We are pleased to report that we were also able to make a promising start in 2007 in arousing the interest of other financial backers for these programmes. We will pursue these efforts vigorously in 2008.

In its three-part annual report, NWO looks back with justified pride on its work and the achievements of researchers doing pioneering work using NWO funds. In this annual report you will find an overview of the policy results. In Synthese – the annual edition of our magazine Hypothese – we give an overview of attractive, interesting and surprising projects carried out and results obtained in 2007 with funding from NWO. This issue of Synthese comes with a CD-ROM that gives access to information about all NWO's projects in 2007, the Social Annual Report and the 2007 issues of Hypothese. In the autumn, for the third year in a row, NWO will publish a book for the general public containing easily accessible articles about NWO research. This will allow a wide readership to enjoy all the wonderful things that Dutch science has to offer.

Peter Nijkamp
Chair Governing Board

Key figures (consolidated)

Balance sheet (x €1000)	End 2007	End 2006
Assets		
Tangible fixed assets	72,810	69,506
Financial fixed assets	16,497	16,750
Fixed assets	89,307	86,256
Stocks	2,041	3,221
Accounts receivable	49,215	45,188
Liquid funds	283,463	246,178
Movable assets	334,719	294,587
Total assets	424,026	380,843
Liabilities		
General reserve	-148,432	-129,034
Designated funds	384,841	314,292
Capital	236,409	185,258
Provisions	10,769	12,530
Debts	176,848	183,055
Loan capital	187,617	195,585
Total liabilities	424,026	380,843

Statement of assets and liabilities (x €1000)	2007	2006
OCW government contribution	310,539	308,115
OCW subsidies	154,828	102,839
Third-party subsidies and contributions	90,492	85,872
Other assets	10,811	7,835
Total for assets	566,670	504,661
Subsidies to third parties	332,579	324,838
Exploitation of NWO institutes	151,046	151,400
Administrative costs	36,114	34,833
Other liabilities	8,346	11,890
Total for liabilities	528,085	522,961
Result of operational management	38,585	-18,300
Financial assets	12,566	6,739
Result	51,151	-11,561
Mutations in designated funds	70,549	18,898
Mutations in general reserve	-19,398	-30,459

Expenditure (x €1000)	2007	2006
Universities	285,146	293,561
Institutes	124,252	124,886
Other institutions	30,126	42,367
NWO office	36,114	34,833
Other	52,447	27,314
Total	528,085	522,961

Outstanding obligations (x €1000)	
Outstanding obligations at end-2006	861,930
Plus: obligations entered into 2007	489,102
Minus: expenditure and settlements on subsidies	-358,080
Outstanding obligations at end-2007	992,952

Publications	2007	2006
Publications in refereed journals	7,576	6,304
Publications in other scientific journals	2,655	2,315
Book contributions	980	897
Monographs	302	210
Theses	609	639
Patents	52	45
Other professional products	4,643	4,911

Contents

1 NWO mission, organisation, governance and positioning

NWO's core tasks are to promote quality and innovation in scientific research and to ensure the transmission and use of knowledge. Under the title Science Valued! NWO presented an ambitious strategy in 2006 for a vigorous increase and optimal implementation of the indirect government funding in the period 2007-2010. The aim is to make the Netherlands the leading knowledge society in Europe. The current strategy was developed in close cooperation with all of NWO's stakeholders in science, government, and the private sector, and in other relevant areas of society. These partners will also be involved in the implementation of the strategic plans.

1.1 NWO's mission

For the Netherlands to remain an international competitor, a powerful knowledge system with strong universities and knowledge institutions is required, together with a productive interaction between science and society. As an indirect government funding body, under the responsibility of the Ministry of Education (OCW), NWO is one of the organisations that is expected to make a major contribution to the strengthening of the Dutch knowledge system. NWO as a national organisation uses its programming in collaboration with those active in the field of research, those seeking knowledge and co-financiers to give direction to scientific research and it also makes connections between this research and social challenges. Through meticulous selection NWO is able to safeguard and enhance the high standard of Dutch science. And by being alert to new possibilities, NWO is able to stimulate innovation that benefits the knowledge society as a whole.

1.2 NWO organisation and governance

NWO is an autonomous organisation in the form of an independent governing body (Zelfstandig Bestuursorgaan – ZBO), which falls under the responsibility of OCW. The NWO Act lays down NWO's duties and powers. The NWO Regulations provide the framework within which the management and organisation of the governing body are regulated.

Minister of OCW
NWO falls under the responsibility of the Minister of OCW. In order to carry out this ministerial responsibility correctly, the minister has a number of powers laid down in the NWO Act. The most important of these are: appointment and dismissal of members of the Governing Board, approval of changes to the NWO Regulations, determining the position as regards the strategic plan, and approval of the budget and annual accounts. The 2008 budget that was submitted to OCW on 1 November 2007 was approved on 12 March 2008. The 2007 annual accounts are included in this annual report.

Governing Board
The Governing Board is responsible for ensuring that NWO's duties are carried out. The Governing Board is supported by a general director, who acts as secretary of the board and is also in charge of the NWO Office. The composition of the Governing Board was unchanged in 2007. The terms of three members were extended by Royal decree.
NWO has a financial committee made up of two members of the Governing Board, together with the external accountant, the general director, the director of Operations and Institutes, and the head of Finance and Control. This committee convened twice in 2007. In addition to the usual subjects such as the budget, the annual accounts and the accountant's findings, the committee paid special attention last year to the Good Governance Code and risk management.

NWO organisation
Eight science divisions (Earth and Life Sciences – ALW, Chemical Sciences – CW, Physical Sciences – EW, Humanities – GW, Social Sciences – MaGW, Physics – N, Technology Foundation – STW and Netherlands

Organisation for Health Research and Development – ZonMw), two foundations (WOTRO Science for Global Development – WOTRO and National Computer Facilities – NCF) and three temporary taskforcess (Advanced Chemical Technologies for Sustainability – ACTS, Netherlands Genomics Initiative – NGI and National ICT Research and Innovation Authority – ICTRegie) develop subsidy programmes, implement them and monitor the results. The temporary taskforcess, in which NWO collaborates with ministries and the private sector, provide short-term impetus to a specific field of research. In addition there are researchers at work within the nine NWO research institutes that are active in diverse fields, from history to fundamental particles.
See Appendix II for the organisational structure of NWO.

Good Governance Code
NWO uses the Good Governance Code as a guideline in giving account of its public governance structure. An important aim is to further enhance the transparency of NWO's administrative structure.
In the divisional administration the policy is, in addition to the scientific aspect, to make room for administrators with a (mainly) social administration background. The Governing Board has thus opted to incorporate socially-committed individuals into the administration instead of having separate social advisory councils.
It is understood that the institutes will move towards 'hands-off administration', with the administration departments focussing more on their supervisory role and directors taking on an important role in the development of institutional policy, in addition to their day-to-day responsibilities. To this end, there is a corresponding shift in the profile of administrators. At the same time, a scientific advisory committee will be set up to advise the administration. As the name indicates, the emphasis in this committee will be on relevant scientific expertise. These changes will be put into effect by updating the existing covenants with institute administrations.
Other best practices from the Good Governance Code will also be gradually introduced. Thus in 2007, a whistle-blower's regulation was introduced and brought to the attention of staff. An integrity guidance scheme was brought in at the end of 2007, aimed at increasing awareness and making it possible for staff to discuss dilemmas in the workplace. This scheme is also concerned with the integrity of the organisation as a whole.

NWO and the Autonomous Administrative Authorities Framework Act
An important development for NWO in 2007 was the Autonomous Administrative Authorities Framework Act (Kaderwet Zelfstandige Bestuursorganen), introduced in order to strengthen the political direction of Independent Governing Bodies (ZBOs). NWO worked hard to be recognised as an exception with the aim of being able to continue to function independently in the interests of Dutch science. In the opinion of NWO this is the best guarantee of a highly-principled scientific system. The Minister of OCW has now created an appropriate status for NWO.

Evaluation of NWO
In 2007, the Minister of OCW appointed a committee to conduct an external evaluation of NWO. The committee is chaired by Prof. Peter van der Vliet (Utrecht University) and its members are Prof. Josien Bensing (NIVEL research institute) and Prof. Rutger van Santen (former vice-chancellor of Eindhoven University of Technology). The committee published its report in spring 2008 and concluded that NWO is an effective and efficient organisation with an undisputed position as a provider of subsidies in the scientific world. NWO plays a crucial role in assessing the quality of scientific research. It has the effect of improving quality, and obtaining an NWO subsidy carries prestige. The committee is critical of the position given to NWO in the innovation system. NWO will be discussing the committee's conclusions both internally and with the Minister of OCW, and will look at how the recommendations can be implemented.

1.3 Field of operations and positioning of NWO

As a distributor of indirect government funding, NWO is one of the organisations expected to contribute significantly to the strengthening of the Dutch knowledge system. NWO's position as a guardian of quality in science, as an organisation that helps to give direction to scientific research through programming in cooperation with the world of research, and as mediator between science and society, is a very promising starting point for this task. Through meticulous selection NWO is able to safeguard and enhance the high standard of Dutch science. By responding quickly to new possibilities, NWO

stimulates innovation that benefits the knowledge society as a whole. Over the next few years NWO will place particularly more emphasis on its role as mediator.
The foundation of NWO's work is cooperation with (individual) researchers, universities and other public research institutes: they formulate scientific questions, carry out research and, moreover, provide NWO with the quality and manpower needed to carry out the selection procedures. Strengthening its role as an intermediary means that NWO will also actively maintain contact with government departments, the private sector and other public agencies, who submit their research questions to NWO as a starting point for (thematic) research programmes. These partnerships with parties inside and outside the scientific arena are essential for NWO to carry out its duties properly.

Cooperation in a complex field of influence
In 2007, NWO held consultations about its entire strategy with its direct partners in public academic research (universities and the Royal Netherlands Academy for Arts and Sciences – KNAW), both with the administrative sector (e.g. Boards of Governors) and with researchers. Important topics were the aims and scope of the revamped Innovational Research Incentives Scheme. A successful joint approach was also made to the new Cabinet in order to promote fresh investment in science. On NWO's initiative, a common vision was produced in collaboration with the organisations known as the Manifest Parties (KNAW, NWO, Netherlands Association for Applied Research in the Natural Sciences – TNO, Confederation of Netherlands Industry and Employers – VNO-NCW, and Association of Universities in the Netherlands – VSNU) looking at how to attract and retain talented researchers and the importance of this issue for the Dutch knowledge society.

In the context of developing the 13 new NWO themes in 2007, a large number of potentially interested organisations from government, the private sector and society were invited to join NWO in thinking about the themes and deciding how to elaborate them. In this process NWO sought the cooperation of all departments with an interest in scientific research, amongst other things in the context of the current Cabinet's priorities. Moreover, NWO held and continues to hold regular consultations with the technology committee of VNO-NCW. All large companies in the Netherlands that are active in R&D have seats on this committee. In this way NWO is building on a policy that was brought into a limited extent in the previous strategy paper and that has now been introduced across the board. NWO wants to use this process not only to elaborate its 'own' themes but also to achieve greater synergy 'along the knowledge chain', between the different stakeholders in the scientific community.

NWO also collaborates in a variety of ways with a large number of parties on an international scale. NWO has an advisory role in relation to researchers (concerning, amongst other things, programme development and subsidy instruments of the European Commission) and is on diverse European committees that have in their turn an advisory function. NWO also actively works together with (European) sister organisations within larger cooperative ventures (European Heads of Research Councils – EUROHORC's and European Science Foundation – ESF). These cooperative ventures frequently lead to concrete opportunities for subsidies, available to Dutch researchers. NWO also works with a large number of countries outside Europe, mainly in Asia, by means of bilateral agreements. Finally, NWO helps Dutch researchers gain access to international research facilities.

1.4 Implementation of the *Science valued!* strategy

Build-up in 2006
In 2006, NWO presented its *Science valued!* strategy for the period 2007-2010. One of its main starting points is that the need for high-quality, groundbreaking scientific research is one of the driving forces of growth for the Netherlands as an internationally operating knowledge society. In order to continue to perform optimally in the future, a number of bottlenecks must be dealt with which now constitute a serious threat to our scientific potential. NWO's strategy is to tackle these bottlenecks along three lines of action:
- Opportunities for researchers: aims at creating more talent and retaining it, and promoting outstanding, groundbreaking research;
- Consolidating strengths: aims for a concentrated deployment of people and resources;
- Science for society: aims to make new, pioneering research better attuned to social requirements.

As in-depth investment in science is necessary to make the Netherlands an international knowledge leader, NWO advocated in Science valued! a structural increase of 433 million euro in the current budget for indirect government funding. This represents an extra 283 million euro annually combined with making as yet temporary funds of 150 million euro annually permanent. These extra funds are essential if the strategy is to be implemented in its entirety.

In 2007: clarity regarding financing

In the course of 2007 NWO gained a clearer picture of the financial prospects for the coming period. To summarise the outcome, NWO can look forward to substantial extra financing, specifically for the first line of action Opportunities for researchers.

OCW provided the extra financing for the Innovational Research Incentives Scheme by, amongst other moves, transferring 100 million euro from direct to indirect government funding. This met resistance from universities and attracted a lot of media attention. NWO considers it to be important that the granting of this sum for the Innovational Research Incentives Scheme should be accompanied by extra investment by OCW in the state education system. As a result of this there has been a net increase in the amount of money available for science. Furthermore, the universities are no longer required to make their own contribution, which totalled a third of the subsidy. NWO continues to provide a third of the (higher) costs from its own budget, just as before.

In 2007, NWO launched an intensive round of discussions with the universities' Boards of Governors. In this way NWO wishes to provide its university partners with factual information about their results in NWO competitions, which the universities can use to adjust their research policy.

Extra financial resources for the other lines of action have so far remained limited. The NGI did receive follow-up financing of 271 million euro for the period 2008-2012 and OCW also pledged 10 million euro, rising to 16 million, for investment in major research infrastructure. NWO will have to look outside the science budget for additional (co-)financing for its other policy plans.

Nevertheless, NWO is committed to the strategy paper in its entirety over the next few years and will do everything it can to obtain the necessary investment in the Dutch knowledge system, in close cooperation with many partners.

Start of strategy implementation in 2007

To some extent 2007 was a year of transition, in which activities from the previous strategic period continued while at the same time a strong start was made towards achieving the organisation's new ambitions. In chapters 2, 3 and 4 the current situation is described for each strategic line of action.

1.5 Budget allocation 2007

The budget that NWO was able to spend on top-quality research in 2007 stemmed to an important extent from OCW. A number of other financial backers also contributed funds. Table 1 gives an overview of the sources of NWO funding.

Table 1. Income

	Central government				Other	Total
	OCW		Other departments	Total central government		
	Basic Subsidies	Other				
Subsidies 2007 (x €1000)	310,539	154,828	49,113	514,480	52,190	566,670
Share of total subsidies %	54.8	27.3	8.7	90.8	9.2	100
Subsidies 2006 (x €1000)	308,115	102,839	47,476	458,430	46,231	504,661
Share of total subsidies %	61.1	20.4	9.4	90.8	9.2	100

Table 1: explanation
OCW:
The monies that NWO received in 2007 from the Ministry of Education, Culture and Science (OCW):
Basic subsidies:
The basic subsidies (state subsidies) refer to the regular subsidies that NWO receives each year from OCW.
Other:
The remaining (earmarked) contributions that NWO receives from OCW.
Other departments:
The earmarked subsidies that NWO receives from departments other than OCW, thereby contributing to NWO's role as preferred partner.
Total central government:
The sum of all revenues received from OCW and other departments.
Other:
Revenues received from non-governmental organisations, thus contributing to NWO's role as preferred partner.
Total:
Total revenues received from the government and other organisations.

Table 2 shows how the revenues received were spent.

Table 2. Breakdown of expenditure over the lines of action (x €mln)

	2007	2006
Opportunities for researchers	207	200
Consolidating strengths	209	177
Science for society	55	71
Other subsidies	11	20
Total subsidies	482	468
Other	10	20
Administrative costs	36	35
Total NWO	528	523

Table 2: explanation
For 2007, NWO will report according to the three lines of action of the new strategic paper Science valued!: Opportunities for researchers, Consolidating strengths and Science for society.
Other subsidies:
The item Other subsidies refers to those subsidies to which, in contrast to the subsidy instruments that belong to the lines of action, none or only a few of the following characteristics apply: separate competition, separate conditions, separate criteria and a separate time schedule.
Other:
The item Other refers to other general costs that cannot be attributed to subsidies.
Administrative costs:
Administrative costs refers to the expenditure of the NWO office of the NWO umbrella organisation.

2 Line of action 1 – Opportunities for researchers

Excellent researchers in the Netherlands often have insufficient scope to perform at their best and to present themselves at an international level. Innovative, risk-taking research is under strong pressure and the lack of modern research facilities limits what researchers can achieve. Too few young people opt for science, mainly because they believe it does not offer enough career opportunities. Realising that investment in research talent is necessary for durable strengthening of science in the future, NWO is dedicating its efforts to creating Opportunities for researchers. The activities of this line of action are aimed at people (talent programmes), ideas (free competition) and infrastructure (medium-sized and large equipment).

2.1 Progress of line of action 1

Development of Innovational Research Incentives Scheme
The Innovational Research Incentives Scheme, set up as a temporary programme lasting to the end of 2008, was evaluated in the first half of 2007. The evaluation was monitored by a committee made up of representatives of VSNU, KNAW, OCW, VVViO (Vereniging voor Vernieuwingsimpuls-onderzoekers – association of researchers involved in the scheme), and NWO. It was carried out by the independent research bureaus Technopolis and Dialogic. They investigated not only the programme's selection process and its efficiency but also the effects of the programme: its impact on the careers and mobility of researchers, and the strengthening of Innovational Research in the Netherlands. The conclusion was that the Innovational Research Incentives Scheme had gained a prominent position in the Dutch research landscape over the past few years and had become an ever more intrinsic part of the careers policy of Dutch research institutes. Thus the programme made an important contribution to the recruitment and retention of talented researchers. The evaluation also concluded that the Innovational Research Incentives Scheme helps to promote innovative and high-quality research.

On the basis of this positive evaluation, OCW decided in 2007 to continue supporting the programme. It made structural funds of 150 million euro per annum available to NWO, a considerably larger sum than had previously been available. In addition, OCW decided to continue and to strengthen the Aspasia programme, which aims to provide further support and encouragement to top female researchers.
In 2007, NWO began to develop a new structure and procedure for the Innovational Research Incentives Scheme, to be in place from 2009. On this issue it is consulting with the many interested parties, including the universities, the KNAW, OCW and VNO-NCW.
In advance of the new structure it was decided to do away with the receiving institutes' own contribution as of 2008. This 'own contribution' was a third of the subsidy of a project. The programme is also open to foreign researchers who want to carry out research in the Netherlands. NWO will reach a final decision on the new procedure in 2008 and this decision will be publicised widely among Dutch researchers in autumn 2008.

Free competition: extra investment in innovative ideas
One of NWO's basic tools is the free competition for Innovational Research projects. Projects in the free competition are selected exclusively on the basis of scientific excellence; there are no thematic criteria. Thus the projects contribute towards pushing back the boundaries in the relevant subject area. The projects are carried out by PhD students and/or postdocs under the supervision of an experienced researcher.
NWO wants to strengthen the free competition through additional investment, thus creating more possibilities for carrying out high-risk research with an eye to making scientific breakthroughs. In 2007, NWO made 23 million euro in extra funds available for the free competition.

Brain gain: Take Five for (OCW minister) Plasterk
In collaboration with KNAW, TNO, VNO-NCW and VSNU, in the autumn NWO turned its attention to the important issue of attracting, training and retaining talented researchers for the Dutch

knowledge society and knowledge economy, an issue known as the brain gain. In the publication 'NL: Pleisterplaats voor talent' ('NL: stopping place for talent'), which was presented at a meeting on 17 October, the organisations made recommendations for making the Netherlands more attractive as a base for (top) talent.

Results of subsidy instruments – line of action 1
The following paragraphs describe the existing subsidy instruments from line of action 1. The results for 2007 are given for each instrument.

2.2 Promoting the entry and career progression of talent

2.2.1 NWO Spinoza Prize

Aim
The NWO Spinoza Prize is the highest scientific distinction in the Netherlands. A maximum of four prizes are awarded each year. The winners receive 1.5 million euro each to spend over a period of five years on research of their choice. An NWO Spinoza Prize is a mark of distinction but above all it is a stimulus for further research work.

In 2007
In 2007, NWO awarded the Spinoza prizes for the 13th time to four researchers who belong to the absolute top in their field of expertise. These were:
- Prof. D.M. (Deirdre) Curtin, researcher in law at Utrecht University. Curtin has made outstanding contributions to the development and promotion of international and European law, and has developed innovative views on how to manage international organisations such as the European Union
- Prof. M. (Marcel) Dicke, ecological entomologist at Wageningen University. Dicke has discovered, amongst other things, that plants produce made-to-measure odours in emergency situations in order to attract the enemies of their enemies.
- Prof. L.P. (Leo) Kouwenhoven, physicist at the Technical University in Delft. Kouwenhovens' groundbreaking work on so-called spinqubits is of vital importance for utilising quantum information, for example in a fundamentally new type of computer.
- Prof. (Wil) Roebroeks, archaeologist at the University of Leiden. Roebroeks has made new findings concerning early hominids and the development of human society.

2.2.2 Innovational Research Incentives Scheme

Aim
It is the aim of the programme to give added incentive to Innovational Research. The Innovational Research Incentives Scheme is linked to individuals and offers talented, creative researchers the chance to carry out research of their choice and thus improve their career path at scientific research institutes.

In 2007
Table 3 shows the numbers of applications received and grants awarded, and the awarding percentages for the three components Veni, Vidi and Vici of the Innovational Research Incentives Scheme in 2007.

Table 3. Innovational Research Incentives Scheme indicators, applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Veni	0	0	0	492	310	802	102	78	180	21	25	22	21	25	22
Vidi	0	0	0	319	117	436	64	20	84	20	17	19	20	17	19
Vici	183	45	228	68	18	86	21	10	31	11	22	14	31	56	36
Total 2007	183	45	228	879	445	1,324	187	108	295	19	23	20	21	24	22
Total 2006	129	26	155	601	306	907	143	65	208	22	21	21	24	21	23

Table 3: explanation
Preliminary applications and applications:
The number of applications under Total is higher than the number of preliminary applications as not all sections of the Innovational Research Incentives Scheme use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

Two Veni rounds were completed in 2007 (second round 2006 and the 2007 round). Because of this there was a sharp rise in the number of applications and grants compared to 2006. However, the number of applications to Vidi (+25%) and Vici (+32%) also rose considerably, although in these cases there was no extra round. This might have been due to the uncertainty as to whether the Innovational Research Incentives Scheme would continue after 2007, so many researchers wanted to make use of what might have been their last chance to apply. Due to the higher number of applications the gross and net awarding percentages declined compared to 2006.

In the period 2002-2007, the Innovational Research Incentives Scheme enabled 747 Veni, 479 Vidi and 169 Vici researchers to carry out their innovative and pioneering research work. These numbers exceeded the target figures of 115 Veni, 75 Vidi and 25 Vici awards per year.

As part of the Innovational Research Incentives Scheme, special attention is paid to the position of female researchers. NWO guarantees that the approval percentages for female candidates for the total duration of the Innovational Research Incentives Scheme are at least as high as those for male candidates. In 2007, the awarding percentages for women for Veni and Vici met this requirement, while the net awarding percentage for women for the March Vici was as high as 56%. Only in the case of Vidi was the awarding percentage lower for women than for men. The awarding percentage for women in the Innovational Research Incentives Scheme was slightly higher than the percentage for men over the period 2002-2007 (women 23%, men: 20.6%).

Career development of laureates
A major aim of the Innovational Research Incentives Scheme is to offer researchers the prospect of a career in science. Figures 1-5 show the career development of the three groups of laureates. The figures indicate the candidates' positions (given as postdoc, lecturer, senior lecturer and professor) upon receipt of the subsidy, then after approximately three years (end position for Veni, mid-term position for Vidi and Vici), and after approximately six years (end position for Vidi and Vici). There is little data available as yet for the last category, particularly for Vici laureates.
The figures show clearly that in the course of the subsidy period the careers of participants in all three stages of the scheme made strong progress.

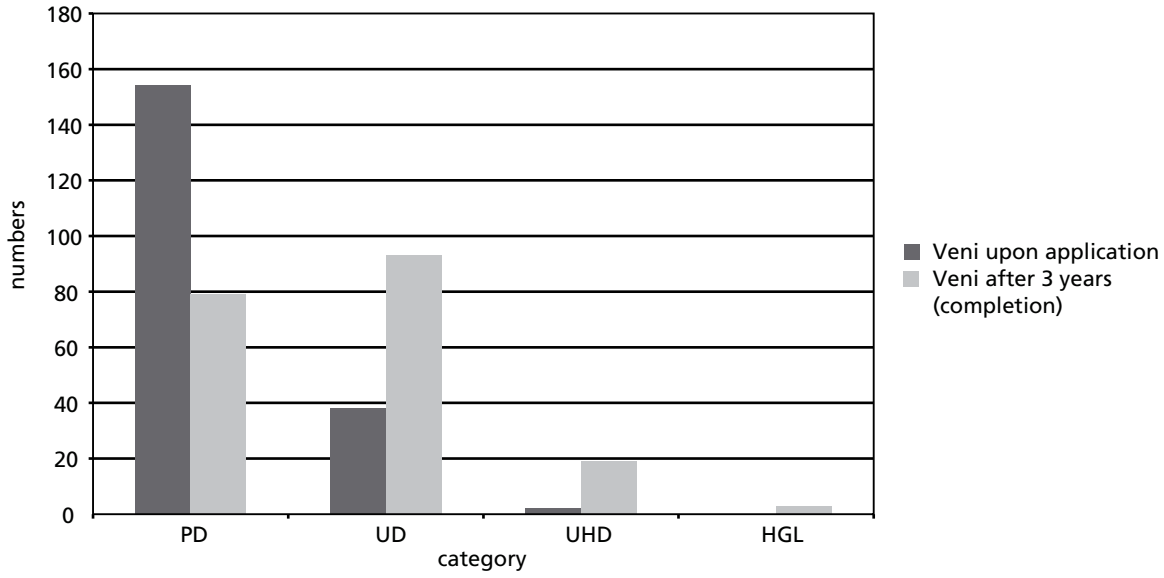
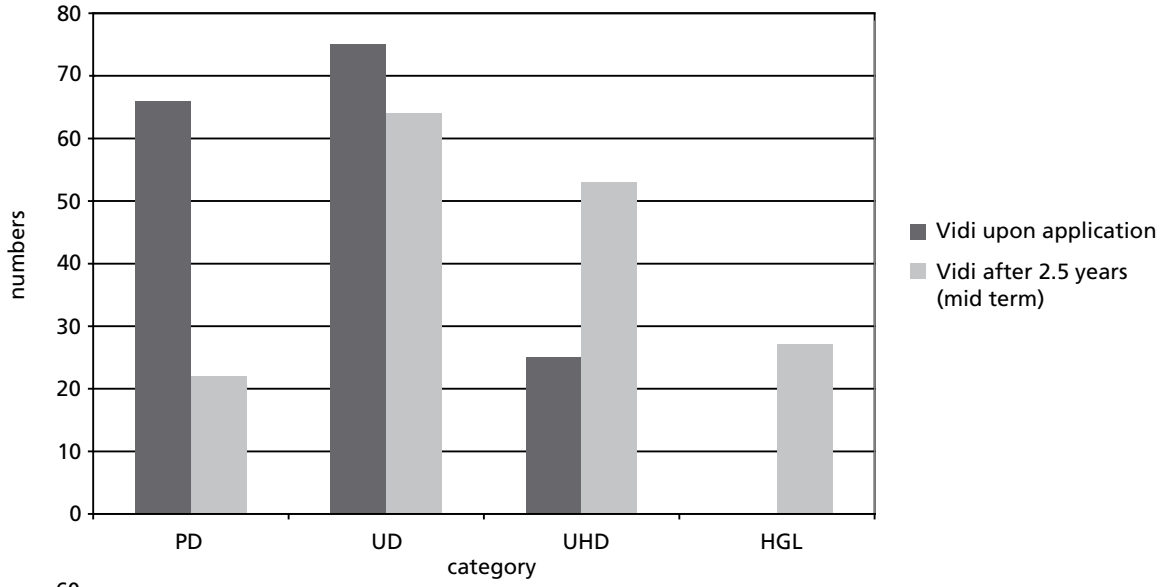
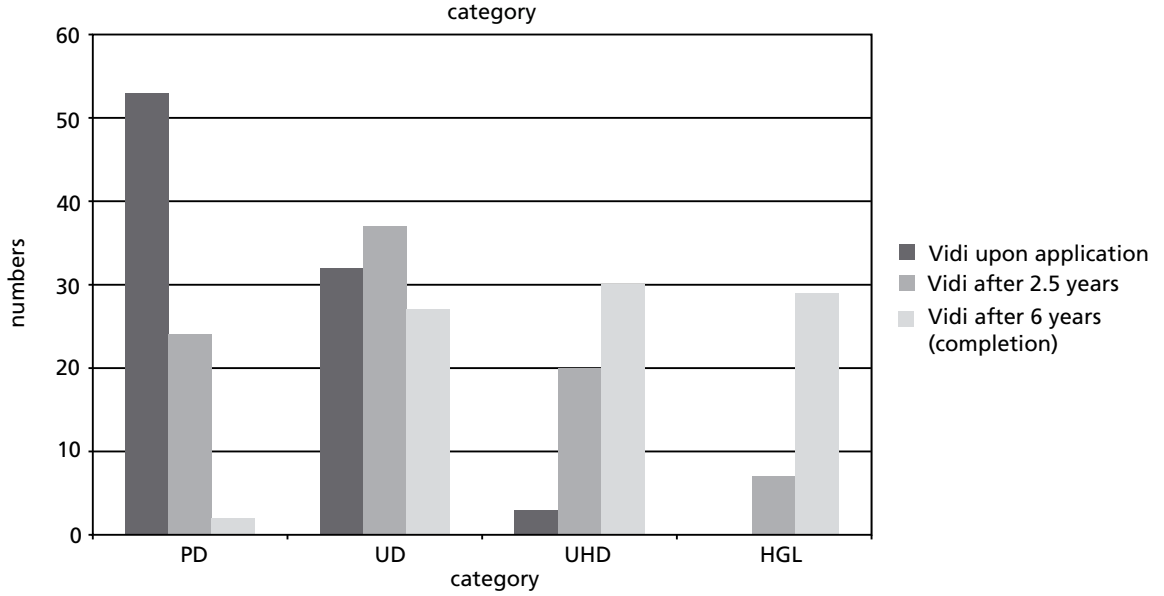
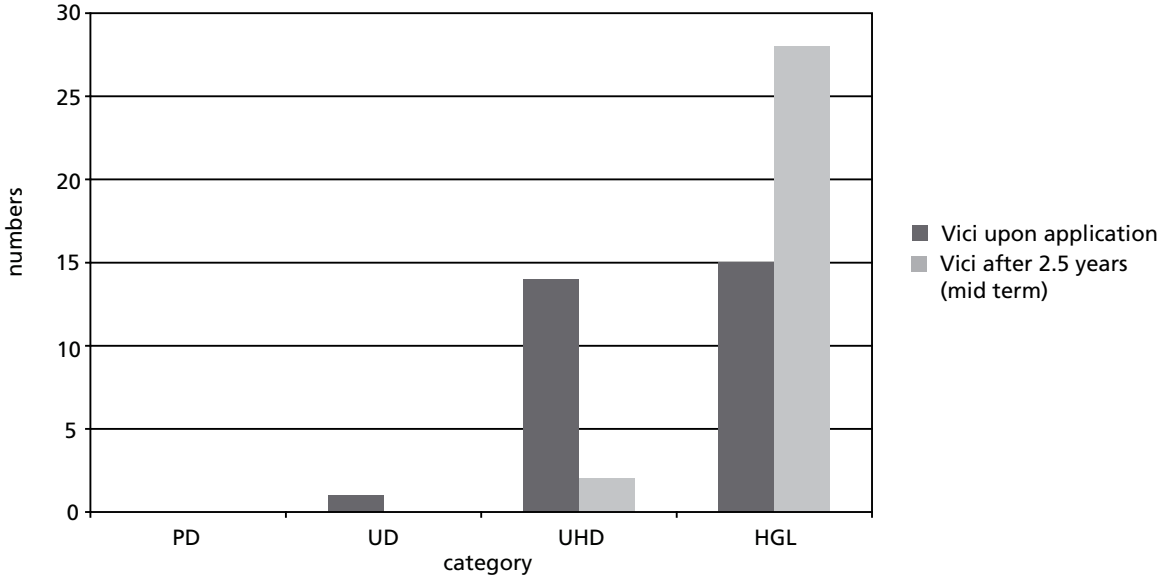


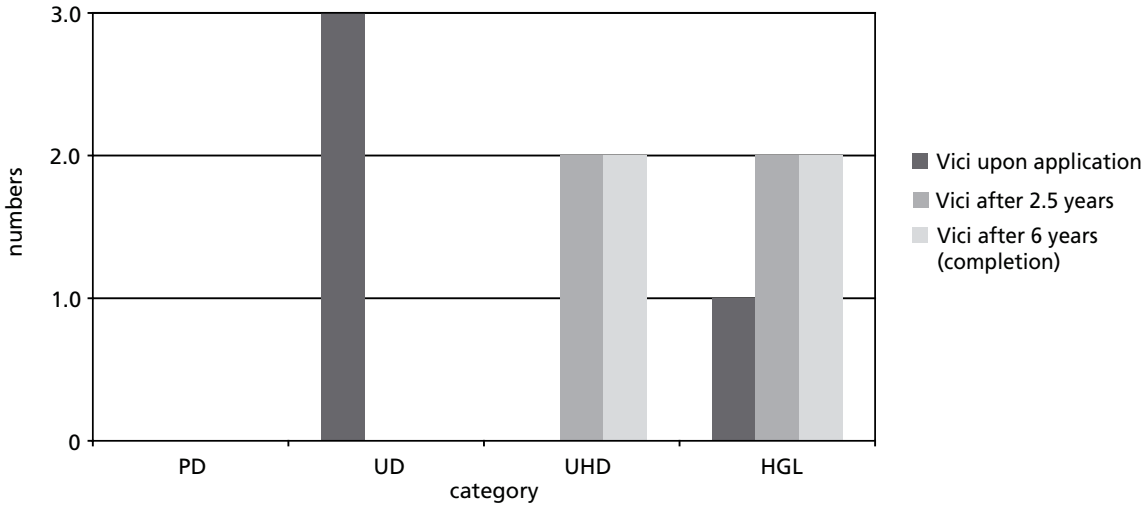
Figure 1. Career development of Veni laureates
Figure 1 refers to the 194 Veni laureates whose final position is known.





Figures 2 and 3. Career development of Vidi laureates.
Figure 2 refers to the 166 Vidi laureates whose mid-term position is known.
Figure 3 refers to the 88 Vidi laureates whose final position is known.





Figures 4 and 5. Career development of Vici laureates.
Figure 4 refers to the 30 Vici laureates whose mid-term position is known.
Figure 5 refers to the 4 Vici laureates whose final position is known.

Figures 1-5: explanation
The X-axis gives the laureates' positions. The Y-axis shows the numbers of laureates.
PD: Postdoc; UD: Lecturer; UHD: Senior lecturer; HGL: Professor.

2.2.3 Rubicon

Aim

Rubicon promotes the scientific mobility of researchers. The programme offers promising scientists, who have recently obtained their doctorate, the chance to gain research experience abroad for up to two years and thus to qualify for a future scientific career. Conversely, foreign scientists can obtain a Rubicon grant to do research in the Netherlands for a year. Both the quality of the researcher and his/her proposal and the quality of the host institute are included in the assessment. The host institute should be of excellent quality.

It is expected that this group of young researchers will be able to take up important positions in Dutch science as a result of their proven talent for innovative and groundbreaking research. NWO's Rubicon programme offers young and talented researchers a bridge between their PhD and the Veni programme of the Innovational Research Incentives Scheme.

In 2007

Table 4 shows that the total number of applications submitted in 2007 was slightly lower than in 2006. Consequently the awarding percentages were higher in 2007.

Table 4. Rubicon indicators, applications and grants

	Number of applications			Number of grants			Awarding percentage		
	M	F	Total	M	F	Total	M	F	Total
Total 2007	152	125	277	56	37	93	37	30	34
Total 2006	199	118	317	63	32	95	32	27	30

Figure 6 shows the mobility of Rubicon laureates. This was similar to that of 2006.

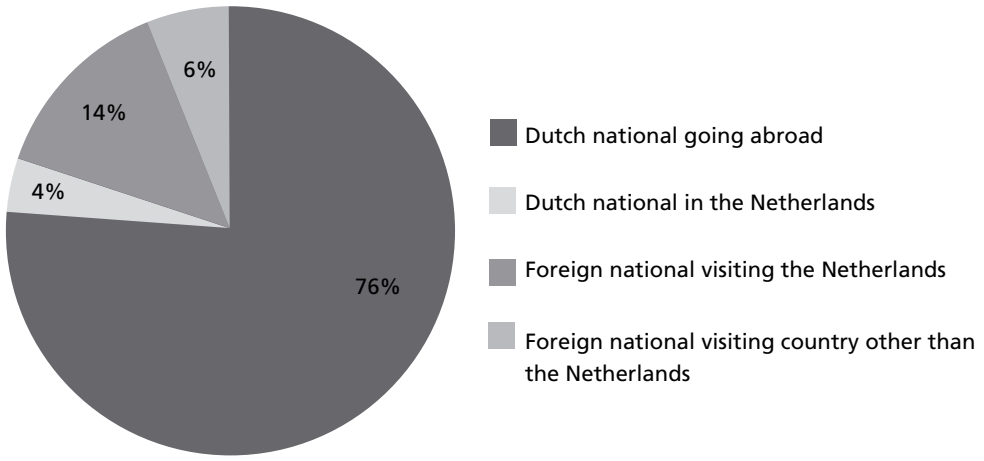


Figure 6. Mobility of Rubicon laureates

2.2.4 Top Talent

Aim

OCW has made a total sum of 16 million euro available to enable young, creative scientific talent to organise the course of their doctoral work themselves. For this purpose NWO, together with VSNU, developed the programme 'Top Talent'. There will be two rounds of subsidies in total. The first subsidies were awarded in 2007.

In 2007

As of December 2006, 128 applications had been submitted of which 41 were approved in May 2007.

Table 5. Top Talent indicators, applications and grant

	Number of applications			Number of grants			Awarding percentage		
	M	F	Totaal	M	F	Totaal	M	F	Total
Total 2007	70	58	128	20	21	41	29	36	32

2.2.5 Simon Stevin: meester en gezel (master and journeyman)

Aim
Since 1998, STW has been running the programme Simon Stevin Meester. Each year under this programme an experienced and prominent scientist is awarded a trophy (a small sculpture) and a cheque for 500,000 euro to be spent on application-oriented research.
STW also has a programme called Simon Stevin Gezel. The aim of this programme is to encourage PhD students to achieve high quality in their research and to be actively involved in the application of the results. The prize is a work of art and 5,000 euro that can be spent on an activity that fits in with STW's aims.

In 2007
In 2007 the Simon Stevin Meester title was awarded to Prof. Ton van der Steen of the Erasmus MC for his work in preventing strokes and cardiac arrest through the use of palpography. Van der Steen is an outstanding scientist who plays an active role in using his findings and who furthermore is able to excite people's enthusiasm and to form and maintain effective networks.
In the Simon Stevin Gezel programme the 2007 title went to Merle de Kreuk of the Delft University of Technology for her work in the field of efficient water purification through the use of aerobic granular sludge. Runners-up were Christian Nijhuis and Martijn Mies. In line with tradition, a booklet was published about the 10 best nominees.

2.3 Promoting the entry and career progression of special groups

2.3.1 Aspasia

Aim
Aspasia was set up in October 1999 as a temporary programme to increase the number of female senior lecturers. In 2005, the Innovational Research Incentives Scheme was coupled with a new-look Aspasia programme. NWO makes grants available for Boards of Governors who promote female Vidi and Vici laureates to the position of senior lecturer or professor within a year of their having been awarded a subsidy.

In 2007
In 2007, the university Boards promoted 17 female Vidi and 2 female Vici laureates, for which they received Aspasia grants. Following the 2007 rounds of the Innovational Research Incentives Scheme, proposals for promotion were once again initiated. During the course of 2008 it will become clear how many women will actually be promoted.

Table 6. Aspasia, grants in 2007 and 2006

	2007	2006
Vidi	17	15
Vici	2	2
Total	19	17

2.3.2 Mosaic

Aim
The Mosaic programme aims to promote the entry into the scientific world of graduates from ethnic minority groups (as defined in the Employment of Minorities (Promotion) Act). More specifically the programme stimulates the influx of PhD students from this target group. With the Mosaic programme NWO targets young, talented graduates.

In 2007
The fourth Mosaic round started in 2007. By 9 January 2007, 95 preliminary applications for Mosaic had been received. After an initial selection, 48 applicants were invited to develop their proposals further. Two of these withdrew their proposals, leaving a total of 46 applications. Of these, 22 excellent candidates were awarded grants and put under the spotlight during a presentation ceremony on 1 November.

Table 7. Mosaic indicators, applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Total 2007	44	51	95	21	25	46	8	14	22	18	27	23	38	56	48
Total 2006	52	68	120	17	26	43	9	14	23	17	21	19	53	54	54

Table 7: explanation
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
- The number of preliminary applications received where preliminary applications are involved.
- The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

2.3.3 Meervoud

Aim
Through the Meervoud programme (Meer vrouwelijke onderzoekers als UD – More female researchers as lecturers) the NWO divisions ALW and EW encourage the career progression of female researchers. The Meervoud subsidy is linked to a permanent post as lecturer at the end of the subsidy period.

In 2007
The Meervoud programme ensured that there were six future female lecturers in 2007.

2.3.4 Athena

Aim
The aim of Athena is to stimulate the provision of permanent posts for talented female Veni laureates in the chemical sciences. As soon as women obtain a post as lecturer or an equivalent post at a research institute during the course of their Veni project, they receive an award of 100,000 euro.

In 2007
The NWO division CW created Athena in 2007. The first awards are expected in 2008.

2.3.5 Fom/v

Aim
The Fom/v programme attempts to retain women physicists in scientific work. The programme has a structural budget of 300,000 euro per year, which can be used to fund research projects and finance measures to support women researchers in their careers within FOM. An important instrument within Fom/v is the biennial Minerva prize for the best scientific paper by a female physicist.

In 2007
In 2007 nominations were submitted for the 2008 Minerva prize.

2.4 Investment Subsidy NWO Large and Investment Subsidy NWO Medium

Aim
Investment Subsidy NWO Large applies to investments in research facilities of more than 900,000 euro. This programme is open for new applications every two years. Investment Subsidy NWO Medium applies to investments of between 110,000 and 900,000 euro. This programme is implemented in a decentralised manner by the NWO divisions, with each division receiving a specific sum of money.

In 2007
A new round of the Investment Subsidy NWO Large began in September 2007. A total of 16 applications were received in this round and a decision will be made in mid-2008. In 2007, 24 applications were approved under the Investment Subsidy NWO Medium.

Table 8a. Investment Subsidy NWO Medium, applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Investment Subsidy NWO Medium	15	1	16	70	8	78	23	1	24	29	11	27	33	13	31

Table 8a: explanation
Preliminary applications and applications:
The number of applications is higher than the number of preliminary applications as not all NWO divisions use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

Table 8b. Expenditure on Investment Subsidy NWO Large and Investment Subsidy NWO Medium

	Investment Subsidy NWO Large	Investment Subsidy NWO Medium
Expenditure in 2007 (x €1000)	17,885	13,900

Table 8b: explanation
– Investment Subsidy NWO Large applies to investments of more than 900,000 euro.
– Investment Subsidy NWO Medium applies to investments of between 110,000 and 900,000 euro.
Investments are spread out over several years. This table only shows expenditure for 2007.

2.5 Promoting ideas through the Free Competition

Aim

The free competition offers top scientists the chance to elaborate their own ideas without being bound to specific subjects. In doing so it acts as the cradle of future opportunities for innovation and technological developments.

Results 2007

Table 9 shows that the number of applications was more or less the same in 2007 and 2006. The net awarding percentage was slightly higher in 2007.

Table 9. Free competition, applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Total 2007	143	46	189	807	123	930	255	33	288	28	22	27	32	27	31
Total 2006	112	24	136	891	100	991	262	27	289	27	22	27	29	27	29

Table 9: explanation
Preliminary applications and applications:
The number of applications is higher than the number of preliminary applications as not all divisions here use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– *The number of preliminary applications received where preliminary applications are involved.*
– *The number of (fully elaborated) applications received where no preliminary applications are involved.*
Net awarding percentage:
The number of accepted applications divided by the number of (fully elaborated) applications submitted to NWO.

2.6 Total for line of action 1: applications and grants

Table 10 gives an overview of all applications and grants within line of action 1.
The awarding percentages for 'Other' are relatively high as replacement subsidies and contributions to publications generally have a high awarding percentage.

Table 10. All subsidy instruments for line of action 1: applications and grants 2007

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Talent	249	113	362	1,187	686	1,873	301	195	496	23	26	24	25	28	26
Free Competition	143	46	189	807	123	930	255	33	288	28	22	27	32	27	31
Investments	15	1	16	70	8	78	23	1	24	29	11	27	33	13	31
Other	63	34	97	309	80	389	176	49	225	52	51	51	57	61	58
Total 2007	470	194	664	2,373	897	3,270	755	278	1,033	28	28	28	32	31	32

Table 10: explanation
Talent:
Spinoza, Innovational Research Incentives Scheme, Rubicon, Top Talent, Mosaic, Meervoud and a number of division-specific programmes.
Investments:
Investment Subsidy NWO Medium.
Other:
Small subsidies such as replacement subsidies and contributions to publications, and division-specific programmes.
Preliminary applications and applications:
The number of applications is higher than the number of preliminary applications as not all NWO divisions and subsidy instruments that come under this line of action use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– *The number of preliminary applications received where preliminary applications are involved.*
– *The number of (fully elaborated) applications received where no preliminary applications are involved.*
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

3 Line of action 2 – Consolidating strengths

In order to strengthen scientific research in the Netherlands it is essential to consolidate strengths at a national level. Opportunities to score highly in the world's scientific field of influence are a deciding factor for the choices to be made. Good examples of cooperation and consolidation are the NWO institutes as places for top research and as bases for large-scale scientific research facilities. With the line of action 'Consolidating strengths' NWO commits itself further to thematic research, large-scale infrastructure and international cooperation.

3.1 Progress line of action 2

Continuing the activities of Themes with talent (NWO strategy 2002-2005)
The activities carried out under line of action 2 in 2007 focused mainly on initiatives already launched in the previous strategy period. Thus the last calls were organised within the nine NWO themes from the previous strategy period. These 'old' themes do not of course end here: research financed within the thematic programmes will continue over the next few years and many more results are expected. NWO also continued with earlier initiatives at an international level. Together with a number of European partners NWO launched a series of calls for proposals in 2007 within the scope of collective subsidy instruments. In cooperation with KNAW, NWO also formulated a special policy to stimulate research cooperation with China, as part of the key priority of promoting collaboration with emerging countries in the field of science.

NWO institutes
The NWO institutes as places for top-quality research and as bases for large-scale research facilities are a major pillar of line of action 2, together with the themes. The NWO institutes are committed to pursuing three tasks. They have an important national responsibility in managing large national research facilities and as a gateway to international facilities for Dutch researchers. Secondly, they provide space for researchers who do scientific research as part of and in support of the general technical support function. Thirdly, institutes develop new technologies, a function that often flows from their other two tasks. The balance between these three tasks varies from one institute to the other. Research at the institutes is characterised by a long time horizon, large-scale infrastructure and national and international cooperation with (university) research groups. In 2007, the institutes were active, each in its own field, in a variety of strategic partnerships and with a focus on carrying out predominantly large-scale projects.

Limited financing for new activities
Some key initiatives from line of action 2 could not get off the ground due to a lack of money. These were the National Research Initiatives (NRIs) and the (very) large research infrastructure initiative. During the course of 2007 it became clear that NWO can only look forward to a modest budget for large research facilities. Although OCW has made the budget available in the form of structural funds, it is not sufficient to repeat the earlier successful open 'BIG round'. However, OCW has set up the Van Velzen Commission, which has the task of drawing up a road map for large research facilities. NWO continues to be a strong advocate of (repeating) an open, national competition for large facilities. For the time being, however, it is awaiting developments while doing its utmost to obtain the necessary funding.

Results of subsidy instruments – line of action 2
The following paragraphs describe the existing subsidy instruments from line of action 2. The results for 2007 are given for each instrument.

3.2 Consolidating strengths nationally: thematic research from *Themes with Talent*

Table 11 gives a picture of the number of ongoing programmes within the themes that were launched as part of the 2002-2005 strategy. Ongoing programmes refer to those programmes within which subsidy decisions were made in the period 2002 to 2007 inclusive, and which have not yet been completed. The number of ongoing programmes has decreased slightly compared to 2006.

The table also shows the expenditure on these themes in 2007.

Table 11. NWO theme indicators, number of programmes and expenditure

	Number of ongoing theme programmes	Expenditure per theme 2007 (x €1000)
Shifts in Governance	3	2,051
Cognition and Behaviour	3	2,723
Cultural Heritage	8	3,769
Digitalisation and Information Technology	13	11,036
Ethical and Social Aspects of Research and Innovation	3	2,162
Fundamentals of Life Processes	14	18,070
Nanosciences	9	1,072
Emerging Technologies	15	4,563
System Earth	21	12,370
Total 2007	89	57,816
Total 2006	92	80,501

Table 11: explanation
Number of ongoing thematic programmes:
The number of ongoing programmes indicates the extent to which the themes are gaining substantive content.
Expenditure per theme 2007:
The sum spent on research in the thematic fields in 2007.

Researchers can submit applications for the various programmes within the themes. The number and size of the programme subsidies is determined by the size of the budget available for the themes. Table 12 gives an overview of the number of applications submitted and the number of grants awarded in 2007. The number of applications for which a decision was made was higher in 2007 than in 2006. The final subsidy decisions were made in 2007 for most of the theme programmes, which all started as part of the 2002-2005 strategy Themes with Talent. Appendix I contains brief descriptions of all nine themes.

Table 12. NWO themes, applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Governance				83	21	104	18	2	20	22	10	19	22	10	19
Cognition				47	13	60	8	2	10	17	15	17	17	15	17
Cultural				18	6	24	5	3	8	28	50	33	28	50	33
Digitalisation															
Ethical	13	1	14	13	4	17	11	4	15	55	100	63	85	100	88
Life Processes				83	18	101	8		8	10		8	10		8
Nano															
Emerging				12		12	7		7	58		58	58		58
System	32	5	37	36	3	39	25	2	27	57	40	55	69	67	69
Total 2007	45	6	51	292	65	357	82	13	95	27	19	25	28	20	27
Total 2006	186	38	224	213	40	253	88	19	107	27	26	27	41	48	42

Table 12: explanation
Abbreviations:
Governance = Shifts in Governance; Cognition = Cognition and Behaviour; Cultural = Cultural Heritage; Digitalisation = Digitalisation and Information Technology; Ethical = Ethical and Social Aspects of Research and Innovation; Life Processes = Fundamentals of Life Processes; Nano = Nanosciences; Emerging = Emerging Technologies; System = System Earth
Preliminary applications and applications:
The number of applications can be higher than the number of preliminary applications because not all subsidy instruments that come under the relevant themes use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

3.3 Consolidating strengths nationally: NWO institutes

NWO's nine research institutes contribute significantly to the focus and critical mass of research in the Netherlands. NWO's institutes are:
– ASTRON Netherlands Institute for Radio Astronomy
– Centrum Wiskunde & Informatica (CWI)
– FOM institute for Atomic and Molecular Physics (AMOLF)
– Nikhef national institute for subatomic physics
– FOM institute for Plasma Physics Rijnhuizen
– Institute for National History (ING)
– Netherlands Institute for the Study of Crime and Law Enforcement (NSCR)
– NIOZ Royal Netherlands Institute for Sea Research
– SRON Netherlands Institute for Space Research

Quality evaluation
The quality of NWO institutes is evaluated every six years by means of internationally organised external evaluations. Between two such assessments there is a mid-term evaluation based on self-evaluation. The external evaluation of FOM institute Nikhef started in 2007. An international commission visited Nikhef in September and judged the institute to be excellent. The Governing Board reached agreements with the institutes in 2007 to carry out a mid-term evaluation in 2008, in which they will pay particular attention to the national and international environments and to benchmarking. The evaluations are conducted on the basis of the nationally-recognised Standard Evaluation Protocol (SEP).

Long-term strategy
In 2007, three institutes announced their strategies for the next few years.
– Nikhef did this in the context of the external evaluation and in its Strategic Plan 2007-2012 it aims, amongst other things, to attain an internationally prominent and leading role in astroparticle physics, a new area of interest for Nikhef.
– Centrum Wiskunde & Informatica (CWI) opted in its new strategy Een fundamenteel verschil (A fundamental difference) to combine research with a theme-based approach. In its research into mathematics and information technology, CWI focuses on the themes Earth and Life Sciences, Social Logistics, the data explosion and Software as Service.
– ING, an expert in the field of opening up sources of information for the scientific study of Dutch history, focuses in its new strategy paper and Policy Plan for 2007-2011 on, amongst other things, continuing to develop its role as an information gateway using the Digital Bibliography of Dutch History (DBNG). ING will vigorously pursue cooperation and coordination in Europe, which is aided by the international network Porta Historica – an ING initiative.

(Inter)national cooperation in 2007
The NWO institutes carry out their mission by means of active national and international cooperation with university groups and institutes.
– Thus NIOZ further expanded its cooperation with the KNAW institute NIOO-Ceme in the area of fundamental sea research in the joint FOKUZ programme for fundamental coastal and sea research.
– NSCR celebrated its 15th anniversary in 2007 with an international scientific conference. NSCR boosted international cooperation through the ENRIC network (European Network of Independent Research Institutes of Criminology), which NSCR initiated.

Cooperation with business and valorisation take a variety of forms.
– Researchers from the FOM institute AMOLF manufactured a new kind of optical material (nanowires) in early 2007 in collaboration with staff from Philips Research.
– An important initiative by the FOM institute Rijnhuizen together with the Nuclear Research and Consultancy Group (NRG Petten) and TNO led in November 2007 to the signing of an agreement to set up a consortium called ITER-NL. This consortium is made up of Dutch research institutes and industry, and brings together the Dutch expertise needed for the construction and exploitation of systems within the international project ITER. This is a particularly large global scientific project in which researchers study and develop nuclear fusion as an energy source.

Key projects in 2007
The institutes give their 2007 results in their annual reports. A few highlights are the launch of the LOFAR project at ASTRON and the delivery of the HIFI instrument by SRON.
– LOFAR (Low Frequency Array Information and Communication Technology) is a ‘wide area sensor network’ which is used for research in areas of application such as astrophysics, geophysics, precision agriculture and ICT. Foreign partner institutes also expressed interest in LOFAR last year and LOFAR arrays are now also being installed outside the Netherlands.
– SRON produced the research instrument HIFI (Heterodyne Instrument for the Far-Infrared) and delivered it to the European Space Agency (ESA) in July 2007. This instrument, on which SRON worked for around 10 years as part of an international consortium of 25 partners, offers astronomers around the world the possibility to make observations in a transition area in space between infrared radiation and radio waves, an area that has up to now been little investigated. HIFI will be placed on the HERSCHEL satellite, due to be launched at the end of 2008.

3.4 Consolidating strengths nationally: large infrastructure

3.4.1 Supercomputer

Aim
The National Computer Facilities (NCF) foundation, working under the umbrella of NWO, is responsible for national high-end computer infrastructure for scientific research in the Netherlands. NCF gives shape to this policy in a European context, taking account of the specifics of the Dutch situation as determined by the government and NWO, and of specific features of Dutch research. The long-term availability of advanced computer facilities makes it possible to do competitive research in the Netherlands that is high in quality and quantity. It also stimulates research into and with high-performance computing, and research on further advances in computing.

In 2007
On 13 June 2007, the first phase of the new National Supercomputer, called Huygens, was officially put into operation. This phase comprises an IBM Power5+ system with a theoretical peak performance of 14,000 billion calculations a second (14 Teraflop/s). This is five times the capacity of the previous National Supercomputer. In mid-2008 Huygens will be upgraded to an IBM Power6 system with a peak performance in excess of 60 Teraflop/s.

3.4.2 National Programme for Investment in Large-scale Research Facilities (BIG)

Aim
The government made 100 million euro available in 2005 for investment in large-scale infrastructure. The aim was to create one or more research facilities in the Netherlands of an international standard. The lower limit for the size of a facility to be requested was 25 million euro (10 million for research disciplines in the arts and humanities). The facilities had to represent, for the relevant field of research, a significant addition in terms of equipment to the European research landscape and also needed to strengthen the Dutch scientific position in this field. In 2006, five applications were approved.

3.4.3 Access to large-scale research facilities

Aim
Through NWO the Netherlands is involved in a number of large research facilities, including the Dutch-Flemish beamline DUBBLE within ESRF, ISIS, the James Clerk Maxwell Telescope and the Isaac Newton Group of Telescopes. Thanks to NWO's participation Dutch researchers can make use of these facilities.

In 2007
In 2007 the participation in DUBBLE and ISIS was evaluated. Based on the evaluation the decision was made to end NWO's involvement in ISIS. NWO will decide in 2008 whether to continue participation in DUBBLE.

3.4.4 Total spending of investment funds on large infrastructure

Table 13. Spending of investment funds

	BIG Facilities	NCF and other
Expenditure 2007 (x €1000)	21,700	23,106

Table 13: explanation
The National Programme for Investment in Large-scale Research Facilities ('BIG Facilities') refers to the one-off grant of 100 million euro.

3.5 Consolidating strengths internationally

Science is international: in virtually all disciplines researchers work within the context of an international research community. Amongst NWO's activities, international peer review, international conferences as part of thematic and other programmes, international publications and international evaluation commissions are all evidence of this strong international aspect. Furthermore, NWO increasingly makes its own subsidies available to foreign researchers. Thus internationalisation is a natural part of every line of action.
NWO also pursues a number of activities within the line of action 'Consolidating strengths' that are worth mentioning separately here because they demonstrate how NWO, together with a wide range of partners, contributes to boosting the quality of science internationally.

3.5.1 Cooperation within Europe

NWO's advisory role
NWO has an advisory role in a number of contexts. For example, it is represented in the European Heads of Research Councils (EuroHORCS). This is an informal council consisting of the heads of European funding bodies who, as well as initiating joint actions, function as an important discussion partner for the European Commission.
NWO also advises the Dutch representatives on the Programme Committees of the EU's Seventh Framework Programme for Research and Innovation (FP7), to ensure that the interests of the Dutch research community are well supported in future Calls for Proposals. For EG-Liaison (EGL), NWO is the National Contact Point on behalf of the European Research Council (ERC), which as part of the Ideas programme provides grants to talented (young) researchers to promote groundbreaking research.

NWO's networking role
There can be no international cooperation without networks and NWO takes an active part in European strategic partnerships. For example, NWO is an active member of the European Science Foundation (ESF) and is actively involved in the various types of subsidies. The ESF is one of the biggest European networks of funding bodies for research and currently has 77 members from 30 European countries. NWO is involved with European Commission instruments in which knowledge institutions and companies work together to improve Europe's competitive position, for example the European Technology Platforms (ETPs), of which 40 have been set up. NWO is involved in two ETPs: Sustainable Chemistry and the Innovative Medicine Initiative. The Innovative Medicine Initiative evolved in 2007 from an ETP to a Joint Technology Initiative (JTI) and as such it will at some point launch its own Calls for Proposals.

NWO as participant in international subsidy programmes
NWO actively contributes to diverse European subsidy instruments that fund research projects (EUROCORES programmes of the ESF and ERA-NETS of the European Commission), offer subsidies to young scientific talent (EURYI) and finance networks (Research Networking programme).

EUROCORES

Aim
ESF's aim with the EUROCORES programme is to stimulate multilateral research cooperation in Europe. The members of ESF use a EUROCORES programme to support medium-sized international research projects around a theme, which is decided on after extensive consultation involving ESF members and the wider scientific community. Topics for EUROCORES programmes can be submitted to ESF by individual researchers, by ESF's members, by ESF committees (Standing Committees) or by Expert Groups. ESF draws up a potential EUROCORES programme and puts it to the member organisations. As soon as at least four organisations with sufficient critical mass from four different countries have approved the proposal, ESF makes a Call for Proposals to researchers.

In 2007
In 2007, NWO supported 21 of the 32 ongoing EUROCORES programmes, which made the Netherlands the fourth most active participant in the EUROCORES programmes after France, Spain and the UK.

Table 14. NWO participation in EUROCORES

Number of EUROCORES newly launched in reporting year	3
Number of EUROCORES in which NWO is involved	21
Percentage EUROCORES with NWO participation	66

Table 14: explanation
Number of EUROCORES newly launched in reporting year:
The starting date is considered to be the launch date of the Call for Proposals.

ERA-NET

Aim
ERA-NET (European Research Area Networks) is the European Commission policy instrument for the coordination of national research programmes in Europe. An ERA-NET is a network in which European research funding bodies, such as NWO in the Netherlands, coordinate the programmes of a specific field of research and explore the possibilities of new joint programmes in that field. The aim of an ERA-NET is to prevent the fragmentation of research funding and to promote quality. Moreover, the consolidation of strengths increases the potential for research funding (in focus and in critical mass). In some cases an ERA-NET remains purely a network; in other cases the cooperating parties develop a joint research programme with a joint budget. European researchers can then apply to such a programme via a call for proposals by one of the participating parties.

In 2007
In 2007, NWO participated in 22 of the approximately 80 ERA-NETS. The Netherlands is in third place in terms of participation, after Germany and France.

- ACE-net: Applied Catalysis ERA-net
- ASTRONET: Coordinating Strategic Planning for European Astronomy
- BiodivERsA: An ERA-Net in Biodiversity Research
- COMPERA: ERA-NET on National and Regional Programme and Initiatives Dedicated to the Creation and Support of 'Competence Research Centres'
- COMPLEXITY-NET: ERA-NET on Complexity
- CO-REACH: European Research Cooperation with China
- ECORD-net: European Consortium of Ocean Research Drilling
- ERA-AGE: European Research Area in Ageing Research
- ERA-Chemistry: Implementation of Joint Bottom-up European Programmes in Chemistry
- ERA-IB: Towards an ERA in Industrial Biotechnology
- ERA-PG: Plant Genomics
- E-RARE: ERA-Net for Research Programmes on Rare Diseases
- ERA-SAGE: Ethical Legal and Societal Aspects of Genomics Research in the EU, Canada and the US
- ERASysBio: ERA-net for Systems Biology
- EuroPOLAR: The European Polar Consortium: Strategic Coordination and Networking of European Polar RTD Programmes
- HERA: Humanities in the European Research Area
- MarinERA: Coordination of National and Regional Activities in Marine RTD Activities in Europe
- NanoSci-ERA: Nanoscience in the ERA
- NORFACE: New Opportunities for Research Funding Co-operation in Europe – A Strategy for Social Sciences
- PRIOMEDCHILD: Coordination of Research on Priority Medicines for Children
- SNOWMAN: Sustainable Management of Soil and Groundwater under the Pressure of Soil Pollution and Soil Contamination
- URBAN-NET: Supporting Urban Sustainability Research in Europe

EURYI

Aim
The EURYI programme was developed by EuroHORCS and is implemented by ESF. This programme focuses on funding very talented young researchers who wish to carry out their research at a European

institute. The EURYI programme will come to an end after 2007 as the European Commission has taken over this form of subsidy through the European Research Council (ERC).

Results 2007
In 2007, for the last time within the EURYI programme, 20 outstanding young researchers were selected, each receiving a subsidy of approximately 1.2 million euro. NWO took part for the fourth time in 2007, with success. Three of the 20 grants went to Dutch researchers.

Table 15. NWO participation in EURYI

	2007	2006
Number of Dutch EURYI awards	3	5
Dutch share in total number of EURYI awards	15%	20%

Table 15: explanation
Dutch share in total number of EURYI awards:
This shows how successful the Netherlands has been in this programme.

Looking back over four years of EURYI
Over four years 15 of a total of 95 grants went to Dutch researchers. This puts the Netherlands on a par with Germany as the recipient of the second largest number of these European subsidies, after France (18).

Research Networking programme

Aim
ESF's Research Networking programme focuses on financing international network projects with the emphasis on creating interdisciplinary fora, training young researchers, developing new technologies and transferring knowledge.

In 2007
In 2007 NWO co-financed 46 of the 69 Research Networking projects that were in progress.

3.5.2 Cooperation outside Europe

There is also frequent collaboration on research with partners outside Europe.

United States
For a long time the United States have been an important partner for Dutch researchers. NWO supports, amongst other organisations, the Fullbright Center, which distributes Fullbright Awards each year to PhD students. NWO also works with the National Science Foundation.

Asia
In addition, NWO has bilateral cooperation agreements with diverse sister organisations in Asian countries such as China, Japan, India and South Korea, through which mobility and joint workshops can be financed. As a result of the implementation of NWO's policy of stimulating cooperation with the 'emerging science nations' China and India, it can be expected that the number of activities carried out in cooperation with these countries will only increase.

Developing countries
Through WOTRO Science for Global Development, NWO supports development-oriented research, with particular emphasis on poverty alleviation, health and sustainable development. As well as financing high-quality scientific research, the programmes pay special attention to social relevance and to promoting the exchange and use of knowledge, amongst other things by involving potential knowledge users. All the programmes strive towards scientific cooperation with research groups and institutes in developing countries. WOTRO Science for Global Development contributes towards achieving the UN millennium goals, and for this work it receives substantial financial support

from the General Directorate for International Cooperation (Directoraat-Generaal Internationale Samenwerking – DGIS) of the Ministry of Foreign Affairs.

3.5.3 Other internationalisation instruments

Russia programme

Aim
NWO carries out the Russia programme for OCW. This programme was established to promote scientific cooperation between the Netherlands and Russia by funding research projects, fellowships and Centres of Excellence.

In 2007
The Committee on Cooperation with the Russian Federation Commissie Samenwerking Russische Federatie) hopes to approve around four applications in 2008, in the context of the second round of the Centres of Excellence. An external evaluation of the Russia programme was conducted in October 2007, the results of which will be made known in the course of 2008.

Travel and visitor grants

Aim
The aim of the travel and visitor grants programme is to stimulate scientific research through international mobility. The travel grants programme enables Dutch researchers to go abroad. The visitor grants programme enables Dutch researchers to bring a foreign colleague to the Netherlands. Postdoctoral, highly-qualified, foreign senior researchers in all fields are eligible for such grants, if it is desirable that they come to the Netherlands in order to work on a clearly-defined piece of collaborative research.

In 2007
The final awards under the travel grants programme were made in 2007. NWO has decided to end the travel grants programme as a separate programme in the context of expansion of the range of subsidies. Visitor grants will continue to be made available.

3.5.4 Total subsidy instruments for internationalisation

Table 16 shows the number of applications made and grants awarded under diverse international programmes. The number of applications and grants declined substantially compared to 2006. This was mainly due to the visitor and travel grants, and to the bilateral cooperation agreements (other programmes).

Table 16. NWO subsidy instruments focussed mainly on international cooperation

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Russia programme				14	3	17	9	2	11	64	67	65	64	67	65
Travel and visitor grants				65	9	74	56	6	62	86	67	84	86	67	84
Other programmes				74	22	96	42	10	52	57	45	54	57	45	54
Total 2007				153	34	187	107	18	125	70	53	67	70	53	67
Total 2006	16	1	17	426	193	619	314	153	467	73	79	75	74	79	75

Table 16: explanation
Other programmes:
EUROCORES, ERA-NETS, EURYI, bilateral cooperation agreements both inside and outside Europe, and the WOTRO programme NACCAP.

Preliminary applications and applications:
the number of applications in 2006 is higher than the number of preliminary applications as not all programmes and/or subsidy instruments use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

3.6 Total for line of action 2: applications and grants

Table 17 gives an overview of all applications and grants under line of action 2.

The awarding percentages for other subsidy instruments are high, as the awarding percentages for travel and visitor grants, and for the Russia programme, are high.

Table 17. All subsidy instruments under line of action 2: applications and grants

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Themes	45	6	51	292	65	357	82	13	95	27	19	25	28	20	27
Other				327	59	386	252	29	281	77	49	73	77	49	73
Total 2007	45	6	51	619	124	743	334	42	376	53	33	49	54	34	51

Table 17: explanation
Abbreviations:
Themes = Themes from Themes with Talent; Other = Other subsidy instruments under line of action 2
Other:
The internationalisation programmes including travel and visitor grants, a number of division-specific cooperation programmes and NCF's infrastructure programmes.
Preliminary applications and applications:
The number of applications is higher than the number of preliminary applications as not all NWO divisions and subsidy instruments that come under this line of action use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

4 Line of action 3 - Science for society

Social issues and the call for greater social and technological innovation lead to an ever-increasing need for rapidly applicable knowledge. This requires a better harmonisation between current social issues and the available scientific potential. As a mediating organisation, NWO, on the basis of the open innovation model, brings together research requests and scientists under the slogan 'Science for society'. Amongst other things NWO is committed to socially-inspired programmes based on 13 themes, on temporary taskforces and on knowledge transfer and communication.

4.1 Progress line of action 3

New themes in collaboration with society
NWO is convinced of the importance of groundbreaking science for solving social questions. Consequently in 2007, NWO worked hard to develop the 13 NWO themes, which are for the most part fleshed out in collaboration with relevant subject departments, social organisations and businesses. NWO is delighted at the interest shown by these partners in the themes.
The effectiveness of collaboration between science and society was shown, for example, by a study in 2007, commissioned by STW. This study indicated that scientific quality and valorisation can go hand in hand without loss of quality.

Scientific communication
NWO has been dedicated for a long time to communication with the public at large. In 2007, a broad range of communication activities were developed and carried out, supported by the regular budget and an extra stimulatory budget.

Financing
It is a pleasure to report that the Cabinet has decided to support the second phase of the Netherlands Genomics Initiative (NGI) with a budget of 271 million euro. The top social institute Netspar also received funding for a second phase. This allowed some key priorities from line of action 3 to be partly achieved in 2007.
NWO is disappointed that OCW did not make any extra generic funding available for line of action 3. The Cabinet also decided to terminate the recently started subsidy scheme SmartMix for research collaboration between public and private bodies. In addition the ministries involved – OCW and the Ministry of Economic Affairs (EZ) – decided not to continue with the Casimir programme.
These decisions automatically lead to these priority areas being dropped from the strategy paper. NWO is determined, however, to achieve the aims of line of action 3 together with its partners, despite the reduced investment, and thereby to make a visible contribution on a great number of social priorities.

Results of subsidy instruments – line of action 3
The following paragraphs describe the existing subsidy instruments from line of action 3. Progress in 2007 is described for each instrument.

4.2 Thematic research (from: Science Valued!)

In the period 2007-2010, NWO is dedicating itself in particular to 13 themes chosen together with scientists and representatives of social organisations.

4.2.1 Conflict and security

Content
As a result of globalisation, transnational immigration and mobility, societies are becoming increasingly more diverse. This frequently leads to severe confrontations related to cultural, ethnic, religious, class and language differences. Research under this theme will focus on issues arising from within the

theme that are of great social importance. Such issues are ethnic, religious and work-related conflicts, and international conflicts over raw materials and water. In addition, attention will be paid to smaller-scale problems such as tension between young people on housing estates or in schools, as well as conflicts between parents and children or within employment organisations. This research will provide new insights into current issues such as increasing violence, security and terrorism, poverty and uncertainty, international law, and the societal costs and benefits of conflict.
The following programme outlines have been or will be elaborated: ethnic conflict around communities and societies; conflict around work and organisations; framing conflict in cultural politics and science; conflict escalation, justice and intervention; natural resources and conflicts; conflict and religion; gender and conflict.

Progress
Four politicians or former politicians have come together to form a Committee of Recommendation (Comité van Aanbeveling) for this theme. These are Job Cohen, Prof. Jan Pronk, Doekle Terpstra and Prof. Joris Voorhoeve. In 2007 a start was made with the organisation of the launch conference in May 2008.
A number of external parties are involved in giving shape to the theme. These are not only ministerial departments (Interior – BZK, Justice, Social Affairs and Employment – SZW, Defence, Foreign Affairs – BuZa, and the Ministry for Housing, Regional Development and the Environment – VROM) but also social institutions. The social stakeholders also play a role in developing the theme further. For this purpose a Social Advisory Council (Maatschappelijke Adviesraad) is being set up, which includes amongst other members Randstad Holding, Forum and the National Ombudsman.

4.2.2 Creative industry

Content
The businesses of undertaking and carrying out science have one thing in common: creativity is essential to create new ideas or things, or to make new connections between existing ideas and concepts. This is particularly true of Innovational Research and it is also true of creative industry, which contributes increasingly to the innovative capital of the Dutch economy. The creative sector is changing rapidly as a consequence of increasing digitalisation, commercialisation and globalisation. This makes the sector an interesting area for research into, and together with, creative industry, and for collaboration between creative businesses and researchers from a wide range of scientific fields. The creative industry is a very heterogeneous group of sectors and businesses in which creation and creativity play a central role and which demonstrate an above-average level of innovation. The programme also intends to promote links between parties that currently have few connections but which could benefit from one another along the entire chain from research to application. Open innovation in the creative industry can emerge through cooperation between diverse scientific disciplines, between universities and the higher vocational education sector (HBO), between artistic and design sectors, between researchers and artists, and between researchers and social players such as industry and business leaders. Due to its position as a national scientific organisation NWO can bring about such collaboration using excellent researchers in all fields.
The theme Creative Industry will be elaborated into a research programme with a strong (economic) valorisation. The aim is to generate knowledge that will help the creative industry to attune its products better to the digital age and to the wishes and expectations of modern consumers, and thus to be better able to place its products in the market of the 21st century.

Progress
A workshop with the creative industry took place on 11 September 2007. In an earlier phase prior to the workshop six research themes had been formulated together with researchers, which were discussed during the workshop:
– Technological advances and new possibilities for the creative industry
– From design to product: tuning into the consumer's wishes
– Shifts in the creation-consumption chain
– Creativity, innovation and the role of the artist
– Creative industry and mutual influences
– Intellectual property and managing culture and creativity
A recently-appointed theme preparation committee will decide on the precise content of the theme based on the workshop's findings.

4.2.3 Cultural dynamics

Content
The theme Cultural Dynamics stimulates research into social issues in which culture and the dynamics of cultural heritage play a central role. Culture is a frequently underestimated factor in current social problems and debates, whereas culture can in fact make an important contribution to dialogue and exchanges between diverse groups and cultures. In this theme culture is defined in its broadest sense, including both tangible and intangible culture. Consider for example architecture, the visual arts, theatre, music, and new forms of cultural expression that have been made possible by new media and technologies, but think also of culturally-determined customs and rituals.
The process of creating cultural heritage and the coupling of culture and identity are at the heart of this theme. We can thus gain a clearer picture of how cultural heritage and cultural citizenship come into being, and we can pay more attention to the position of groups that are discriminated against or excluded in that process. Because of the international character of the problem, research is not limited to the Dutch situation but reaches out to the rest of Europe and emphatically also beyond Europe.

The following lines of research form part of the theme: citizenship and identity; creative design and innovation; intermediality; popular culture; creating standards; the dynamics of war, cultural heritage and memory.

Progress
The theme kicked off in 2007 with a subsidy round for the first five lines of research. The organisation will strive to initiate a second phase with the help external funding. At present OCW and the Ministry of Health (VWS), as well as diverse cultural and social institutions, are among those involved in implementing the theme.

4.2.4 Sustainable earth

Content
Climate change and sustainable energy are at the top of today's agenda. The film 'An Inconvenient Truth' by Al Gore got many people thinking about climate change. Awareness of the effects of human activity on the climate has grown since the last IPCC report. This report shows the huge price that the world will have to pay if action is not taken quickly to reduce climate change. For this reason the EU and the Dutch government are searching for solutions.
Dutch science is playing a leading role in many areas of research. NWO wants to reinforce this role by stimulating research within the multidisciplinary theme Sustainable Earth. The theme Sustainable Earth consists of the following areas for special attention and programme lines:

Energy & resources
– Fossil to renewable energy transitions
– Resource interactions
– Governing trade-offs
Environmental Variability and Global Change
– Climate variability and climate models
Global concerns, local resources
– Integrated management in delta areas
– Sustainable land use in drylands
– Biodiversity

Progress
There has been intense consultation, based on a draft outline of this theme, between representatives of the most important knowledge institutions in this field. There is a lot of support for the theme from the scientific community. The theme complements other programmes such as 'Knowledge for Climate and Energy' ('Kennis voor klimaat en energie') and thus fits in well with them. The most important knowledge institutions have decided to form a partnership to agree on a programme of research on the theme of Sustainable Earth. There has been consultation on prioritising topics considered to be urgent from a policy point of view with the knowledge administrations of VROM, the ministries of Agriculture – LNV and Transport – V&W, BuZa and the Ministry of Economic Affairs

(EZ), and in collaboration with the Council for Research into Space, the Environment and Nature (Raad van Ruimte-, Milieu- en Natuuronderzoek – RMNO).Separate calls for proposals will be made for research into the various sections of the theme. A first Call for Proposals was made in 2007 within the framework of the national programme for sea and coast research, followed by a second call in spring 2008. The first call for Randstad's programme Sustainable Accessibility (Duurzame bereikbaarheid) was made at the end of 2007. Calls for proposals for other parts of the theme will be issued from mid-2008.

4.2.5 Dynamics of complex systems

Content
The theme Dynamics of Complex Systems, short title Complexity, does research into methods, strategies and approaches, which are required for scientific analyses in social, economic, natural sciences and financial fields. Research into complex systems started within the physical sciences but has extended to, for example, the behavioural sciences and economics. It is now among the fastest growing scientific disciplines. This research focuses on different types of systems, such as complex processes in infrastructure networks, the spread of diseases, fluctuations in share prices and changes in the climate. Complex systems behave deterministically, but it is still impossible to predict their evolution on the basis of the known initial conditions. In order to understand the workings of complex systems, more insight is needed into the dynamics of such systems and the concepts of deterministic chaos. An increase in calculation capacity makes it possible to simulate complex, extensive and multi-layered mathematical models. This enables the researcher to identify a similar type of behaviour in spite of the enormous variety of complex systems. The production sector, for example, can benefit from this by achieving improved process monitoring; the bio sector can benefit by acquiring an understanding of complex organisms, and the energy sector by improving control of dynamic processes.

Progress
In 2007, NWO put together a working group made up of scientists working on complexity. After carrying out a survey in the field, this group began its work by drawing up a theme document and making preparations for the launch of the theme in 2008. In addition to the NWO divisions EW, MaGW and ALW, various partners from the business sector and the Royal Dutch Meteorological Institute (KNMI) are involved in developing the theme.

4.2.6 Use of Nanosciences and Nanotechnology

Content
The application of nanotechnology can potentially have major consequences for many areas of society. One can think of such diverse areas as energy and sustainability, health, safety, water purification, communication and advanced instrumentation, with new commercial possibilities in many sectors. For this reason the Cabinet has published a Cabinet Vision on Nanotechnology (Kabinetsvisie Nanotechnologie), in which it asks STW, FOM and NanoNed to set up a Dutch Nano Initiative (Nederlands Nano Initiatief – NNI) in order to identify the possibilities and potential risks of nanotechnology. Nanotechnology will play a key role in the society of the future. The Netherlands is currently one of the world's leaders in the field of nanotechnology. Therefore, the Netherlands must respond rapidly to questions about knowledge, knowledge workers and knowledge infrastructure. The key themes of NNI's Strategic Nanotechnology Research Agenda (Strategische Research Agenda Nanotechnologie) are:
– nanomedicine
– 'Beyond Moore' (development direction nanoelectronics, beyond silicon technology)
– functional nanoparticles and surfaces with patterns at nanoscale
– risks and toxicology of nanotechnology
– nanotechnology for energy provision
– nanotechnology for water purification
– nanotechnology for food and health

Progress
In September 2007, STW, FOM and NanoNed organised a workshop for each main NNI theme with participants from businesses, universities, knowledge institutions, government and social organisations. During inspirational interactive sessions a total of around 175 experts offered their vision of the

future developments that are to be desired in the field of nanotechnology in the Netherlands. It goes without saying that during the workshops attention was also paid to the international position of the Netherlands in this field and the possible economic and social applications.
The sessions clearly revealed that there are outstanding nanoscientists active in the Netherlands, that industry and society are eagerly anticipating the many possibilities that nanotechnology has to offer and that we must ensure responsible development in this field. In October 2007, STW organised a conference for researchers and potential users of nanotechnology. Among the issues that came up at the conference were the concrete possibilities for nanotechnology applications in the areas of healthcare, environment and energy, mobility, living and building.
It is the intention that NNI's Strategic Nanotechnology Research Agenda will be ready around July 2008 and then presented to the Cabinet, following on from the publication of the Cabinet's second nanotechnology paper.

STW, FOM and NanoNed involved many external parties in developing the theme, including universities and knowledge institutions, diverse ministries, other innovation initiatives such as Point-One, the trade union movement, SMEs and large companies such as Philips, ASML, NXP, FEI Company, DSM, Shell and Unilever.

4.2.7 Brain and Cognition

Content
In essence it is our brain that determines who we are and how we manage to deal with a constantly changing environment. In doing this the brain makes use of all sorts of knowledge processes that together are called cognition. Cognition ensures that we learn, observe, remember, think, interpret and make decisions, and act effectively. Knowing how the brain and cognition function offers the chance to increase the well-being of humans. The burden of illness caused by brain disorders, and the resulting reductions in happiness, quality of life and economic potential, is huge. Knowledge about the brain and cognition is of considerable importance if we are to be able to do anything about these problems. Better understanding leads to more efficient intervention. Knowing about the functioning of the brain and cognition means knowledge on learning, communication and information processing. This knowledge results in a positive contribution to well-being and quality of life, to the knowledge economy, to communication between people and between human beings and machines.

Progress
The first plans for this initiative, set out in the initial memorandum 'National Initiative on Brain & Cognition: From Molecules to Minds' ('Nationaal Initiatief Hersenen & Cognitie': From Molecules to Minds') appeared to have broad scientific support, both nationally and internationally. The taskforce Brain and Cognition (Hersenen & Cognitie), led by Dr Jan Terlouw, elaborated the plans further in collaboration with the scientific community and investigated which social, ministerial and industrial partners would be interested in the National Initiative. The results of this investigation were published in the brochure 'Contours of the National Initiative on Brain & Cognition: Mind the Brain'.
These efforts resulted in the approval of the NWO programme 'Brain & Cognition: an integrative approach', for which the divisions ALW, GW, MaGW and ZonMw made 7.5 million euro available. This programme got off the ground in 2008 and forms the strategic scientific basis for the National Initiative. The first Call for Proposals of this programme is planned for May 2008. NWO and KNAW have decided to work together to make the National Initiative on Brain & Cognition a reality. Within the National Initiative question-driven activities will be tackled in cooperation with government departments, the private sector and social organisations. They will work on a proposal in the area of education, care and safety.

4.2.8 Knowledge base for ICT applications

Content
From healthcare and the nutritional sector to cultural heritage, the automation of operational processes is growing explosively in all sectors of society and with it the volume of digital data and communication. The deployment of ICT makes entirely new concepts of service possible. Optimal use of this potential requires a strong ICT knowledge base, in order to work on, for example, inherently safe and reliable hardware and software, trouble-free communication by means of (wireless) networks

and effective solutions for the analysis, storage and presentation of images, language, speech, and sound. Research within the theme Knowledge Base for ICT Applications focuses on four priority areas: Embedded Systems, Software-as-Service, Mixed Reality and Ambient Computing.

Progress
The theme gives rise to two strategic plans. The framework for ICT research is laid down in 'Met vaste hand' ('With a firm hand'), the national research agenda for ICT research (NOAG-ict 2005-2010), drawn up by the Netherlands Information Technology Research Platform (Informaticaonderzoek Platform Nederland – IPN), STW and the Information Technology Advisory Committee (Adviescommissie Informatica – ACI) of the NWO division EW. The main points regarding promotion of public-private collaboration, which is essential for this theme, are set out in 'Het veld aan zet' ('The groundwork is done'), the 2005-2010 strategic plan of the national taskforce ICTRegie. These plans make the leap from information technology to the broader field of information and communications technology (ICT). For this reason IPN transformed itself in 2007 into a national platform that represents the totality of university scientific research into ICT. This transformation was finalised during SIREN (Scientific ICT Research Event Netherlands), when the seven associated institutes and schools of research signed the foundation document.

4.2.9 Quality of life: dynamics of life courses

Content
The thematic programme Dynamics of Life Courses focuses on issues related to the life courses of different generations of Dutch citizens and people of non-Western origin (children, parents and grandparents) in different socialisation contexts and socioeconomic circumstances. The research will map changes and transitions in life courses, as well as differences between generations and between groups of foreign origin and indigenous groups in the areas of primary relationships, health, education and employment, position in society, and cultural integration. Research findings will provide insight into a variety of contemporary social questions such as social and economic integration, cultural experience, participation in society and employment, isolation, relationships, addiction, ageing, criminality and mobility. Knowledge will also be gained about the effects of medical technology on home care and modified accommodation. This theme offers many opportunities for interdisciplinary research. In addition, there are possibilities for designing new methods focussed on the development paths of individuals and of groups. There will also be a new impetus for collaboration between leading medical research groups, the humanities and the fields of social and behavioural sciences.

Progress
Five priority areas were pinpointed in 2007:
– Displaced lives (integration)
– Lives off the rails (criminality)
– Developed lives (youth and family)
– Quality of life (care, health)
– Longer life (ageing)

The research programme Developed Lives is currently being examined in consultation with the Ministry for Youth and Family.

4.2.10 Responsible innovation

Content
The theme Responsible Innovation focuses on issues relating to technological developments for which there is good reason to suspect that they will have profound effects, both positive and negative, on the individual and/or society. This concerns on the one hand developments in new technologies (e.g. ICT, nanotechnology, biotechnology and neuroscience) and on the other hand technological systems in transition (e.g. energy, transport, agriculture and water).
The theme contributes to socially responsible innovation by broadening and deepening research into the social and ethical aspects of science and technology. It focuses on proactive research into the ethical and social aspects of technological development pathways. The international perspective is also important here. This theme is emphatically concerned not only with the course of Dutch innovation

but also with innovation developments in other countries or regions of the world, especially in developing countries. Intensive cooperation between researchers from the arts, science and engineering, and the humanities is an important starting point in this programme. There is a lot of interest in the valorisation of the research.

Progress
A large number of ministerial departments are involved in this research programme, both in the financial aspect and in the content. In summer 2007, participants put the final touches to the theme's research agenda, which was drawn up both by researchers and by representatives of the participating departments. As a result themes were chosen that are important and challenging both from the point of view of policy and of science.
The theme will kick off officially in 2008 with a first Call for Proposals, followed by a meeting where researchers will have the opportunity to make contact with other researchers with an eye to submitting joint research proposals. This is because close cooperation between arts, science and engineering and the humanities is an important starting point in this programme.
In a subsequent phase NWO will also try to bring in private partners.

4.2.11 New instruments for healthcare

Content
Medical technology is an economic growth market around the world. In specific niches the Netherlands has a head start in know-how that offers economic prospects. This theme links this know-how advantage to a speeding up of innovation to improve public health (a longer and healthier life with fewer health differentials between groups) and to achieve better and safer healthcare. This innovation should take account of rapid changes in the make up of the population and of the rapidly changing demand for, and limits to, healthcare.
The key aim of the theme is to stimulate the development of new, effective instruments for healthcare (care products), which at the same time will generate new industry, employment opportunities and prosperity (economic products) in the Netherlands. The theme aims to increase, apply and integrate knowledge, focussing on the development of innovative equipment (appliances and instruments) to promote health, prevention, diagnostics, prognosis and the treatment of diseases, and also to improve care of the elderly, the disabled and the chronically ill.
The five priority areas ('innovation clusters') within the theme are the following: guided minimally invasive interventions; medical optics and acoustics; medical image processing; high-sensitivity diagnostics; healthcare technology and safety.

Progress
The theme preparation committee carried out an investigation in 2007, which led to the theme being divided up into the five priority areas, based on Dutch strengths. The intention is to create innovation clusters for these priority areas, in which science, technology, businesses and the healthcare system can act in an integrated fashion within public-private partnerships to accelerate innovation in medical equipment and to give the Netherlands a quantitative and qualitative advantage from both an economic and a healthcare point of view. The aim is to create five coherent research programmes under the umbrella of the theme committee.
A workshop for 'innovators' from universities, the private sector and the healthcare system was organised in April 2008 to shape the theme further; the first Call for Proposals will be launched during the course of 2008.

4.2.12 New methods of production, storage, transport and use of energy

Content
The supply of energy is one of the most urgent social issues and requires a coherent approach in the short term. Not only does the process of bringing improved and new technologies for energy supply from the concept stage to market introduction take many years, but in the longer term we will have to use every available energy option. Research into substantial improvements to highly-promising concepts and the finding of new methods for energy supply will have to take place in consultation and cooperation with market players.

A complete analysis of all energy options is not possible for a country such as the Netherlands. Researchers and market players will therefore have to identify the relevant research subjects within the Dutch context for which sufficient focus and critical mass can be achieved. Various scientific fields can make important contributions in areas such as electricity and heat generation (waste incineration, energy conservation, environment) and materials research (biomaterials, solar cells, hydrogen, fusion). The likelihood of plans making a real contribution to solving the energy problem will have to be an important criterion for the selection of research areas.

Progress
Twelve subsidiary themes have been developed within the main theme: waste incineration processes; energy conservation, transport and distribution; intelligent energy use; geothermal energy; solar cells; biomass & bio-based production; hydrogen; energy storage; fusion/ITER; social transition processes; CO2: capture/storage; Enervidi.
The NWO divisions involved will spend 96 million euro in the period from 2007 to end-2011 on energy research through the various programmes. Diverse external parties are involved in the theme, both public (ministries of OCW, EZ and VROM) and private (Shell, NRG, ECN, TNO, Nuon, Euratom, and Gasunie).
Following on from the development of the theme, the report 'Een nationale onderzoeksagenda duurzame energie' ('A national research agenda for sustainable energy') by the committee Onderzoek Duurzame Energie (Research into Sustainable Energy) was presented to ministers Plasterk (OCW) and Van der Hoeven (EZ) on 20 February 2008. In the key points of the report the committee advocates the investment of 250 million euro over a five-year period for basic energy research and the creation of a taskforce within the NWO organisation, but independent of it. The government will respond to this in 2008.

4.2.13 Systems biology

Content
Insight into the functioning of living systems is essential for the effective development of medicines and food, for tackling infections, as well as for understanding the development and regeneration process in humans, animals and plants, or the design of efficient, sustainable bioproduction processes. Organisms function on the basis of complex interrelated networks of processes. Genes, proteins and metabolic products influence each other in the cell, in a system in which many links and feedback mechanisms take place in and between various compartments. Cells within an organ and organs within an organism also engage in such complex interactions. The same applies in effect for organisms in a population and for interactions between populations. The essence of systems biology is to determine quantitatively how molecules, cells, organelles, organs and organisms cooperate in time and space to allow biological processes to proceed. (Information) technology developments and progress in the 'omics' disciplines are producing increasing amounts of data, which will be integrated into computational and theoretical approaches, and predictive models. This approach signifies a methodological breakthrough. Systems biology therefore requires cooperation between biologists, chemists, physicists, mathematicians, information scientists and medics. The efforts the Netherlands intends to make will focus on three application areas: agro/food, pharmaceuticals and bioprocess technology.

Progress
In 2007, the Systems Biology theme preparation committee was set up by the divisional administrations of the Taskforce Life Sciences (ALW, CW, NGI and ZonMw), together with EW, FOM and STW, and given the task of creating an effective and integrated national programme for systems biology. The committee's report is expected in early 2008. In addition, the theme is a major pillar of the second phase of NGI's business plan, namely in the shape of the recently-formed Netherlands Consortium for Systems Biology (NCSB). The division EW, working together with NGI, also made a Call for Proposals in 2007 for the programme Computational Life Sciences 2007, as a transition from the theme Fundamentals of Life Processes to a first concrete national subsidy programme under the theme Systems Biology.
On an international level, NWO is involved in the ERA-NET Systems Biology, ERASysBio. In the field of Systems Biology of MicroOrganisms, ALW and NGI took part in a transnational call for proposals together with, amongst others, Germany and the UK. Within that framework a European agenda for Systems Biology has been drawn up and the possibility of a second joint translational call is being looked into. Furthermore, cooperation between European systems biology consortia and institutes is taking shape under the auspices of ERASysBio.

4.2.14 Total subsidy instruments of NWO themes

Table 18 shows the applications and grants in the relevant thematic programmes.
In 2007, decisions regarding subsidies were made about two thematic programmes, both of which are programmes that were launched under a theme from the strategy Themes with Talent (2002-2005), and that were continued under a new theme with an equivalent content.

Table 18. NWO theme indicators, applications and grants

	Number of applications			Number of grants			Awarding percentage		
	M	F	Total	M	F	Total	M	F	Total
Knowledge	14	2	16	4	2	6	29	100	38
MVI	10	9	19	10	7	17	100	78	89
Totaal 2007	24	11	35	14	9	23	58	82	66

Table 18: explanation
Abbreviations:
Knowledge base = Knowledge base for ICT applications; MVI = Responsible innovation.
Awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

4.3 Cooperation and knowledge transfer between scientists and professionals

4.3.1 Smart Mix

Aim
Smart Mix stimulates economic, social and cultural innovation in which the Netherlands can shine internationally. To this end businesses and/or social organisations work together with knowledge institutions on a very wide range of subjects, on the basis of questions present in the market and in society. In its work the Smart Mix programme concentrates on value creation and on focus and critical mass in high-quality scientific research. The entire knowledge chain is used, from basic and applied research to pre-competitive developments (prototypes).

In 2007
The year 2007 began well for Smart Mix when the awards from the first subsidy round were announced. Seven projects were able to get off the ground:
– MEMPHIS: Merging Electronics and Micro & Nano PHotonics in Integrated Systems
Indicative subsidy budget: 18 million euro
– Braingain: Brain-Computer and Computer-Brain interfaces
Indicative subsidy budget: 14.6 million euro
– SMARTPIE: SMART Systems Based on Integrated PIEzo
Indicative subsidy budget: 7.1 million euro
– NIMIC: Nano IMaging under Industrial Conditions
Indicative subsidy budget: 14 million euro
– A New Generation of High-Efficiency Screens for Drugs against Major Human Illnesses
Indicative subsidy budget: 14 million euro
– TeRM: Translational Excellence in Regenerative Medicine
Indicative subsidy budget: 15 million euro
– CATCHBIO: CATalysis for Sustainable CHemicals from BIOmass
Indicative subsidy budget: 16.6 million euro

However, in the autumn the financial backers OCW and EZ decided not to make any more money available for a second round. Sadly, NWO and SenterNovem were obliged to end the programme after a single successful round.

4.3.2 Casimir

Aim
The Casimir programme aims to increase researchers' mobility and the number of exchanges of researchers between companies and public knowledge institutions. The programme is funded by the Deltapunt Beta/Technology (as delegated client on behalf of OCW and EZ).

In 2007
The final subsidy round was held in 2007, in which 35 applications were submitted, of which 15 were approved.

Table 19. Casimir indicators, applications and grants

	Number of applications			Number of grants			Awarding percentage		
	M	F	Total	M	F	Total	M	F	Total
Total 2007	22	9	31	10	5	15	45	56	48
Total 2006	28	7	35	11	4	15	39	57	43

Table 19: explanation
Awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

4.3.3 Valorisation Grants

Aim
The Valorisation Grant was established on the initiative of STW and aims to support university researchers in their plans to put knowledge from their research into a marketable form through a new company or an existing SME. Other parties that have joined up with the Valorisation Grant are ICTRegie, ZonMw/Stigon, NGI, the research programme Progress, and, since 2007, NanoNed.
The Valorisation Grant consists of two phases, which must be applied for separately. Before submitting phase 2 proposals it is a requirement that phase 1 has been approved and carried out. Phase 1 concerns the funding of studies into the technological and commercial feasibility of the valorisation plan. For this phase a subsidy of up to 25,000 euro is awarded for a maximum six-month period. Phase 2 is the valorisation phase, in which innovation and organisation are systematically underpinned. At the end of this phase the point should have been reached where private financiers are willing to take on the further commercial development themselves. For phase 2 there is a maximum subsidy of 200,000 euro for a period of up to two years.

In 2007
In 2007, there were 50 proposals submitted in phase 1, of which 24 were approved. In phase 2, 15 applications were submitted of which 8 were approved.

4.4 Taskforces

NWO has three temporary taskforces: NGI, ACTS and ICTRegie. Their task is to stimulate new scientific research in specific strategic fields by means of a substantial, targeted injection of funds, and to bring together scientists and research requests from society.

4.4.1 ACTS

Aim
ACTS' mission is to initiate and support the development of new technological concepts for the sustainable production of materials and energy. ACTS contributes to lasting economic growth and a knowledge infrastructure in the Netherlands, and wishes to encourage young talent to take up a career in science and technology.

In 2007
In 2007, ACTS had five public-private programmes: Integration of Biosynthesis and Organic Synthesis (IBOS); Sustainable Hydrogen; Advanced Sustainable Processes by Engaging Catalytic Technologies (ASPECT); Process on a Chip (PoaC) and Bio-Based Sustainable Industrial Chemicals (B-Basic). Internationally, ACTS has a collaborative programme with Taiwan in the field of catalysis. ACTS also coordinates two European networks for transnational cooperation in Europe: Applied Catalysis European Network (ACENET) and ERA-NET Industrial Biotechnology (ERA-IB). In the last five years ACTS has grown into an expertise network for public-private cooperation in the areas of sustainable chemistry, life sciences and technology.
In 2007 ACTS, in close cooperation with its stakeholders, launched its strategy for the period 2007-2011: ACTS means business. The title points to the main theme for the coming period: translating knowledge into concrete contributions to innovation in business and society.

4.4.2 ICTRegie

Aim
ICTRegie's objective is to strengthen the Dutch ICT knowledge infrastructure and to bring supply into line with demand.

In 2007
In 2007, the taskforce organised the first annual ICTDelta conference, which attracted a very high attendance of 1200. At the conference ICTRegie launched the first nine ICT Innovation platforms (IIPs). These thematic partnerships of researchers, entrepreneurs and consumers work together to define challenging research questions and to start work on them. After the conference a further five IIP initiatives started up. ICTRegie was evaluated in autumn 2007. The evaluation committee was enthusiastic about the ICT Innovation Platforms and suggested that the strategy should focus on them and that more funds should be freed up for them.

4.4.3 Netherlands Genomics Initiative (NGI)

Aim
NGI finances and manages genomics research in the Netherlands. Universities, research institutes, businesses and social organisations work together in large-scale consortia on effective programmes within one of the four central themes: food, health, sustainability and safety. The starting point is to gain new knowledge but at the same time the consortia have the task of using this knowledge in a practical way to create applications that generate added social and economic value. NGI, set up in 2002, is funded by the Dutch government.

In 2007
The first phase of NGI was concluded in 2007. Looking back over the period 2002-2007, the Supervisory Council concluded that NGI had more than succeeded in its tasks of building up an internationally prominent knowledge infrastructure for genomics, of giving shape to the social and economic uses of research results (valorisation) and of helping genomics research to take root in society. This conclusion has been supported by the various international review panels that have passed judgement on NGI over the past few years.
On Prinsjesdag (opening of Parliament) 2007 it was announced that the Dutch government is prepared to continue with NGI and has made 271 million euro available for it for the period 2008-2012.

4.5 Communication with the general public

4.5.1 Activities for the public initiated and carried out by NWO

Aim
Part of NWO's mission is to inform the general public about scientific research and to involve people in it. To this end, NWO, in particular, facilitates communication between the researchers it funds and the public. For example, NWO creates 'podia' (public lectures) where researchers can present their work.

In 2007

NWO offered its researchers a wide range of podia in 2007:

– *Whole year* – **Research reports** and **press releases**: reports to the media, especially about research results; 600 copies.

Table 20. Media indicators for NWO research reports and NWO press releases

	2007	2006
Number of research reports and press releases produced by NWO in the reporting year	193	255
Number of media reports:		
National daily newspapers	400	295
Regional daily newspapers	166	257
Radio and TV (incl. Internet)	588	287
Scientific journals (including university magazines, professional journals, general magazines)	1,066	893

Table 20: explanation

Table 20 shows how many reports NWO (incl. STW en FOM) issued in 2007 and how often these led to publication

in the most important media. The figures given above were obtained by searching the media intensively for reports on activities in which NWO is involved. The offices of NWO, STW and FOM pick up these articles on a weekly basis, after which the numbers thus found are added up to arrive at the above figures.

– *25 April* – **Huygens lecture**: three lectures on the theme of cultural dynamics before a wide audience, in collaboration with The Hague city council, daily newspaper NRC Handelsblad and KPMG.
– *22 May* – **Bessensap**: presentations by researchers to an audience of science journalists, information and public relations officials, and other professionals in the field of scientific communication, in collaboration with the Vereniging voor Wetenschapsjournalisten (Society of Science Journalists).
– *June* – **The Great Nutrition Experiment**: primary school children investigate the connection between nutrition and movement, followed by an event in the science centre NEMO. The experiment had both an educational and a scientific objective: the children learned from it and it was followed by an article published in a scientific journal. Organised by ZonMw, together with NGI and NEMO, amongst others, and sponsored by companies including Philips, Unilever and IBM.
– *16 September* – **Sign of the Times**: day for the general public on science and politics, organised by NWO division MaGW, in collaboration with Stichting Toekomstbeeld der techniek (Foundation on the Future of Technology) of the Rathenau Institute.
– *4 October* – **STW conference 'Nieuwe Perspectieven'** (New Perspectives): conference about nanotechnology and its applications, for potential users in diverse sectors of society, organised by STW.
– *October* – **Start of the exhibition Gebruik je hersenen** (Use your brain): exhibition in LUMC (Leids Universitair Medisch Centrum – Leiden University Medical Centre), on the initiative of ZonMw, NGI and in collaboration with, amongst others, LUMC.
– *20 October* – **Launch of NWO general interest book 'Op onderzoek'** (In Search): publication for a general readership with articles, interviews and short reports about NWO research completed in 2006; 5000 copies.
– *20 November* – **Conference Justitie & Cognitie** (Justice & Cognition): conference on possible applications for the judicial sector of results of research into cognition, organised within the framework of the theme Cognition, with the collaboration of the prominent US scientist Michael Gazzaniga.
– *October 2007* – **Start of the exhibition Zo Apen, Zo Mensen** (Like Apes, Like Humans) at Naturalis Leiden, initiated in part by the programme Cognition and Behaviour; runs until 24 August 2008 and will then travel to a number of other European science centres.
– *December* – **Final of the National Science Quiz Senior and Junior**; the senior part was preceded by a series of seven qualifying rounds.

Table 21. Entries and viewing figures for the National Science Quiz and National Science Quiz Junior

Science quiz VPRO-NWO	2007	2006
Number of entries to quiz	18,500	19,000
Viewing figures for TV show	2,790,000	2,600,000

Table 21: explanation
Number of entries to quiz:
The number of entries combines the entries received through newspapers and those received via the NWO website.
Viewing figures for TV show:
The viewing figures for the TV broadcast combine those of the National Science Quiz and the National Science Quiz Junior,
including the qualifying rounds, for TV as well as Internet (uitzendinggemist.nl). The figures are registered by the Ratings Research Foundation.

4.5.2 Participation of NWO in (inter)national infrastructural facilities for communication with the public

Aim
As a national organisation, NWO feels that it has a responsibility for creating and maintaining an (inter)national infrastructure for communication with the public. For this reason NWO contributes to projects and activities initiated by other organisations, which can be considered to fit in with this aim.

In 2007
In 2007 NWO contributed to the following facilities:
- *Whole year* – **Alpha Galileo**: NWO is the "national subscriber" of this "Internet press agency" for European research. AG promotes research by offering the international media a "one-stop-shop" for press releases, announcements etc. from European knowledge institutions. As NWO is the national subscriber, all Dutch knowledge institutions have free access to all AG's services.
- *17 to 24 October* – **WetenWeek** (Knowledge Week): a national event, particularly aimed at schoolchildren and their families, to fire children's enthusiasm for science and technology, organised by NCWT (Stichting Nationaal Centrum voor Wetenschap en Technologie – National Centre for Science and Technology).
- *20 October* – **Scientific**: science festival as part of WetenWeek in Westergasfabriek, Amsterdam.

4.5.3 Sponsoring third-party activities

Aim
NWO has a small annual budget for contributions to initiatives by (small) organisations that develop projects dealing with science and the general public. NWO itself has no direct or indirect involvement in the content or organisation of the projects that it supports in this way.

In 2007
In 2007, the budget was spent on the following projects:
- *7 June* – **Techniek Toernooi** (Technology Tournament): fourth annual technology competition for primary schools, in which 200 primary school teams from all over the Netherlands (1000 pupils + supporters) took part.
- *17 to 19 August* – **Lowlands University**: lectures by scientists at the Lowlands Festival.
- *28 September* – **Discovery 07**: celebration of contemporary science, as part of the European Researchers Night, in Westergasfabriek, Amsterdam.

4.6 Total for line of action 3: applications and grants

The table below gives an overview of all applications and grants under line of action 3.

Table 22. All subsidy instruments under line of action 3: applications and grants 2007

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Themes				24	11	35	14	9	23	58	82	66	58	82	66
Casimir				22	9	31	10	5	15	45	56	48	45	56	48
Other	51	8	59	98	20	118	33	5	38	31	25	30	34	25	32
Total 2007	51	8	59	144	40	184	57	19	76	38	48	40	40	48	41

Table 22: explanation
Abbreviations:
Themes = Themes from Science Valued!; Other = Other subsidy instruments under Line of action 3
Other:
Other includes the stimulation and priority programmes, and division-specific programmes.
Preliminary applications and applications:
The number of applications can be higher than the number of preliminary applications because not all programmes and/or subsidy instruments use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

5 Granting subsidies: selection, input and output

A key aspect of NWO's mission is to stimulate scientific research by granting subsidies. Funding nearly always takes place on the basis of a national competition aimed at the selection of the best research proposals. To arrive at a fair assessment of submitted proposals, NWO consults many experts, both at home and abroad. The NWO office tries its utmost to reduce the burden on the experts to a minimum and make the process run as efficiently as possible.

5.1 Optimising the granting process

In its selection of research proposals NWO uses a standard procedure that comprises the following steps:

- When a large number of research proposals are expected, preliminary applications are used. A prior appointed evaluation committee, in which committee members act as pre-advisers, selects the applicants who can 'go through' to the next stage.
- The NWO office then sends the final applications to referees (who remain anonymous to the committee and to the applicant).
- The referee reports (at least two for each application) are sent to the applicant, who has the opportunity to respond to them.
- The evaluation committee meets to discuss the applications, the referee reports and the responses.
- The committee engages in formal consultation on the applications, then prioritises them or, in some cases, selects candidates for interviews (this occurs in some rounds, for example in the Innovational Research Incentives Scheme).
- After its final meeting, the evaluation committee sends its recommendations to the relevant administration, which makes a decision based on the recommendations regarding priorities and on the available budget.
- Applicants are then informed of the decision.
- Unsuccessful applicants have six weeks in which to appeal against the decision, after which the Appeals and Objections Committee makes a judgement after holding a hearing.

NWO continuously looks for ways to optimise the selection process. NWO sees it as its task to reduce to a minimum the burden on the researchers who submit proposals. The use of preliminary applications is one way of achieving this: only those applications that get through the preliminary application stage need to be elaborated further by the researchers. An increasing number of programmes that anticipate a high pressure of applications work with preliminary applications.
Besides, the work of researchers is reduced as progress reports and project results may be submitted through the electronic Iris system. NWO took further steps in 2007 towards streamlining the subsidy granting process by standardising programme brochures. To evaluate the applications submitted, NWO seeks the help of a large number of specialists in the relevant fields of research. It is these experts and their substantive comments on the applications that enable assessment and selection to take place. NWO also intends to cut the burden on these specialists to a minimum with the help of an evaluation process that works increasingly by electronic means. The use of preliminary applications also reduces the work of referees.
In 2007, the code of conduct for committees was applied in all selection procedures; it aims to ensure that there is no conflict of interest, or any appearance of a conflict of interest, in the evaluation and selection of applications. How this regulation works in practice will be evaluated in 2008.

5.2 Selection process

Within NWO's various subsidy programmes, a rigorous selection of submitted proposals takes place on the basis of fixed criteria. The main criterion is always the scientific quality of the proposed research. It follows from NWO's objectives that only the best research is funded. The majority of applicants receive

a negative decision on the submitted application. This happens either because the proposal is not of sufficiently high quality or often because NWO does not have sufficient funds available.

5.2.1 Applications and grants

Table 23 gives the total number of subsidy applications by researchers, which led to subsidy decisions in 2007.

In 2007
The awarding percentages show that competition is strongest in line of action 1, which includes the Talent programmes and the free competition.

Comparison between 2006 and 2007
As the 2006 annual report was based on the strategic aims of the strategy paper Themes with Talent, while from 2007 onwards NWO will report according to the lines of action of the Science Valued! strategy paper, there can only be a comparison made of the totals for the two years.
The total number of preliminary applications and applications was higher in 2007 than in 2006, while the gross and net awarding percentages were lower in 2007. There was a greater pressure of applications in 2007 than in the previous year.

Table 23. Applications and grants, totals for 2007, categorised by line of action

	Number of preliminary applications			Number of applications			Number of grants			Gross awarding percentage			Net awarding percentage		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Opportunities for researchers	470	194	664	2,373	897	3,270	755	278	1,033	28	28	28	32	31	32
Consolidating strengths	45	6	51	619	124	743	334	42	376	53	33	49	54	34	51
Science for society	51	8	59	144	40	184	57	19	76	38	48	40	40	48	41
Total 2007	566	208	774	3,136	1,061	4,197	1,146	339	1,485	33	29	32	37	32	35
Total 2006	515	167	682	2,939	946	3,885	1,195	393	1,588	37	37	37	41	42	41

Table 23: explanation
Preliminary applications and applications:
The number of applications is higher than the number of preliminary applications as not all subsidy instruments that come under the relevant lines of action use preliminary applications.
Gross awarding percentage:
The number of applications accepted divided by the number of applications initially submitted to NWO.
'Applications initially submitted to NWO' means:
– The number of preliminary applications received where preliminary applications are involved.
– The number of (fully elaborated) applications received where no preliminary applications are involved.
Net awarding percentage:
The number of applications accepted divided by the number of (fully elaborated) applications submitted to NWO.

Table 24 shows the number of experts approached by NWO. The number of referees approached in 2007 was comparable to that of 2006.

Table 24. Involvement of referees

	2007			2006		
	NL	Foreign	Total	NL	Foreign	Total
Total number of referees approached	3,559	6,997	10,556	3,712	7,125	10,837
Total number of referee reports received	2,484	3,774	6,258	2,450	4,245	6,695

Table 24: explanation
The total number of referees approached is the number of referees who received a research proposal from NWO for evaluation.

5.2.2 Administrative costs – burden on NWO office

Employees of the NWO office are among those who select applications, develop and implement new policies, promote the transfer of knowledge and obtain new funds for research. Table 25 shows the deployment of manpower and financial resources at the office and also the share of administrative costs in total NWO overheads. The number of office employees is about the same as in 2006. The percentage of total administrative costs has also remained more or less the same.

Table 25. Burden on NWO office

	2007	2006
Number of FTE office employees at NWO (including FOM and STW)	356	356
NWO administration costs (including FOM and STW) (x €1000)	36,114	34,833
Administration costs as a percentage of total expenditure	6.8%	6.6%

Table 25: explanation
The number of FTEs in the NWO office and the percentage share of administrative costs give an indication of NWO's overheads.

Table 26 gives a picture of absence through illness, which increased slightly compared to 2006. More information on NWO's human resources policy can be found in its Social Annual Report.

Table 26. Absence through illness at NWO

	2007	2006
Average % absence through illness	2.86	2.69

Table 26: explanation
Calculation in line with the method agreed as of 1 January 2003, derived from the working conditions agreement with SZW.

5.2.3 Appeals and objections

If an applicant believes to have been treated unfairly then this person has the legal right to lodge an appeal or objection. NWO regards the appeals procedure as an efficient method to correct misjudgements or to contest fundamental procedural matters.

Table 27 shows how many appeals NWO received in 2007. The number fell sharply compared to 2006 and the number of appeals found to be valid also declined.
The number of appeals gives an indication of the level of transparency at NWO and of the level of acceptance of procedures and rulings. It also provides a picture of the professionalism of the NWO organisation.

Table 27. Due care evaluation

Appeals and objections	2007	2006
Number of appeals	39	48
Number of valid appeals	5	7

Table 27: explanation
Number of valid appeals:
An appeal is valid if the reconsideration of the case causes the original decision to be annulled.

In 2007, a total of more than 4000 applications were submitted. An appeal was lodged for 0.9% of these applications, a lower percentage than in 2006 (1.2%). NWO has found that since the introduction of the code on (possible) conflict of interest in early 2006, no appeals have been received concerning conflict of interest.

5.3 Input: deployment people and resources

Table 28 shows the size and distribution of NWO subsidy awards amongst the diverse recipients, with the amounts for each university/research institute. It gives an indication as to whether NWO funding reaches the entire knowledge infrastructure.

Table 28. Indicators relating to subsidy recipients (x €1000)

	Central	ALW	CW	EW
NWO institutes:				
ASTRON Netherlands Institute for Radio Astronomy	17,844			163
National Research Institute for Mathematics and Computer Science (CWI)	13,440	40		2,643
FOM institute for Atomic and Molecular Physics (AMOLF)	17,481	102	241	29
Nikhef national institute voor subatomic physics	12,670	17		
FOM institute for Plasma Physics Rijnhuizen	15,770	18	76	48
Institute for National History (ING)	3,238			
NIOZ Royal Netherlands Institute for Sea Research	16,526	3,719		33
Netherlands Institute for the Study of Crime and Law Enforcement (NSCR)	1,468			
SRON Netherlands Institute for Space Research	16,871	38		223
Total NWO institutes	115,308	3,934	317	3,139
Universities:				
Erasmus University Rotterdam	6,160	1,071	562	155
Radboud University Nijmegen	16,965	2,258	1,250	1,838
University of Groningen	1,139	4,507	1,950	1,951
Delft University of Technology	2,082	780	1,092	1,968
Eindhoven University of Technology	736	79	1,314	3,508
Leiden University	3,164	1,718	2,595	3,404
University of Maastricht	644	199		460
University of Twente	256	149	887	1,892
Utrecht University	5,232	5,709	3,245	2,966
University of Amsterdam	1,535	2,308	1,193	3,589
University of Tilburg	3,115	112		465
VU University Amsterdam	1,365	3,451	1,602	2,642
Wageningen University and Research Centre	1,973	3,433	721	47
Total universities	44,366	25,774	16,411	24,885
Other institutions	4,387	4,929	543	2,735
Other (including settlements)	15,357	2,128	(157)	804
Administrative costs NWO	13,248	2,451	991	1,913
Total 2007	192,666	39,216	18,105	33,476
Total 2006	166,058	41,288	17,108	32,943

Table 28: explanation
NWO institutes/universities:
The data from NWO institutes refer to NWO's lump sum awards to the institutes and the subsidies awarded to applicants working for an NWO institute. The data from the universities refer to subsidies awarded to applicants who work for a Dutch university. The categorisation by university is made on the basis of the institution where the main applicant works.

GW	MaGW	N	TW	WOTRO	ZonMw	NCF	NGI	ACTS	ICTRegie	Total	Total % NWO
										18,007	3
						78				16,201	3
		715				15				18,583	4
		269				100				13,056	2
						13				15,925	3
										3,238	1
				305						20,583	4
	59									1,527	0.3
										17,132	3
	59	984		305		206				124,252	24
1,062	1,495	41	739	37	4,628	5	170	51		16,176	3
2,513	3,036	1,513	2,994	1,083	2,906	9	2,592	347		39,304	7
2,243	2,951	3,078	1,083	198	1,888	66	107	1,517		22,678	4
331	341	4,430	9,260	52		181	3,100	2,883		25,500	5
602	464	1,749	6,898		150	247		473		16,220	3
4,937	2,141	3,370	3,517	492	2,634	265	1,122	388		29,747	6
395	2,550		338		1,698	4	965			7,253	1
777	1,028	3,106	8,955	20		193	84	691		18,038	3
3,162	4,319	2,732	2,384	365	4,244	311	557	572	1,000	36,798	7
4,177	5,572	2,418	1,098	2,088	2,547	82	262	46		26,915	5
572	4,949			53		1	2			9,269	2
1,673	2,751	2,288	2,027	376	1,386	126	309	13		20,009	4
553	726	128	2,970	1,419	87	15	2,588	1,579		16,239	3
22,997	32,323	24,853	42,263	6,183	22,168	1,505	11,858	8,560	1,000	285,146	54
2,119	4,130	44	434	1,495	2,872	3,198	2,681	310	249	30,126	6
504	140	699	2,901	(68)	7,595	17,300	4,227	234	783	52,447	10
1,431	3,087	2,303	3,068	886	2,180	494	2,089	1,095	878	36,114	7
27,051	39,739	28,883	48,666	8,801	34,815	22,703	20,855	10,199	2,910	528,085	100
25,723	45,087	35,300	53,570	8,857	43,805	7,089	33,902	9,891	2,268	522,961	100

Central:
The column Central shows the expenditure relating to the institutes' own research activities and to the NWO Governing Board's central programmes (amongst others the Aspasia programmes and the central positions for the Innovational Research Incentives Scheme). Expenditure on the stimulation and priority programmes, and on the Genomics programmes Functional Genomics and Proteomics, Biomolecular Informatics and Social and Ethical Questions, are included in the various scientific divisions.
Other research institutions:
These are research institutions other than NWO institutes and universities.

Table 29 shows the research positions funded by NWO through grants at NWO institutes, universities and other institutions, office employees of the central apparatus (The Hague) and FOM and STW (Utrecht). The figures show the situation as at 31 December 2007.

Table 29. Employees financed by NWO (in FTEs)

	Central		ALW		CW		EW		GW		MaGW	
	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP
NWO institutes:												
ASTRON	55	129					3					
CWI	118	50	1				37					
FOM-AMOLF	90	66	1		1		1					
FOM-Nikhef	85	95										
FOM-Rijnhuizen	52	89			1		1					
ING	23	20										
NIOZ	47	109	29				1					
NSCR	13	4									2	
SRON	69	110	1				3					
Total NWO institutes	552	673	32		2		46				2	
Universities:												
EUR	15		18		10		6		15		34	
RU	14		52		27		35	1	49	1	63	
RUG	23		74	2	39		42	1	41		55	
TUD	9		11		17		43		7		5	
TUE	12				23		73	1	8		14	
UL	31		35	1	43		62		96	1	47	
UM	3		7				9		5		55	
UT	5		4		17		42		13		17	
UU	55		122	2	53		55		60		111	
UvA	33		25	1	25		70	1	88		116	1
UvT	6		1				11		9	1	74	
VUA	41		65		28		50	1	32	1	64	
WUR	14		61	2	9		1		12		15	
Total universities	262		474	7	289		499	4	435	3	669	1
Other research institutions	52	4	86	3	19		14	2	28	1	31	
Office		100		27		20		24		21		37
Total 2007	867	777	592	37	309	21	559	30	463	25	702	38
Total 2006	801	795	555	38	287	24	562	29	467	26	655	40

Table 29: explanation
In cases where joint applications by universities (and/or NWO institutes) are accepted, the location of the main applicant is considered to be the recipient.
Central:
The column Central includes the FTEs relating to the institutes' own research activities and to the central programmes Aspasia and Innovative Research Incentives Scheme (old style, up to end-2001), Mosaic, Casimir, Top Talent, Spinoza, Cooperation with Russia, and EURYI.
The FTEs of the central programmes, priority programmes and stimulation programmes are included in the various scientific divisions that carry out these programmes.
Other research institutions:
These are research institutions other than NWO institutes and universities.

N		TW		WOTRO		ZonMw		NCF		NGI		ACTS		ICTRegie		Total		Total general	Percentage in total
SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP	SP	NSP		
																58	129	187	3
		2														158	50	208	3
7																100	66	166	3
6																91	95	186	3
																54	89	143	2
																23	20	43	1
				5												82	109	191	3
																14	4	18	0
																73	110	183	3
13		2		5												653	673	1,326	21
1		11	5			88	3					1				197	7	205	3
21	2	39	8	24	9	52				2		4				381	21	402	6
32	9	24	3	7		42	1			2		10				392	16	408	6
64	3	138	10	3		1						6				304	13	317	5
26		92	6			3						5				255	7	262	4
59		26	8	15		48	4			2		4				466	14	480	7
		5	3			38	2			4						126	5	131	2
44		93	18	1		1				1		13				251	18	268	4
43	1	42	3	9		86				8		11				655	6	661	10
37	1	17	2	51	8	57	2			2		1				522	17	538	8
				1		1										103	1	103	2
25	2	17	7	7		43	1			1		2	1			375	12	387	6
3		42	11	45		1				5		3				211	12	223	3
354	18	546	82	162	17	461	13			27		59				4,237	148	4,385	68
9		15	2	13		52	11			14	1	6				340	22	362	6
	52		46		11				5		10				4		356	356	6
376	70	563	129	180	28	514	23	0	5	41	11	65	1	0	4	5,230	1,199	6,429	100
415	94	630	126	182	12	501	49	0	5	58	12	69	4	0	3	5,182	1,257	6,439	100

NWO taskforces NGI and ACTS:
The figures given here relate to researchers funded by means of subsidies granted by NGI or ACTS. These subsidies are usually administered by NWO divisions. The appointed staff, however, are not included in the FTEs of the divisions but are wholly assigned to NGI and ACTS.
SP:
Scientific Personnel
NSP:
Not Scientific Personnel
The figures in this table are rounded off to the nearest whole number. Figures in the columns Total and General Total are based on the actual figures, which are not rounded off.

5.4 Output: publications and other products

In 2007, a total of more than 5000 researchers were active in research projects financed by NWO (Table 29). The output from these projects is shown in Tables 30a to 30c.

Table 30a lists the academic publications. This table gives insight into the publications and other products in 2007, which are for the most part the results of research financed by NWO over a number of years. In 2007, there were more publications of all types than in 2006 with the exception of theses. The number of publications in refereed journals, in particular, rose considerably.

Table 30a. Productivity indicators: academic publications

	Academic publications				
	Publications in refereed journals	Publications in other scientific journals	Contributions to books	Monographs	Theses
ALW	554	230	47	5	35
CW	587	184	34		64
EW	973	374	62	13	94
GW	488	217	391	124	31
MaGW	945	104	227	56	62
N	793	151	17		73
NCF	107	13	1		5
Technical Sciences (TW)	747	790	48	11	102
WOTRO	111	2	26	11	32
ZonMw	876	117	20	4	45
NWO institutes	1,248	281	69	27	56
Other	147	192	38	51	10
Total 2007	7,576	2,655	980	302	609
Total 2006	6,304	2,315	897	210	639

Table 30a: explanation
Publications in refereed journals:
The number of articles in academic journals that employ a peer review system, which is independent of the editors.
Publications in other scientific journals:
Articles in other academic (electronic) journals, including conference proceedings, and other scientific output such as CD-ROMs intended for scientists and researchers. Not included are unpublished conference contributions such as posters and talks.
Book contributions:
Contributions to scientific books intended for scientists and researchers.
Monographs:
Books written for scientists and researchers, which describe the results of scientific research.
Theses:
The publication on the basis of which a researcher obtains a doctorate.

Table 30b. Publications in Nature and Science

	Nature	Science
Total 2007	47	12
Total 2006	48	16

Table 30b: explanation
This table shows the number of publications by NWO-funded researchers in the journals Nature and Science.

Table 30c shows how many and what kind of professional products NWO research produced in 2007.

Table 30c. Productivity indicators: other professional products and publications, and patents

	Other professional products and publications	Patents
ALW	318	7
CW	187	16
EW	270	1
GW	328	
MaGW	939	2
N	1,056	3
NCF	35	
TW	95	12
WOTRO	86	
ZonMw	288	4
NWO institutes	946	7
Other	95	
Total 2007	4,643	52
Total 2006	4,911	45

Table 30c: explanation
Other professional products and publications:
The other professional products illustrate more broadly-based efforts relating to knowledge transmission and social relevance. These include contracts, publications designed for the general public, contributions to documentaries or scientific TV or radio broadcasts, CD-ROMs, etc.
This section also includes all other output not mentioned previously, which derives to a great extent from NWO-funded research, such as prizes, membership of the programme committees of important conferences, unpublished conference contributions, etc.
Patents:
Registered or applied-for patents from NWO research and contracts flowing from these. These give an indication of the commercial significance of NWO research.

6 Financial policy and budget

NWO's financial policy is aimed at managing the source of available funds, spending those funds on scientific research, maintaining an acceptable level of liquidity and careful management of the financial resources made available to NWO. This chapter gives details of the financial policy pursued in 2007. Figures are based on NWO's consolidated financial results. In addition, this chapter contains a brief review of how the (simple) 2007 budget of NWO The Hague was used, together with a look at the future.

6.1 Financial policy

6.1.1 Source of available funding

NWO's assets increased by €62 mln (12%) in 2007 from the 2006 level, to €567 mln. The state contribution from OCW rose slightly by €3 mln to €311 mln to compensate for salary and price increases.

In 2007, NWO received earmarked funds of €155 mln from OCW (€103 mln in 2006). OCW made the one-off contribution of €50 mln for SmartMix in 2007 and a contribution of €11 mln for the continuation of NGI.

Third-party contributions (i.e. contributions from sponsors other than OCW) rose to €90 mln (share of total assets 16%). In addition to OCW funding, NWO was financed by nine other ministerial departments to a total of €49 mln in 2007 (€47 mln in 2006). The bulk of income from other departments came from the ministries of Foreign Affairs (€10 mln) and Economic Affairs (€33 mln, of which €19 mln was for STW's Open Technology Programme – OTP). The source of the contributions is explained in the consolidated and simple annual accounts.

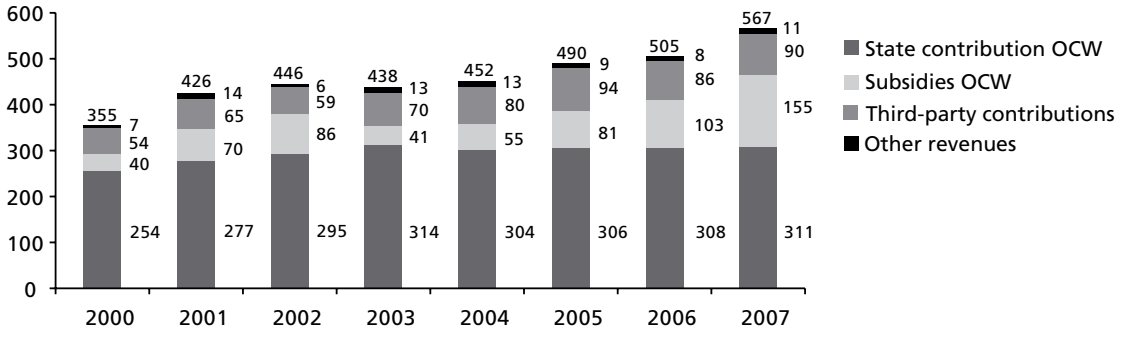


Figure 7. Development of NWO revenues 2000-2007 in € mln

6.1.2 Spending of funds on scientific research

The deployment of funds for scientific research, whether by means of subsidies to third parties or by exploitation of the institutes (including other consolidated parties such as Astrotec and Research Centre Watergraafsmeer – WCW), rose by 2% to €484 mln (2006: €476 mln).

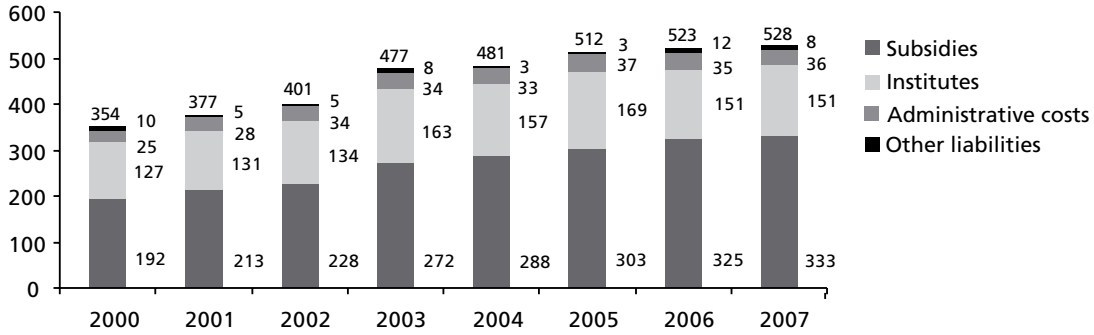


Figure 8. Development of NWO liabilities 2000-2007 in €mln

In 2007, new obligations of €489 mln were entered into (€417 mln in 2006) and a total of €343 mln in subsidies was paid.

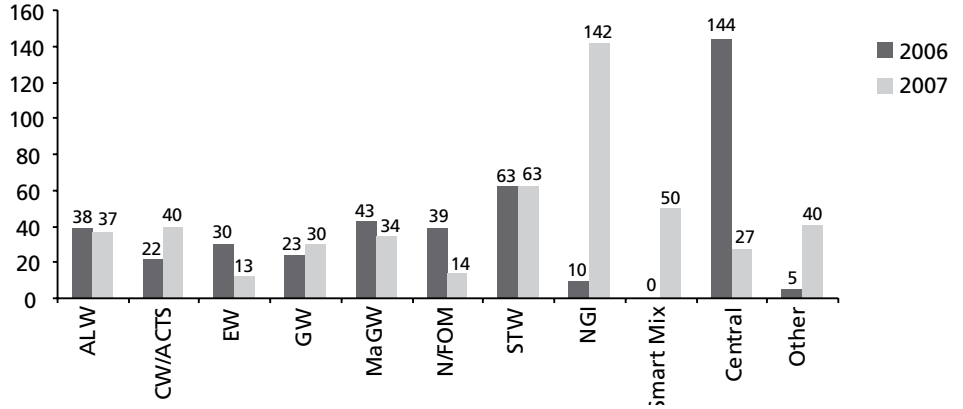


Figure 9. Development of obligations entered into by NWO in 2006 and 2007 in €mln

The increase is due to the obligations entered into in 2007 for the second phase of NGI (€142 mln) and for Smart Mix (€50 mln).
A total of €100 mln of the central obligations in 2006 related to the one-off subsidies awarded in that year for large-scale research facilities.

As a result of the increase in obligations entered into in 2007, the total of outstanding obligations rose to €993 mln (€862 mln in 2006).

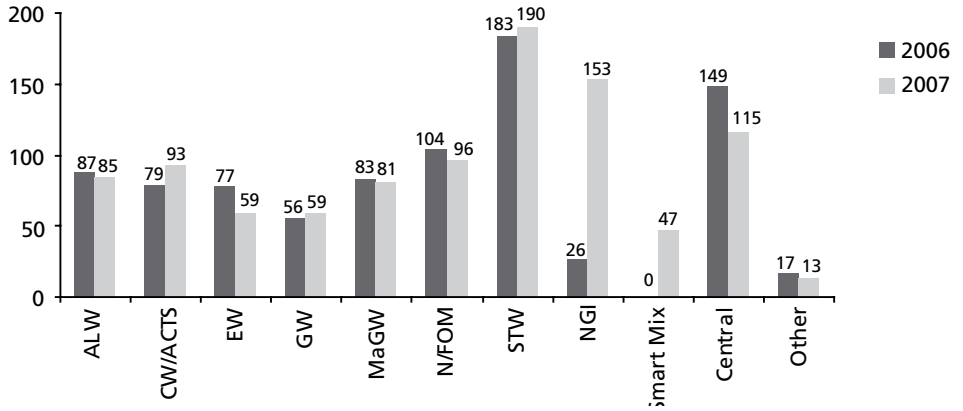


Figure 10. Development of total outstanding NWO obligations as at end-2006 and end-2007 in €mln

The outstanding obligations of €993 mln have to be paid from NWO's own funds and from future contributions from OCW and from third parties.

6.1.3 Liquidity position

Liquid funds were up by €37 mln at the end of 2007 from the end of 2006. It is not always possible to put funds to use in subsidising research programmes as soon as they are made available by funding bodies. The rhythm at which funding bodies make financial resources available to NWO can differ from the timing of subsidy awards by NWO. NWO tries to harmonise these inflows and outflows as much as possible so as to manage its liquidity space as efficiently as possible.

The increase in liquidity space in 2007 is the result of differences in the cash-flow rhythms in the programmes large-scale research facilities, Smart Mix and the continuation of NGI.

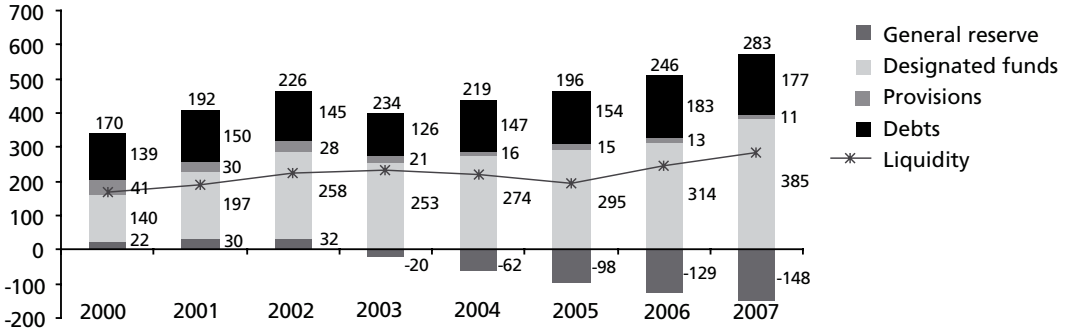


Figure 11. Development of NWO liquidity and liabilities in €mln

NWO limits the liquidity space as much as possible by pursuing an overspending policy. NWO uses the overspending policy to deploy its liquid funds promptly for purposes other than those for which the money was made available. Thus, in drawing up the framework for the 2007 and 2008 budgets, the Governing Board decided that due to the anticipated liquidity space it would use a sum of €53 mln and another of €50 mln to strengthen the free competition and the 'socially-inspired thematic programmes' that are to be developed. In this way the Governing Board, in expectation of the funding increase requested from OCW, made a first step towards carrying out the 2007-2010 strategic plan Science valued!.

NWO will be able to settle its liabilities within the space of a year. Liquid assets are still higher than liquid liabilities (quick ratio 1.5). However, in the longer term the overspending policy will lead to a sharp decrease in the liquidity position. The general reserve is decreasing further in advance of this and the 2007 result brings the Governing Board[1] general reserve down further to €224 mln negative. This is counterbalanced by the designated funds – the earmarked sums that were reserved in the past few years (€385 mln, of which €325 mln simple annual account), as a result of which the organisation's own funds are ultimately in positive figures (€236 mln consolidated, €113 mln simple). Own funds as a share of total assets (solvability) had risen above 50% at the end of 2007 (from 48% to 56%). On the basis of current financial forecasts, the general reserve will not fall below the lower limit set of €300 mln negative.

According to current financial forecasts, it is possible that the liquidity position of own funds will decline sharply over the next three years to end at zero. This is a result of the overspending policy, the deployment of designated funds (earmarked funds) and advance financing of NGI. In the decline continues, NWO will have to take countermeasures in the longer-term budget estimates.

[1] The structure of the consolidated general reserve is set out in the consolidated annual accounts as part of the clarification of NWO's own funds. The overspending policy is based on the general reserve in NWO's simple budget and annual accounts. The consolidated general reserve is noticeably higher but is for the most part made up of reserves resulting from the maintenance of tangible fixed assets at the institutes.

6.1.4 Careful management of available funds

NWO's careful management of available funds is made apparent in its budget management, management of the NWO office and cash management.

NWO strives to convert its available resources as quickly as possible into subsidies for scientific research. As mentioned above, this is not always easy due to discrepancies in cash-flow rhythms. In 2007, NWO was able to deploy 90% of its allocated (simple) budget, belonging to the simple annual accounts (target level 95%).

NWO's Governing Board manages administrative costs and efficiency in the NWO office on the basis of internal and external benchmarks, amongst other measures. Therefore it is pleasing to note that in its recently published report, the NWO evaluation committee described NWO not only as an effective but also as an efficiently operating (granting) organisation.
Administrative costs, expressed in the administrative costs percentage (administrative costs divided by total liabilities), rose slightly from 6.6% to 6.8% in 2007. This increase is mainly related to CAO ('collectieve arbeidsovereenkomst' – collective labour agreement) developments and other administrative costs, and is set out in more detail in the annual accounts. There is of course also a 'denominator effect' where real spending lags behind estimated spending.

The yield achieved with careful cash management increased in absolute terms from €6.7 mln to €12.6 mln. The average return of 4.7% is higher than the average interest reimbursed on the current account by the Ministry of Finance in the context of the treasury agency (3.9% in 2007). This was due to an incidental gain of €1.8 mln as a result of the increase in 2007 of the guarantee value of an indemnity fund, the sharply increased interest rate on deposits in 2007, and an effective evaluation of short-term versus long-term deposits.

6.2 Budget and annual accounts 2007 NWO The Hague (simple)

As regards the annual report, OCW has to approve the mutations relating to NWO's 2007 budget, approved by OCW. The approval of the budget by OCW concerns the (simple) budget NWO The Hague.

NWO submitted its 2007 budget to OCW in November 2006. The Minister of OCW gave written approval of the budget in December 2007. There have subsequently been mutations to the 2007 budget as a result of OCW making funds available, contributions from third parties and decisions by the Governing Board and divisional administrations, amongst other factors. Mutations to the 2007 budget were brought to the attention of OCW in the 2008 budget, submitted in November 2007.

Table 31 lists all the mutations that were carried out with relation to the original 2007 budget. The table also gives the account for 2007. These figures relate to the simple annual accounts.

Table 31. NWO budget and accounts 2007 (in €mln)

	Budget 2007			Account 2007	Account 2006
	Original	Mutations	Available		
Government contributions OCW	302.9	7.6	310.5	310.5	308.1
Target subsidies OCW	131.9	3.7	135.5	154.8	94.3
Third-party contributions	35.4	3.3	38.7	34.3	35.3
Other revenues	1.1	-0.3	0.8	2.2	0.6
Revenues	471.3	14.3	485.6	501.8	438.3
Liabilities	544.4	-5.6	538.8	485.5	466.4
Result of operational management	-73.0	19.9	-53.2	16.3	-28.1
Financial revenues	3.0	6.4	9.4	10.1	5.8
Result	-70.0	26.2	-43.8	26.4	-22.3
Mutations in designated funds	-15.4	23.6	8.2	70.9	7.9
Mutations in general reserve	-54.6	2.6	-52.0	-44.5	-30.2

The mutation in the OCW government contributions mainly concerns general salary measures and price adjustments.

The increase in target subsidies from OCW compared to 2006 relates to the subsidy for SmartMix (€50 mln) and the contribution for the continuation of NGI (€11 mln). The continuation contribution for NGI and €8 mln of the contribution for SmartMix was awarded by OCW after the budget had been submitted to the ministry on 1 November 2007. This explains the increase in the 2007 account compared to the 2007 budget. The top-up of €8 mln for SmartMix, taking the total to €50 mln, concerns money brought forward by OCW from 2011.

The mutations in estimated liabilities are the result of liabilities arising from new subsidies and various readjustments in the sphere of liabilities caused by the mutations in revenues and the estimates of various divisions and programmes. The realisation of liabilities was €53 mln lower than estimated, as a result of lower spending in the divisions, WOTRO and NCF (€16 mln), and in the temporary taskforces ICTRegie, NGI and ACTS (€20 mln).

For a section-by-section specification of the difference between estimate and realisation, see the explanation of the statement of assets and liabilities in the simple annual accounts.

6.3 Expectations for the future

When setting the financial frameworks for the 2007 and 2008 budgets, the Governing Board made €103 mln available from the liquidity space for the overspending policy and for carrying out the 2007-2010 strategic plan, Science Valued! This will lead to a further expected reduction in the general reserve available to the Governing Board, to nearly €300 mln negative, which thus approaches the lower limit set by the Board and also by OCW for the negative general reserve (simple annual accounts). Consequently there is now no more room for ‘overspending’.

Over the years cuts, have been imposed on NWO to a total of €22 mln in structural funds from 2009. These relate to the cutback resulting from the ‘Verhagen motion’ (efficiency cutback for ZBOs) and the economy measures set by OCW in the 2008 budget. In the 2009 budget, the Governing Board will accommodate this cutback in its entirety within the budget and the long-term estimates.

These two effects – no room left for overspending and a structural cutback of 7% of OCW’s basic subsidy – suggest that the policy freedom needed to achieve NWO’s strategy is coming to a halt. The organisation’s financial policy is aimed at improving the General Board’s general reserve in order to compensate for the expected reduction in designated funds. The aim is also to avoid, insofar as is possible, painful reorganisations and reductions in research budgets.

Appendix I Description of themes from Themes with talent

1 Shifts in Governance

Aim
The major aim of the theme Shifts in Governance is to stimulate interdisciplinary research into national and international changes in governance. One example of this is the effect of the emergence of new, international bodies and institutions on national governance. Conversely, one can also look at the effect of national administrative bodies on international relations. Another research topic is the emergence of diverse intermediate levels of governance and the interactions between these levels. Explicit scientific objectives of this theme are to build bridges between divergent disciplines and to generate innovative lines of research. The theme contains four subsidiary themes: multilevel governance, urban governance, cultures of governance, and private and public responsibilities.

In 2007
In 2007, NWO began organising a conference for March 2008, at which some 15 researchers were to hold a workshop on the progress of their projects and on their results to that date.

Programmes in progress within the theme Shifts in Governance in 2007:
– Contested Democracy (GW, MaGW), term 2007-2012
– Shifts in Governance (MaGW, GW, WOTRO), term 2002-2010
– Stimulation Action on Jurisprudence Research (MaGW), term 1997-2008

2 Cognition and Behaviour

Aim
By nature humans all exhibit intelligent behaviour. We easily recognise people around us, walk, read a newspaper, drive a car, while at the same time listening to the radio, and so on. The question is how we manage to do all of these things.
Research within the theme Cognition and Behaviour focuses first and foremost on clarifying fundamental laws relating to information and information processing, and on answering the question as to how knowledge is obtained and used in personal, social, cultural and digital contexts.
Further promising possibilities are behaviour and evolution, language acquisition, animal behaviour, the accessibility of knowledge, and disorders in cognitive processes. More new information can be gained through multidisciplinary collaboration and the use of new techniques and technology. Within the theme researchers work together who come from fields such as neuroscience, linguistics, psychology and teaching, artificial intelligence, economics, sociology, political science and ethology.

In 2007
Within the Cognition programme, 10 research groups each received approximately 50,000 euro in 2007 to carry out short pilot projects (maximum one year). These Cognition pilot projects are focused on promising, integral and high-risk subjects at the cutting edge of diverse cognitive disciplines. The aim of the pilot projects is to form the basis for successful national and/or international grant applications.
Researchers from the programme Evolution and Behaviour worked on the exhibition ‘Like Apes, Like Humans’ at the Naturalis museum.

Programmes within the theme Cognition and Behaviour in 2007:
– Cognition (ALW, EW, GW, MaGW, STW, ZonMw), term 2001-2008
– EUROCORES Consciousness in a Natural and Cultural Context (ALW, GW, MaGW), term 2006-2011
– Evolution and Behaviour (MaGW, ALW), term 2002-2011

3 Cultural Heritage

Aim

Within the theme Cultural Heritage research is being conducted into the function, perception and forms of expression of culture: archaeology, history, religion, art, language and literature, music, theatre and new media. All these forms of cultural expression are of great importance socially.
For instance, researchers are examining religion at the beginning of the 21st century, where we can find diverse modern forms of religious expression but also the rise of fundamentalist religious movements and groups. The central question is whether religion has become a thing of the past or whether there is also a place for religion in the future. Other research examines the huge artistic and cultural changes that are a result of such trends as globalisation and the growing influences of technology and commercialisation. A third example is the research, now completed, into the remains of two Batavian settlements and a burial ground that belongs to them in the new residential estate Passewaaij in Tiel. The large-scale archaeological excavations have produced unique findings.

In 2007

Programmes within the theme Cultural Heritage in 2007:
- Endangered Languages (GW, WOTRO), term 2002-2010
- BBO: Preserving and Developing the Archaeological Archive (GW), term 2000-2008
- De Mayerne (GW, EW, CW), term 2001-2008
- Flemish-Dutch committee for Dutch Language and Culture (GW), term 2003-2011
- Malta's Harvest (GW), term 2002-2008
- The Future of the Religious Past (GW, MaGW, WOTRO), term 2002-2011
- Transformations in Art and Culture (GW), term 2002-2011
- Urbanisation and Urban Culture. Development and Urbanism in the Netherlands (GW, MaGW), term 2004-2011

4 Digitalisation and Information Technology

Aim

We live in a society that depends on information. The ability to extract information and knowledge from large amounts of data and to use them is an essential precondition for material and emotional well-being. For this reason both basic and strategic research are carried out within the theme Digitalisation and Information Technology. Basic research deals, for example, with the methods and technology needed to build inherently secure software systems. Strategic research emerges from intensive interaction between social organisations and IT researchers.
The research programmes within the theme carry out the National Information Technology Research Agenda (NOAG-i 2001-2005), set up by the Netherlands Information Technology Research Platform (IPN) and the Information Technology Advisory Committee (ACI) of the NWO division EW. The research is conducted within the theme Digitalisation and Information Technology in 12 large research programmes looking at such widely varying fields as embedded systems, language and speech technology, software engineering and unlocking the secrets of digital cultural heritage. In most programmes research is driven by the needs of society.

In 2007

In 2007, NWO, often with support from external parties, funded approximately 150 researchers who work in promising areas within the field of information technology, such as global computer systems, visualisation and new ways of searching through cultural heritage in digital form.

Programmes within the theme Digitalisation and Information Technology in 2007:
- Accessibility and Knowledge Extraction in the Netherlands (ToKeN) (EW, MaGW), term 2001-2010
- Continuous Access to Cultural Heritage (CATCH) (EW, GW), term 2004-2011
- Essential Speech and Language Technology Facilities in Dutch (STEVIN) (GW, EW), term 2005-2009
- GlobAL Computer ScieNCE (GLANCE) (EW), term 2004-2011
- Interactive Multimodal Information Extraction (IMIX) (GW), term 2003-2008
- Joint Academic and Commercial Quality Research & Development (JACQUARD) (EW, STW), term 2002-2012

- Network of Networks (MaGW), term 2002-2010
- Programme for Research on Embedded Systems & Software (PROGRESS) (STW), term 1998-2010
- ReinForcing CompUter Science (FOCUS) (EW, CW), term 2004-2011
- Sentinels (STW), term 2003-2010
- Society and the Electronic Superhighway (MES) (MaGW), term 2002-2009
- STAR E-Science (STARE) (EW), term 2005-2010
- Visual Interactive Effective Worlds (VIEW) (EW), term 2004-2011

5 Ethical and Social Aspects of Research and Innovation

Aim

The findings of genomics research increasingly confront us with fundamental questions. Who determines what is desirable and what is undesirable in genetic research? What factors must we consider on this issue? And who decides which possible applications may find their way into clinical practice? In numerous fields there are scientific and technological developments that give rise to discussions on ethical and social matters. Nanotechnology prompts debate on risks and safety, about how realistic expectations and promises are, and about the controllability of nanotechnology applications. Digitalisation and information technology lead to large-scale linking of databases and thus prompt discussions about limits to the exchange of information and about the protection of privacy.
By calling attention to and thinking about such questions, advice is prepared in the context of this theme for:

- scientists, so that they will think about the possible consequences of their research as early as possible;
- citizens, to enable them to reach their own well-founded conclusions about what they want to see happen and what they do not want;
- policymakers and those who prepare policies, as an input of knowledge to help them with decision-making.

In 2007

Programmes within the theme Ethical and Social Aspects of Research and Innovation in 2007:

- Ecology Regarding Genetically Modified Organisms (ERGO) (ALW), term 2006-2012
- Ethics, Research and Government (GW, MaGW, STW, ZonMw), term 2002-2010
- Societal Component of Genomics Research (GW), term 2001-2008

6 Fundamentals of Life Processes

Aim

The theme Fundamentals of Life Processes is being continued under the name Systems Biology.
For further information see Section 4.2.13.

In 2007

Programmes within the theme Fundamentals of Life Processes in 2007:

- Biomolecular Informatics (CW, ALW, EW, ZonMw), term 2001-2007
- Biomolecular Physics (N), term 2003-2010
- Computational Life Sciences (EW, ALW, NCF, ZonMw), term 2003-2012
- EUROCORES EuroDyna (ALW), term 2004-2011
- EUROCORES EuroSCOPE: Science of Protein Production for Functional and Structural Analysis (ALW), term 2003-2011
- Fellowship Genomics (ALW), term 2001-2008
- From Molecule to Cell (ALW, CW, EW, N), term 2002-2010
- Horizon (ZonMw), term 2003-2011
- Material Properties of Biological Assemblies (N), term 2005-2010
- Nucleic Acids Chemistry (CW), term 2003-2010
- Physical Biology (ALW, N), term 2001-2007
- Physics for Medical Technology (N), term 2001-2009
- Research Institute Diseases of the Elderly (RIDE) (ZonMw), term 1999-2008
- Research on Infectious Diseases (ZonMw, WOTRO), term 2003-2008

7 Nanosciences

Aim

The theme Nanosciences has been converted into the theme Uses of Nanoscience and Nanotechnology. For further information see Section 4.2.6.

In 2007

Programmes within the theme Nanosciences in 2007:
- ERA-NET Chemistry (CW), term 2005-2009
- ERA-NET Nanoscience (STW, FOM), term 2006-2012
- EUROCORES Self-Organised Nano-Structures (SONS) (CW, N), term 2003-2008
- Materials Specific Theory for Interface and Nano-physics (N), term 2004-2014
- Nanolaboratory in a Transmission Electron Microscope (N), term 2006-2012
- Nanotechnology and Nanoelectronics, term 1998-2007
- Process on a Chip (POAC) (ACTS), term 2003-2011
- Softlink: Technology Related Soft Condensed Matter Research (CW, N), term 1998-2008
- Solid State Quantum Information Processing (N), term 2004-2013

8 Emerging Technologies

Aim

The theme Emerging Technologies contains programmes that make the connection between research and the development of new technology. Examples of fields in which new scientific concepts can lead to further technological breakthroughs are quantum technology, photonics, biomimetics, sensor technology, miniaturisation and self-learning systems, systems for data analysis, and modelling and simulation.

In 2007

Programmes within the theme Emerging Technologies in 2007:
- Combinatorial Chemistry (CW), term 2001-2008
- Dispersed Multiphase Flow (N), term 1999-2008
- Dutch Programme for Tissue Engineering (STW), term 2004-2010
- Evolution of the Microstructure of Materials (N), term 1999-2008
- Fundamentals of Heterogeneous Bubbly Flow (N), term 2007-2012
- IOP Photonic Devices (STW), term 2006-2011
- Laser Wakefield Accelerators (N), term 2001-2008
- Physics for Technology (N), term 1997-2011
- Physics of Fluids and Sound Propagation, (N), term 2005-2009
- Physics of Granular Matter (N), term 2004-2013
- Physics of Thin Film Materials (N), term 1996-2007
- Separation Technology (CW, STW), term 2002-2008
- Scientific Instrumentation (N), term 1998-2007
- Tissue Engineering: made-to-measure tissue (ZonMw), term 2004-2010
- Turbulence and its Role in Energy Processes (N), term 2002-2010

9 System Earth

Aim

The theme System Earth comprises research programmes concerning human influences on natural systems and the consequences of these influences. In addition, there are a number of programmes focused on reducing these human influences.

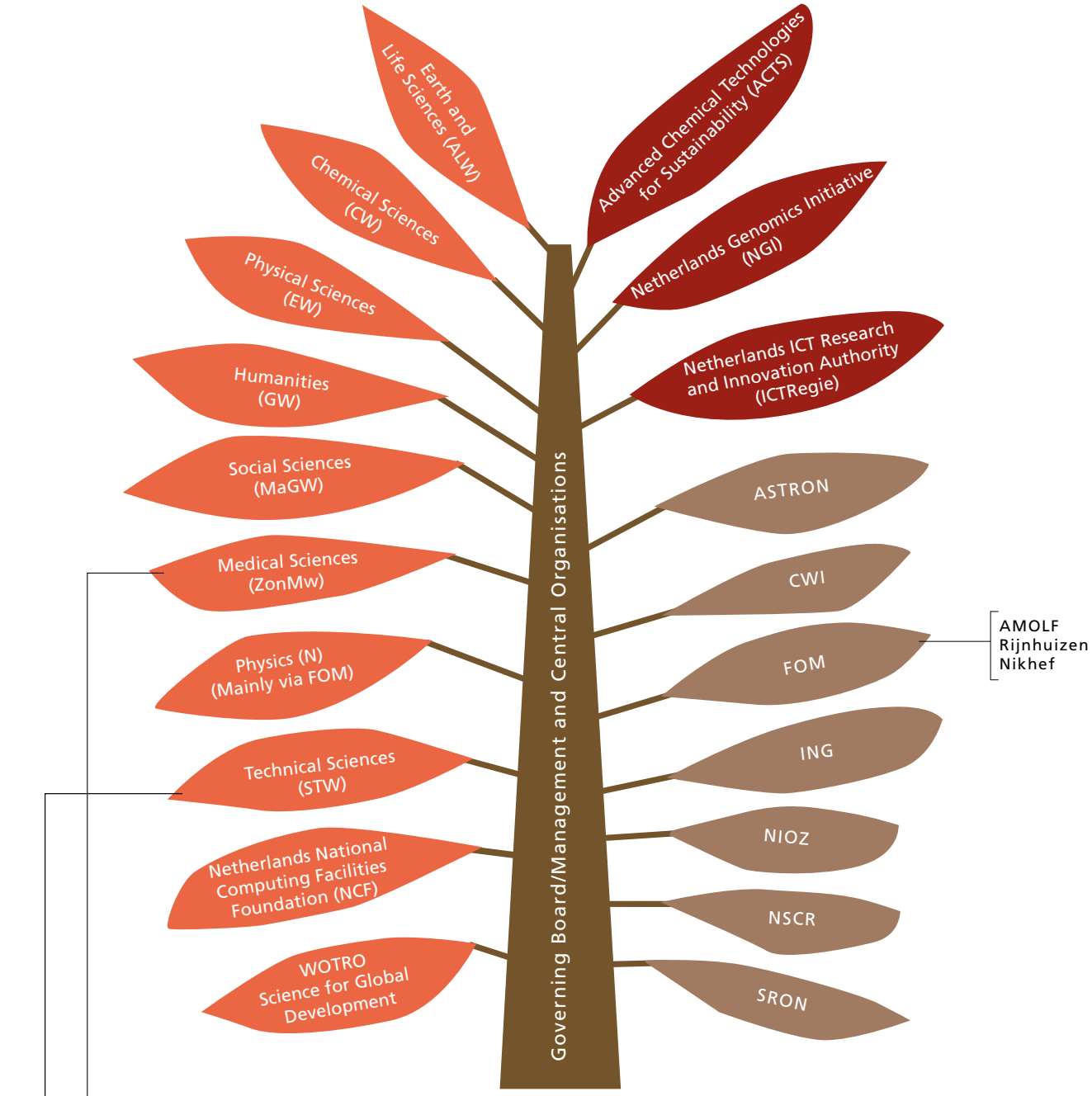
In 2007

The programmes made good progress in 2007. A mid-term symposium took place for the programme Vulnerability, Adaptation and Mitigation (KAM). The programme Climate Variability also had a mid-term symposium, at the end of 2006. The Rapid Climate Change programme (together with UK-NERC

and the Research Council of Norway) held an international symposium at the end of 2006 where the first results were presented from research into the variability of the North Atlantic Gulf Stream. The East Kalimantan Programme is being carried out in collaboration with an Indonesian consortium headed by LIPI; in 2007 researchers did fieldwork in the coastal areas of the Berau delta and the Mahakam delta. The programmes Land-Ocean Interactions in the Coastal Zone (LOICZ) and Flemish-Dutch Cooperation on Schelde Research were completed in 2007. During the annual B-Basic symposium a prize was given for research into biodiesel from algae.

Programmes within the theme System Earth in 2007:
- Advanced Sustainable Processes by Engaging Catalytic Technologies (ASPECT) (ACTS), term 2004-2012
- Bio-Based Sustainable Industrial Chemicals (B-BASIC) (ACTS), 2004-2009
- Biodiversity in Relation to Global Change (ALW), term 2002-2008
- Biosphere and Geosphere Linked (ALW), term 2004-2009
- Centre for Biogeology (ALW), term 2004-2012
- Chemistry in Support of Sustainability (CW), term 2002-2008
- Climate Variability (ALW, EW), term 2004-2011
- Energy Research (MaGW), term 1998-2009
- Environment and Economy (MaGW), term 1997-2007
- EUROCORES Challenges of Biodiversity Science (EuroDiversity) (ALW, WOTRO), term 2004-2011
- EUROCORES Challenges of Marine Coring Research (EuroMARC) (ALW), term 2007-2010
- EUROCORES Ecosystem Functioning and Biodiversity in the Deep Sea (EuroDEEP) (ALW), term 2007-2011
- EUROCORES EuroCLIMATE (ALW), term 2004-2009
- EUROCORES Euromargins (ALW), term 2002-2008
- Integration of Biosynthesis and Organic Synthesis (IBIOS) (ACTS, CW), term 2003-2012
- Joint Solar Programme (N), term 2005-2010
- Land-Ocean Interactions in the Coastal Zone (LOICZ) (ALW, MaGW), term 2002-2009
- Sustainable Hydrogen (ACTS, CW, N, WOTRO), term 2003-2012
- Sustainable Technology (Netherlands-Japan) (CW), term 2003-2007
- Vulnerability, Adaptation, Mitigation (KAM) (MaGW, ALW), term 2004-2010
- Water (ALW, WOTRO), term 2004-2012

Appendix II Organogram



via ZonMw, a partnership between NWO and the Ministry of Health, Welfare and Sport

via Technology Foundation STW, a partnership between NWO and the Ministry of Economic Affairs

Divisions/Foundations

Temporary Task Forces

Institutes

Key to abbreviations

ASTRON Netherlands Institute for Radio Astronomy
CWI Centrum Wiskunde & Informatica
FOM Foundation for Fundamental Research on Matter
AMOLF FOM-Institute for Atomic and Molecular Physics
Rijnhuizen FOM-Institute for Plasma Physics 'Rijnhuizen'
Nikhef National institute for subatomic physics
ING Institute for Dutch History
NIOZ Royal Netherlands Institute for Sea Research
NSCR Netherlands Institute for the Study of Crime and Law Enforcement
SRON Netherlands Institute for Space Research
STW Technology Foundation STW
ZonMw the Netherlands organisation for health research and development