

SWOV Annual report 2005

Foreword

2005 was a very safe year for traffic. The minister announced that in 2004 the number of road deaths had decreased by 19%, to 881. During the coming years it will become clear whether or not this was a structural road safety improvement. Anyway, the 2005 data looks positive. Another important event in 2005 was that parliament had approved the *Mobility Paper*.

The targets in the *Mobility Paper* are a maximum of 900 deaths in 2010 and 580 deaths in 2020. However, the most recent two years of 2004 and 2005 could mean that the 2010 target has already been achieved. If there has been a break in the trend, we recommend lowering the targets. After all, a target must be challenging. How we are to achieve these targets together is, among others, to be found in our *Advancing Sustainable Safety* publication. In this, SWOV sketches the possibilities of making progress in many areas. We hope that the large number of leads offered will be worked out during the coming years. For SWOV it is an important guideline for surveying the new research programme. To have published the 250 pages of *Advancing Sustainable Safety* in less than a year can justifiably be regarded as a top achievement in itself. This was only possible thanks to the enthusiasm of many both inside and outside SWOV.

This year we would like to thank all those who have contributed to SWOV's work, especially our own personnel. A special word of thanks is due to Frits Castricum, who has been forced by ill health to resign as our Chairman of the Board of Governors. His involvement in road safety in general, and SWOV in particular, was large and it stimulated us in our striving for top scientific quality.

Director's report

SWOV in 2005

2005 was the third year of our 2003-2006 research programme. SWOV has made considerable contributions to a number of research activities partly financed by the European Union and the TRANSUMO programme. A great deal of energy and capacity has also been spent on the further development of the Planning Department research, SWOV's new research programme.

Work in this programme has mainly involved the development of an explanatory model that can be used to understand past road safety developments, and to make predictions about road safety in the future. A lot of progress has been made in this complicated work.

In Anticipatory Research, SWOV's other research department, we have done a lot of further work on the varied 'there-and-then' projects. What comes to mind is the progress made in *Novice drivers and driver training* and *Speed analysis*.

Spreading our knowledge has also fulfilled an important function in 2005. As usual, we carried this out via national and international working parties and advisory groups, via SWOVschrift, (in Dutch), Research Activities, the SWOV website, and via requested and uninvited advice, congress contributions, press releases and interviews, and presence at various knowledge markets. The many Fact Sheets that we produced for knowledge management were very well received by the target groups aimed at.

Advancing Sustainably Safe

In 2005 we published the book entitled *Thinking about Sustainable Safety*. This presents the visions for future road safety from the points of view of more than 20 well-known traffic and transport experts in the Netherlands. This book also inspired another important publication in 2005. This was entitled *Advancing Sustainable Safety; National road safety exploration 2005-2010*. The first copies were presented to the Minister of Transport Ms. Peijs on 2nd November 2005, and to representatives of the police, provinces, framework act areas, municipalities, and interested parties. The book is an update of the 1992 book entitled '*Towards a sustainably safe road traffic*', known by many as the 'purple book'. Although the basic principles of Sustainable Safety were maintained, the book introduced new insights about the basic principles and paid a lot of attention especially to possible measures and implementation strategies. There was also a lot of interest abroad for the Sustainable Safety vision. That is why the English translation of this book will be published in 2006.

Assessments of SWOV's scientific quality

Another important event in 2005 was the external assessment of SWOV's work. One of the Ministry of Transport's subsidy provisions is that "SWOV cooperates with a minister's assessment study of the extent to which the annual programmes of 2002-2005 were completed and the subsidy involved was functional". The ministry had indicated that it was particularly interested in assessing the scientific quality. The assessment was coordinated by the Quality Assurance Netherlands Universities (QANU) institute. The verdict was very positive. The international assessment committee concluded that SWOV's research was 'good' to 'very good'. SWOV was described as the most important road safety institute in the Netherlands and, moreover, can be regarded as one of the top ones in Europe. SWOV's active policy of

encouraging graduates to do their postgraduate thesis in a road safety subject was highly valued. At this moment in time, SWOV has eight graduates studying for their PhD. SWOV was, of course, extremely pleased with this verdict and regards it as a confirmation of its current way of working and its ambition to be a top road safety knowledge and research institute.

A look ahead

In 2006, SWOV expects two challenging tasks. The first one is to complete the current 2003-2006 research programme. The second one is to create a new 2007-2010 programme together with our Programme Advice and Scientific Advice Boards, and of course the Ministry of Transport.

Starting points and organization

SWOV is an inter-disciplinary and independent scientific institute that conducts research to improve road safety and, based on this, gives requested and uninvited advice. SWOV enjoys its reputation as a authoritative knowledge institute, both at home and abroad.

In research of aspects that promote road safety, the most important are the practical application possibilities of the research results. With this, SWOV strives to cover the whole field of road safety and adjacent policy areas in which this subject plays a role: health care, national health, spatial planning, mobility etc. The scientific quality of SWOV's research was in 2005 judged to be 'good' to 'very good' by the Quality Assurance Netherlands Universities (QANU) institute. SWOV advises the government, parliament, and various governmental bodies. The publications are also of importance for the professional and managerial ranks in the public sector and social organizations, and for fellow researchers and research institutes. Our researchers use reports, articles, papers, congress contributions, and interviews to spread their knowledge and contribute to public and social debates. Our website is playing an ever important role.

Four-year research programme 2003-2006

SWOV carries out its work within a four-year research programme. The programme contains research projects and knowledge distribution.

The Planning Department has four projects about road safety developments that show what they have been up till now and how they will be in the future under various policy variants:

1. Road safety analyses
2. Road safety explorations
3. Peripheral explorations
4. Knowledge and information systems.

The Anticipatory Research Department, SWOV's other research pillar, works on ten research projects:

1. Road safety explorer
2. Infrastructure and road safety
3. Speed analysis, distribution, and road safety
4. Measures for speed control
5. Route choice on a road network
6. Recognizable layout and predictable behaviour
7. Novice drivers and driver training
8. Effects of education and campaigns
9. Optimal investments
10. Information use in decision making and knowledge management.

A separate place in the programme has been reserved for knowledge distribution and knowledge management activities.

Practical and scientific relevance

The relevance of SWOV's research and knowledge distribution activities are vouched for in various ways.

The **Programme Advice Board** discusses the content choices in the programme and the progress of the activities, and advises the SWOV Board of Governors about it. The Programme Advice Board consists of representatives from ministries and interested parties. The Scientific Advice Board advises SWOV's Governors and Director in order to increase the quality of its research and promote its scientific value.

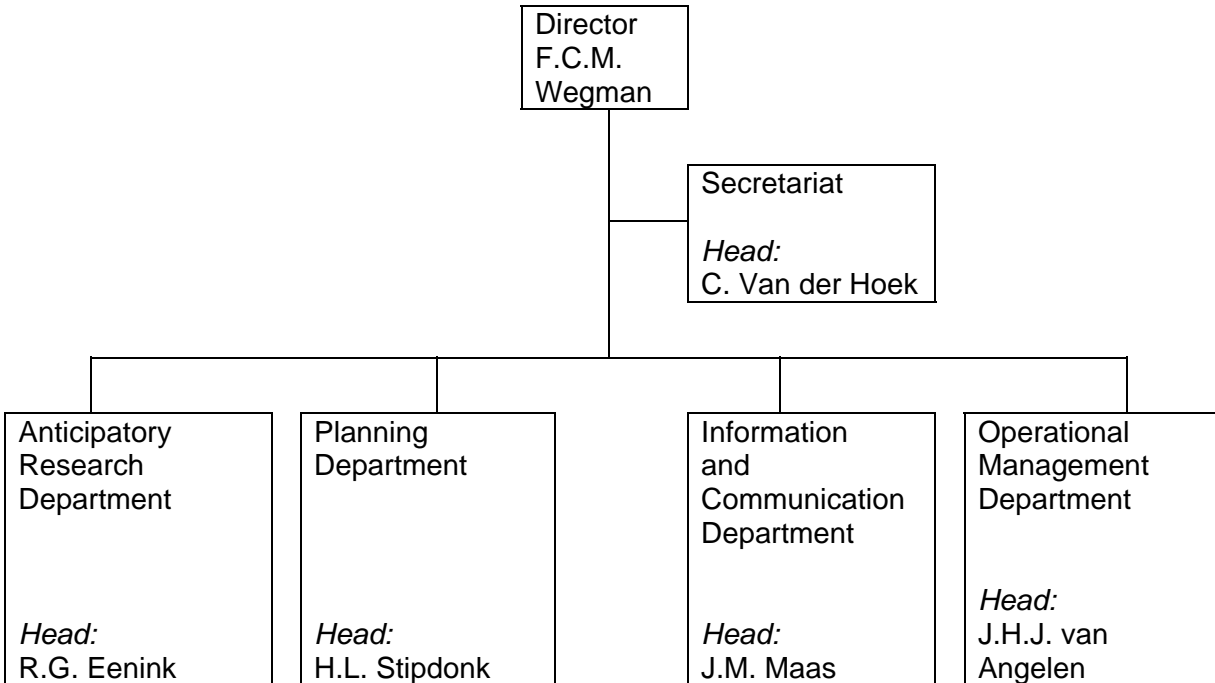
The **Scientific Advice Board** aims with this at generic scientific questions in SWOV's research programme. The members represent various scientific disciplines that are important for SWOV's work. The task of the advice groups is to give advice to SWOV researchers and the Programme Advice Board about the project and work plans at a more detailed level. The three Advice Groups deal with Knowledge Management and Distribution, Anticipatory research, and Planning Department research.

The advice groups contain representatives of the state, provinces, municipalities, water boards, research institute, consultancy firms, universities, colleges of advance education, police, law courts, and interest groups.

SWOV is extremely pleased, also in 2005, with the contributions of these advice boards and advice groups

Organization

The organigram provides an overview of SWOV's organization structure.



Organization structure of SWOV

Road Safety Anticipatory Research

Which factors influence road safety?

Anticipatory research is one of the two research programmes in SWOV's current research period. The results provide greater scientific knowledge about certain aspects of road safety. With this we want to gain insight into the factors that influence road safety, thus gaining greater insight into ways of improving it.

SWOV researchers are working on ten subjects. For some of these a connection has been looked for and found in projects subsidized by the European Union and the Dutch TRANSUMO programme, by which SWOV could carry out extra activities. Below you will find an overview of these projects. *You will find more information at www.swov.nl under Research, Publications in 'Research and knowledge dissemination 2005' (D-2006-1).*

Road safety explorer

This project optimises and adapts for practical use the software instrument *Regional road safety explorer* (RRSE): the RRSE-GIS. With this, the costs of measure packages are compared with the effects on road safety and, ultimately, on mobility and the environment. An instrument that makes it possible to determine the Sustainably Safe level of infrastructure has also been developed within this project.

Infrastructure and road safety

This project aims to establish relations between traffic volumes, road infrastructure features, and road safety by using exposure and risk measuring units. To do this, data from a number of different test areas are being analyzed.

Speed analysis, distribution, and road safety

Speed is one of the core areas of current road safety problems. SWOV is studying the relation between speed, speed distribution, and road safety, as well as the credibility of optimal speed limits.

Measures for speed control

This project examines the possibilities of getting all drivers to obey the then applying speed limits within a period of ten years. To do this, two points of view are used: enforcement and surveillance in combination with campaigns, and new technologies alongside the road or in-vehicle.

Route choice on a road network

This project deals with the possibilities of influencing drivers' chosen route in such a way that is complies with the Sustainable Safety requirement that the quickest and the safest route are one and the same. Work will be particularly with micro simulations of route choice behaviour in various types of road networks.

Novice drivers and driver training

Young, novice motorists of 18-24 years old have a crash rate more than four times greater than experienced motorists. The central issues in this project are to understand, measure, and influence the extent to which a young motorist is capable of tuning the difficulty of the driving task and all traffic dangers to his/her own driving skill.

Effects of education and campaigns

This project studies the effects of different types of traffic education, and the costs and benefits that go with them. It will deliver clues to an effective and efficient education policy.

Information use in road safety decision making

The *Information use in road safety decision making* project consists of two parts. The first part, *Cooperation during decision making*, aims at the influence of cooperation during the decision making about the construction of 60 km/hour areas. The second part, *Weighing up of all road safety interests*, deals with those road safety interests besides those such as accessibility, the environment, and spatial planning in the decision making about investments in the construction and maintenance of roads.

Optimal investments

This project concentrates on the further development of practical, usable standard methods for carrying out cost-benefit and cost-effective analyses of various road safety measures. This project also includes a study of the utility of the Quality Adjusted Life Years (QALY) method for road safety issues.

TRANSUMO

The Dutch research programme TRANSUMO (Transition to Sustainable Mobility) has as goal to make a large step forwards in achieving a sustainable transport system that meets the high requirements of pollution, accessibility, and safety. The programme is divided into a number of projects. The *Area-orientated integrally safer* project is being carried out with SWOV in charge. SWOV also contributes to the *Intelligent vehicles* and *Advanced traffic management* projects. *More information can be found at www.transumo.nl.*

Example of an Anticipatory Research project

How does a road user recognize the road type?

In a sustainably safe traffic system, road users should 'automatically' behave correctly. The desired driving behaviour can only be incited if the road surroundings are tuned to it and are uniform in layout. But what determines recognition? Road users who know on what road type they are driving also know which situations they can expect: intersections, oncoming traffic, cyclists, etc., and which behaviour they can expect from others. Uncertain driving behaviour and serious errors can be prevented by this. But what makes a road type recognizable as such, what are the crucial factors, and can these factors be used to increase recognition?

What does theory say about this?

Categorizing roads always precedes recognition. The more experience and knowledge people have of particular objects or surroundings, the more they are capable of categorizing them at a detailed or, on the contrary, general level. Categorizing objects and surroundings also is a flexible process. The category to which an object or surroundings belong to depends largely on the context in which people observe it and the category division that an individual uses. In traffic terms: depending on the context in which it is observed, a road can be categorized differently by different drivers, and thus lead to different expectations and road user behaviour.

What happens in practice?

Most road authorities in the Netherlands use the Essential Recognition Features Guideline (ERFG) for making roads recognizable. However, there is no consistent and uniform application of the guideline. That is why there are large differences in appearance between roads within the same road category, whereas the differences between the various road categories are often small or too small.

It is known of a number of road features that they increase the average driving speed. These are: type of road surface, edge marking, buildings and/or vegetation, position on the road, and overtaking manoeuvres. For example, this is the case for a recently renewed asphalt layer and the addition of a centre line or border line on an unmarked road.

Conclusions

Road users use different layout elements, among others lining patterns, to recognize road types. This involves, for example, the presence of buildings and vegetation, but also the type of surface hardening. Which of these elements are crucial for recognition, and thus should be used in the road layout, is at this moment in time being studied in a follow-up. It is doubtful whether limiting it to a lining pattern, as proposed in the ERFG, is sufficient.

The complete report entitled 'Recognizable layout and predictable behaviour' (R-2005-17) can be read at www.swov.nl.

Planning department research

Is road safety predictable?

Starting with it's 2003-2006 research programme, SWOV began with a new programme segment: planning department research. This research results in road safety analyses, road safety explorations, and peripheral explorations. In these, researchers analyse the number of road deaths and injured over a longer period in the past, and analyse the road safety effects of social developments. In addition, planning department research spends time on vision development.

You will now find an overview of projects within this programme. *You can find more information at www.swov.nl under Research, publications in 'Research and knowledge dissemination 2005' (D-2006-1).*

Road safety explorations

A road safety exploration examines possible future developments and their expected road safety effects. Priority was given in 2005 to the development of a quantitative model necessary for both the road safety analyses and explorations. That is why the first analysis and first explorations were delayed until 2006. In 2005, SWOV updated the 'Sustainable Safety' vision.

Model development

This project is aimed at developing models with explanatory variables for a number of selected high risk groups: moped-car crashes, pedestrian-car crashes, etc.

Peripheral explorations

This project examines which influences in other policy areas have recent and future road safety effects. Such insight is necessary for a proactive road safety approach.

Road safety analyses

This project results in annual analyses and long term analyses. Annual analyses deal with the most recent developments and compare them with long term trends. Analyses describe long term trends and offer explanations by means of data on road safety measures and social developments. The results of these analyses provide a better understanding of factors that influence road safety developments and they form a basis for explorations.

Knowledge and information systems

Much SWOV research depends on the availability of high quality data. Collecting and making this accessible in various SWOV knowledge and information systems is a continuous activity. These systems are an essential information source for both our own researchers as for external professionals. The activities in this project are data management, relation management, and technical management of the data collection. The starting points are being up to date and customer orientated.

Example of a Planning Department project

Advancing Sustainable Safety; cooperation for greater road safety

Vision development is important to achieve an effective and up to date road safety policy. Sustainable Safety has now for years been a leading approach in Dutch policy. However, since it was 13 years ago that what is known as the 'purple book' was published after the *Sustainable Safety Start-Up programme*, and there was a new management environment: 'decentralize what can, centralize what must', SWOV thought it was time to give it a new impulse. The result was the updated version entitled *Advancing Sustainable Safety*'. This book contains many ideas that can be employed to make traffic even safer during the coming 15 to 20 years.

SWOV would like, with the other road safety parties, to study how to convert the ideas into implementation. It is very important to combine forces and, more than in the past, to cooperate.

The foundation has been strengthened and deepened

The ultimate goal of the updated vision has remained unchanged: Sustainable Safety wants to prevent crashes and, where it can not, practically exclude the chance of severe injury. The starting point is still that man is the measure of all things, with his/her physical vulnerability and capability – people simply make mistakes. A new point of special interest is what he/she wants. He/she not only makes mistakes, but now and again breaks the law, consciously or not.

Intervene as quickly as possible

In Sustainable Safety, the human characteristics are integrally approached from the elements of human/vehicle/road, also known nowadays as the human-machine interface. First of all, the environment, such as road and vehicle, should fit what someone can do and offer protection. Furthermore, education should prepare the human properly for the driving task, and he/she should be ultimately controlled as to whether he/she is fit to participate in traffic. Sustainable Safety strives to fit road safety measures as quickly as possible in the chain of system design to ultimately safe traffic behaviour. It is the gaps in the traffic system that lead to unsafe behaviour - errors and offences, and ultimately to crashes. By intervening in the system as quickly as possible, unsafe actions are much less dependent on choices of individual road users.

Five principles instead of three

Advancing Sustainable Safety contains five central principles that are based on scientific theories from traffic engineering, biomechanics, and psychology:

- *Functionality* of roads; roads should be to let traffic through – through-roads – or offer access – access roads, and are connected by distributor roads.
- *Homogeneity* of masses, speed, and direction: vehicles that have too great a difference in mass or speed that move in the same space should be physically separated. Where this is not possible, such a speed should be driven that the crash type occurring on that road can end up safely.
- *Recognition* of the road's layout and predictability of the road's course and road users' behaviour: by means of behaviour that is uniform and fits the surroundings, road users

should know which behaviour is expected of them and what they can expect from others. Here the updated vision that makes a road's course predicable has been added.

- *Forgivingness*; physical of the surroundings and social of road users mutually: this is a new principle that, on the one hand, is already being worked out for safe road shoulders and, on the other hand, must be filled in further for the social side of the principle; e.g. road user anticipation of others' behaviour.
- *State awareness* by the road user: this is also a new principle. Road users should know what their skills are and whether they know if these are sufficient to participate safely in traffic. They should themselves also realize when they are in such a traffic situation that they, albeit temporarily, should not be driving. Examples of this are the influence of alcohol, stress, or fatigue.

The book can be read entirely at www.sustainable-safety.nl

National Road Safety Initiative

At the National Road Safety Congress 2004, an initiative was born to draw up a road safety agreement. The first explorations led in 2005 to this initiative being followed; it is known as the *National Road Safety Initiative (NRSI)*. The NRSI strives to exchange, distribute, and develop road safety knowledge and results booked by all parties involved. This is to promote the Mobility Paper goals being achieved, and more rapidly so. A NRSI starting document has been written with a plan of approach. As a consequence of this, the Ministry of Transport has promised also its financial support to this initiative, providing that most of the elaboration be done by existing organizations. That is why the NRSI group was enlarged in 2005 with the Traffic and Transport Knowledge Platform for knowledge exchange between the implementing parties. In addition, an inventory has been made of the subjects that can be further elaborated with the NRSI.

PhD research

Which answer hides behind the question?

In 2005, eight SWOV researchers were working on their PhD theses. The QANU assessment commission judged this part of SWOV's programme very positively. We expect that four of these theses will be completed in 2006, and that the other four will be ready in 2007 or 2008. You will find here a list of their subjects.

Information use in road safety decision making

The subject studied here is how the decisiveness of road safety policy is influenced by cooperation during the decision making, and the presence or absence of public support. An examination is also being made of how cost-benefit information can improve the decision making about infrastructural investments.

Time series models for road safety analyses

In this study develops risk models that fit the specific requirements of statistically reliable road safety research.

Novice drivers and driver training

What does a young motorist learn from his/her traffic experience and how do they lead to changes in attitude and driving behaviour? This project uses a monitoring study and a practical study.

The elderly in traffic

How can the driving task of the elderly be improved, for example turning left? Which infrastructural features of intersections are related with crashes involving the elderly and which driver assistance systems can achieve safer driving behaviour?

Route choice on a road network

Which possibilities are there to influence a driver's route choice in such a way that the chosen route fits Sustainable Safety; the quickest route and the safest route are one and the same?

Emotions in traffic

Under which circumstances do emotions occur in traffic, and which influence do emotions have on traffic behaviour?

Example of PhD research

How do Intelligent Transport Systems (ITS) influence driving behaviour?

How do drivers behave in traffic if driving tasks are partly or completely automated, and how do other road users react to them? In two study parts of the BAMADAS research programme, two SWOV PhD candidates are looking for the answers to these questions.

Interaction between human and ITS

More and more instruments and systems are being introduced, the purpose of which is to assist the driver in his/her driving task. Examples are: keeping distance, keeping to one's lane, changing lanes, or maintaining the correct speed. These instruments are collectively known as Advance Driver Assistance Systems (ADAS). There are many expectations and assumptions about ADAS's influence on driving behaviour, but as yet little is known about their real effects. Knowledge about the interaction between drivers is also getting ever more important now that assistance telematics will play a larger role in road traffic. After all, the 'behaviour' of vehicles that are practically driven by telematics has to be 'understood' by other road users.

Expectations in interact situations

In the study part entitled *Modelling of drivers' interaction behaviour*, the PhD candidate is studying the interaction of road users at intersections. The emphasis in the first place is on mapping the expectations of drivers in such situations. The analysis shows that four clusters of expectations can be distinguished: 'insecurity about a safe settlement of the situation', 'priority/right of way', 'indication of direction', and 'expectations based on previous experiences'. In the priority cluster there was a further distinction between 'giving someone priority' and 'someone else taking priority'.

System properties influence behaviour

In the other study part entitled *Interaction with driving task assistance systems*, the central point is whether and how drivers adapt their driving behaviour to systems that assist them in driving. The PhD candidate is also studying which unintended and undesirable behavioural changes are consequences of ADAS. Such behavioural changes can have a negative road safety influence. Knowledge about the consequences for behaviour and about the conditions for driver acceptance is considered to be of great importance for introducing ADAS to society.

You can follow the progress of these PhD studies via www.bamadas.tbm.tudelft.nl

Advisory research

Requests from at home and abroad

Every day requests reach SWOV about all aspects of road safety. These requests often come from municipalities, provinces, ministries, firms of consultants, fellow research institutes, inhabitant groups, etc. SWOV is also regularly requested from abroad to give an expert advice. A number of examples are:

Ministry of Transport

Requested to do so, SWOV made an inventory of what was known about the relation between concentration, or lack of it, and road safety. *More information at www.swov.nl under Research, Publications, 'Concentration problems when driving' (D-2005-5).*

MoT's Transport Research Centre

SWOV brought out an advice about an update of the costs of road safety and the changes in human costs. *More information at www.swov.nl in the Fact Sheet 'Costs of road safety'.*

Utrecht Province

SWOV carried out an exploration of the possibilities of improving the safety on the Oudewater-Montfoort part of the provincial road N228.

The World Bank

At their request, SWOV judged the international value of a draft handbook for sustainably safe road designs.

The European Commission (Dg TREN)

Together with ECORYS, SWOV studied the extent to which the *European Road Safety Action Plan* would lead to the intended 50% reduction in road deaths in the European Union by 2010 and in which way a possible speeding up of the reduction could be achieved. As member of a special consortium under the leadership of Transport and Mobility Leuven, SWOV also analysed the measures in the *White Paper on the European Transport Policy*. This was part of a midterm review requested by the European Commission.

More information at

http://europa.eu.int/comm/transport/white_paper/mid_term_revision/assess_en.htm.

Example of Advisory research

Cars that reach home safely

During the last 30 years, vehicle safety measures have increased road safety considerably. However, within secondary safety as it has been called since 2005, apart from the safety of occupants, attention should also be paid to the safety of the crash opponent of a collision with a car. This is one of the recommendations SWOV makes as a consequence of its research into the road safety effect of vehicle safety that was made possible by the Dutch Car Industry RAI.

Sorts of improvements

Since the 1970s, many changes have been made in cars to make their occupants safer; for example the obligatory wearing of seatbelts, the airbag, and the improved car body. But crashes can also be prevented by technological facilities. For example, braking is better with the Antilock Braking System, keeping distance is better with Advanced Cruise Control, and keeping on course is better with Electronic Stability Control. It has been shown that drivers benefit from assistance and simplification of the driving task by high-speed apparatus. In spite of the results achieved in secondary safety during the past few years, there are still many more possibilities of further reducing the number of road casualties by improvements to and in the car.

More about these possibilities can be read at www.swov.nl under Research, Publications in 'Cars to reach home safely'.

International research

What can we learn from each other?

SWOV strives to also conduct project-financed research for the European Union. A precondition for this is that such projects fit in our research themes, knowledge management, or knowledge dissemination. With this international cooperation, SWOV strives to broaden its research and increase its quality and efficiency. 2005 was also a year in which we participated in a large number of mainly European Union (EU) projects. Below you will find a list of these projects in alphabetical order.

Alcohol interlock

The research team is studying the psychological, sociological, behavioural, and practical influence of alcohol programmes on various target groups. The project is a preparation of a large scale quantitative study that precedes the judicial implementation.

CAST

The goal of the EU Campaigns and Awareness-Raising Strategies in Traffic Safety (CAST) project is to develop aids to establish the added value of mass media campaigns in combination with other measures such as police surveillance or infrastructural adaptations. The project team is developing a manual for effective mass media campaigns and a manual for assessment studies.

DRUID

In 2005, the first preparations took place for a new EU project about alcohol, drugs, and medicines called DRUG (Driving under the Influence of Drugs, Alcohol, and Medicines. This is a large scale project in which nearly 40 partners from about 15 European countries will participate during the coming years.

HUMANIST

The Human Centred Design for Information Society Technologies (HUMANIST) is an EU 'network of excellence' whose purpose it is that researchers and research institutes exchange knowledge to form an EU knowledge network. The project aims at the possible applications of new technological developments in traffic. Its point of view is to as well as possible fit the wishes and needs, possibilities and impossibilities of the human being. *You can find more information at www.noehumanist.org.*

IMMORTAL

This project was practically rounded off in 2005. It studied the risks of driving while intoxicated, methods to trace it, and ways of taking it into account when issuing the driving licence. It concerns alcohol, drugs, and medicines: known as psychoactive substances (*'The prevalence and relative risk of drink and drug driving in the Netherlands: a case control study in the Tilburg police district', R-2005-9*).

SWOV, together with the Norwegian TØI institute, carried out a cost-benefit analysis of measures to remove those drivers from traffic who are driving while intoxicated or who have certain physical or psychic disorders (*'detailed cost-benefit analysis of potential impairment countermeasures' R-2005-10*).

IN-SAFETY

The Infrastructure and Safety (IN-SAFETY) project aims at promoting two road design principles with planners and designers. These are 'forgiving roads' and 'self-explaining roads'. 'Forgiving' is the design principle that makes it possible for drivers to correct wrong manoeuvres in time. 'Self-explaining' means that drivers recognize an unsafe traffic situation and react to it correctly in time. *You can find more information at www.insafety-eu.org.*

PENDANT

This Pan-European Coordinated Accident and Injury Databases (PENDANT) should lead to two new European databases: an in-depth crash database and one with hospital data about traffic casualties. These databases will give a better picture of the causes of crashes and injury. *You can find more information at www.vsi.tugraz.at/pendant.*

PREVENT

This project, which is called PREVENT (Develop a training programme to improve work zone safety) consists of various international institutes working together on an education programme in which knowledge about safety at road works is distributed to relevant target groups, such as road workers and driving instructors. *You can find more information at www.hit.certh.gr/prevent.*

RiPcoRD-iSEREST

The project entitled 'Road Infrastructure Safety Protection – Core-Research and Development for Road Safety in Europe and Increasing Safety and Reliability of Secondary Roads for a Sustainable Safe Surface Transport' (RiPcoRD-iSEREST) has as goal to develop 'best practice' instruments and guidelines for infrastructural road safety measures. *You can find more information at www.ripcord-iserest.com.*

ROSEBUD

The EU project Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making (ROSEBUD) was completed in 2005. (*The use of efficiency assessment tools: solutions to barriers, R-2005-2*). The project's purpose was to stimulate the use of cost-benefit and cost-effectiveness analyses in decision making by bundling knowledge and experiences in this area and make it available to potential users. *You can find more information at <http://partnet.vtt/rosebud>.*

SafetyNet

In this project, 22 European institutes are developing an information system to assist road safety. Within SafetyNet, SWOV is the leader of two of the seven project parts: Safety Performance Indicators and the development of the European Road Safety Information System. *You can find more information at <http://safetynet.swov.nl>.*

SUPREME

This project, the Summary and Publication of Best Practices in Road Safety in the Member States (SUPREME) makes an inventory of good practice examples of road safety measures in 25 EU member countries plus Norway and Switzerland, and exchanges it with them. *You can find more information at www.kfv.at/supreme/objectives.php.*

Example of an international research project

SUNflower+6: Greater efforts required to achieve EU target for 2010

During the last decennia, the numbers of traffic casualties in many European countries has decreased, as it has in the Netherlands. In spite of this, the expectations are that, unless the tempo increases, it will be insufficient to achieve the goal of the European Commission: 50% fewer road deaths in 2010 than in 2000. This is one of the outcomes of a comparative international study that SWOV carried out together with eight other institutes in Europe. This study was called SUNflower+6.

Approach improved

In order to gain insight into the extent to which policy programmes are successful, in 2002 a comparative study was made of the road safety programmes in Sweden, the United Kingdom, and the Netherlands. This method, which acquired the name 'SUNflower' was followed in a further refined and larger scale application called 'SUNflower+6'. Nine countries cooperated in this follow-up study, and they were divided into three clusters: three Central European countries (Czechia, Hungary, and Slovenia); three Southern European countries (Greece, Portugal, and Spain – and the autonomous region of Catalonia); and the three original SUNflower countries (Sweden, the United Kingdom, and the Netherlands). The method is aimed at expressing the road safety in each country quantitatively. In this way, comparisons are possible and developments can be made clearer; the stronger and weaker points of a country's road safety are made visible. The participating countries can learn from each other about which measures are effective, so as to make progress quicker.

Compare as well as possible

It is not easy to compare nine different countries. Every one of them has specific features. For example, there are large differences in road design, the crash rate per mode of transport, and alcohol limits. These differences influence the performance indicators and, from these, the resulting safety score for each country. We tried in SUNflower+6 to present the road safety data in such a way that insight into the influence of these factors on the difference in result occurs.

In the SUNflower+6 project, what is known as a footprint was also developed to show how safe a country is and what its developments have been during a particular period. The footprint can be used to compare the road safety in a country with that in another country, or that in a group of countries. Such a comparison can show the weaker road safety points and contribute to a goal-oriented approach.

The SUNflower+6 project is an important step forwards in drawing up comparable performance indicators and standards in order to be able to sensibly compare the road safety in different countries. Follow-up research is still necessary to improve the method and make it more user friendly so that more countries can measure their road safety.

More information can be found at <http://sunflower.swov.nl>.

Knowledge management

What is known about a subject?

Not all aspects of road safety are explicitly studied in the projects of a four-year research programme. In order to have up to date information about as many aspects as possible, SWOV in its programme segment knowledge management follows as many developments possible and reports them in literature studies and fact sheets.

All literature studies and fact sheets can be seen integrally at www.swov.nl under Research.

Literature studies

Literature studies provide an overview of national and international research about a particular subject that has been published. They contain well considered conclusions and, where necessary, signal knowledge gaps. In 2005, SWOV published a literature study about the road safety effects of mobile phoning. This literature study offers an overview of the relevant laws in various countries (*Use of mobile phones while driving-effects on road safety, R-2005-12*). Another literature study completed in 2005 dealt with the theme *Recognizable layout and predictable behaviour (R-2005-17)*.

Fact Sheets

SWOV began in the current research programme with making fact sheets about all sorts of road safety subjects. The fact sheets are a brief, accessible form of important information about a subject. They are available in English as well as Dutch. In 2005 we produced 18 new fact sheets. We now present two fact sheets.

Example of a Fact Sheet

How can the value of a saved road death be determined?

Road crashes lead to all sorts of social costs, such as material damage, production loss, and medical costs, but also human costs. Human costs include the loss of the quality of life for casualties and their families and friends. Various studies have shown that the human costs of road crashes, for killed as well as injured casualties, constitute a considerable proportion of the total social costs of road safety. It is important for policy and policy research to be able to value this damage in terms of money. Until recently, such well founded values did not exist for this sort of damage in the Netherlands. However, in 2004 and 2005, SWOV carried out extended research into valuing the human costs of fatal crashes. Based on this, the researchers advise a new standard value of a road fatality of €2.2 million.

More detailed information can be found in the fact sheet entitled 'Valuation of the human costs of road deaths' and in the report entitled 'The valuation of road deaths saved' (R-2005-4). Both can be found at www.swov.nl under Research.

Example of a Fact Sheet

Goods and delivery traffic: Goliath on the road?

The outcome of crashes between lorries and other traffic is often serious if only because of the great difference in mass. Lorries are not only involved in crashes because of unsafe behaviour by their drivers i.e. loss of freight, rollovers, and jackknifing; but also because other road users hardly allow for them. Very few road users realize that they could find themselves in the blind area of a lorry, or that a lorry can jackknife. Although delivery vans are smaller than lorries, they are still larger and heavier than cars; what is more they have a smaller rear vision.

There is still a great deal of safety benefit to be gained by equipping lorries and vans with, for example, an Intelligent Speed Assistance (ISA), a black box, and facilities for the blind area problem. We can also expect greater safety in the future from rollover warning systems and fatigue alarm systems, provided that there is a further increase in their specificity and sensitivity. Moreover, it is very important that companies recognize the value of a safety culture. The great difference in mass between lorries and other road users means that infrastructural measures are also necessary. Examples of these are separate lanes for target groups, but also separate traffic rules such as not allowing heavy traffic in city centres.

More information can be found at www.swov.nl under Research, Fact Sheet 'Lorries and vans'.

Knowledge dissemination

Who wants to know what?

In addition to research, an important SWOV task is knowledge dissemination. It's most important purpose is to ensure that SWOV knowledge and SWOV positions are really used for road safety policy in the Netherlands and abroad. For example, questions asked in parliament here that are based on SWOV knowledge show us clearly that this is regularly the case. Within the current research programme we strive to use the knowledge dissemination activities more effectively and efficiently in order to meet the knowledge needs of SWOV's target groups even better.

Publications and publicity

SWOV'schrift and Research Activities were also published in 2005. The articles in SWOV'schrift regularly result in national and local media reports or in scientific reactions of traffic experts. In order to generate more media attention, SWOV also distributed various press releases about studies and about publications such as the essay bundle *Thinking about Sustainable Safety* and the book *Advancing Sustainable Safety*.

Website and e-mail

Our website www.swov.nl was regularly updated and replenished with new knowledge in 2005. Especially the Fact Sheets supplied a need. In order to keep interested parties informed about website developments, a newsletter is e-mailed every month with the latest additions and changes. Among other matters, the newsletter signals new reports, fact sheets, positions, and updated crash data. In 2005 we carried out a satisfaction survey among visitors to our website and among other well known SWOV relations. The user survey among website visitors showed that nearly half of them are private individuals. Taking the professional visitors as starting point, they are satisfied and value it's contents.

Knowledge markets, congresses, and foreign visitors

SWOV participated in the knowledge market of the Sustainable Safety Congress in Rotterdam and that of the Traffic Engineering Course in Utrecht. In March we presented the essay bundle *Thinking about Sustainable Safety*. The website www.doormetduurzaamvelig.nl was launched here. At our office we welcomed delegations from various research institutes and government bodies from China, South Korea, Australia, New Zealand, Israel, and various European countries.

Education activities

We provided lecturers and guest lecturers on road safety to the Civil Engineering Faculty at Delft University and to Diepenbeek Traffic Engineering University in Belgium. We also contributed to courses for consultant companies and arranged workshops for students at the Civil Engineering Faculty at Twente University and UNESCO's Institute for Hydraulic Engineering. A large number of students from advanced education institutes and universities also did work placement or carried out their graduation projects by us.

Library and documentation

The library collection of books, congress proceedings, and journal articles has grown to more than 115,000 titles. We have about 275 journal subscriptions and we have access to relevant national and international documentation systems. This extensive collection and provision of services makes our library the most specialized road safety library in the Netherlands, and

perhaps the world. In 2005 we had 540 requests for literature and, of these, 27.5% came from outside SWOV. Of these, 64% were from abroad. Of all the internal and external requests, about 95% could immediately be answered from our own collection. The increase in electronic publications continues our transformation into a hybrid library.

Example of knowledge dissemination

Learn young, learn fair

In May, together with the Ministry of Transport's Traffic Research Centre, its Road and Waterways Department, and the Netherlands Organization for Applied Scientific Research, we organized the third Young Researchers Seminar. This congress is a combined initiative of three European traffic and transport research organizations: ECTRI, FERSI, and FEHRL. Its purpose is to give young researchers the chance of experiencing writing a paper and presenting it to a scientific audience. 60 young researchers from the whole of Europe participated. Four themes had been selected: economic transport and traffic behaviour, sustainable safety and pollution, road safety, and intelligent transport systems. Three SWOV researchers presented their studies at this congress. Their studies dealt with the interaction behaviour of road users mutually at intersections, the influence of cooperation in the decision making about the safety of 60 km/hour areas, and the road safety effect of ITS on the secondary road network.

The presentations and papers can be found at www.ectri.org under Young Researchers Seminar 2005.

Composition of the Board of Governors and external Advisory bodies per 1st June 2006

Board of Governors	
P.J. Biesheuvel (chairman)	
Ms. M.T.J. Blankers	Municipality of Haarlemmermeer
P. Janssen	Dutch Car Industry RAI
H.J. van der Steenhoven	On the recommendation of the employees council
G. van Woerkom	Royal Dutch Tourist Association ANWB

Programme Advice Board	
J. Barkhof (chairman)	
B.J. Bruins	3VO
J. de Geus	Municipality of Waalwijk
J.F. Jeekel	Transport Research Centre
H.H. Kok	Province of Utrecht
W.G. de Raad	Province of Flevoland
Ms. W.A.A. Schrover	Transport and Logistics Netherlands
J. Spee	Bureau of Traffic Enforcement
W. Wessels	Provincial Road Safety Board Amsterdam

Scientific Advice Board	
Dr. J. Godthelp (chairman)	TNO Human Factors Research Institute
Prof. K.A. Brookhuis	Groningen University / Delft University
Prof. I.A. Hansen	Delft University
Prof. R.E.C.M. van der Heijden	Radboud University
Prof. C.C. Koopmans	Amsterdam University
Prof. G.P. van Wee	Delft University

Financial report

Introduction

Although SWOV's income in 2003 and 2004 was already greater than the 2003-2006 plan assumed, excluding that designated for contracting research, in 2005 there was a relatively large increase of more than 13% when compared with 2004. The most important increase was the external income obtained in addition to the subsidy. In comparison with 2004, this rose from €469,215 to €892,960. External income from European Union (EU) projects are still the main source for external financing, but in 2005 SWOV was also requested to carry out a number of World Bank projects, and we participated in projects financed by another subsidy. In addition, more than the annual subsidy amount was spent on subsidy activities. What was left over from previous years was completely used up in 2005. SWOV's Board of Governors decided to designate part of the equity capital that had increased considerably because of the achieved results, in an extra effort to finance the subsidy programme. The number of personnel increased further in order to be able to meet the increased demand for SWOV knowledge, but the general costs, besides the salary costs, did not increase. Because the result was a lot more than average for 2003-2006 budget, the exploitation results were positive at €510,575.

Charged internal costs in percentages of total charged

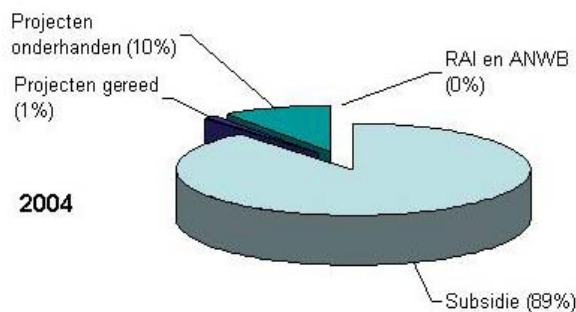
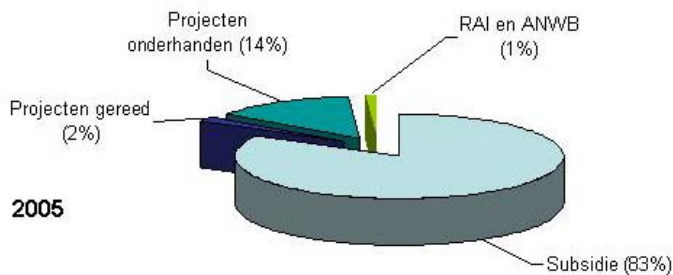


Table of charged internal costs

Internal costs	2005	
Total	5,108,155	100%
Subsidy	4,215,195	83%
Completed projects	122,467	2%
Current projects	739,693	14%
RAI and ANWB	30,800	1%

	2004	
Total	4,509,372	100%
Subsidy	4,040,157	89%
Completed projects	25,493	1%
Current projects	440,318	10%
RAI and ANWB	3,404	0%

BALANCE PER 31 DECEMBER 2005

ASSETS	31/12/2005		31-12-2004	
		<hr/>	<hr/>	<hr/>
Tangible fixed assets		220,369		225,568
Floating assets:				
- Current projects	210,861		383,687	
- Receivables concerning projects	85,327		101,638	
- Turnover tax	49,684		71,740	
- Other receivables and accrued income	420,363		634,912	
- Liquid assets	1,093,919		1,060,772	
	<hr/>	1,860,154	<hr/>	2,252,749
		<hr/>		<hr/>
		2,080,523		2,478,317
		=====		=====
EQUITY AND LIABILITIES	31/12/2004		31-12-2003	
		<hr/>	<hr/>	<hr/>
Equity capital		1,034,049		523,474
Designated capital		170,450		178,700
Equalization reserves		43,000		383,493
Provisions		200,107		253,407
Short term debts and accrued liabilities:				
- Ministry of Transport concerning salaries	0		665,493	
- Other debts and accrued liabilities	632,917		473,750	
	<hr/>	632,917	<hr/>	1,139,243
		<hr/>		<hr/>
		2,080,523		2,478,317
		=====		=====

Explanation of the balance sheet

Statutory accounting principles and method of determining the result

The tangible fixed assets are valued against purchase value, with deduction of linear depreciation based on the expected economic life span. Purchases in the report year are depreciated according to time. The depreciation periods that apply are: 5 years for the telephone exchange, furniture, and housing costs; 3 years for breath-testing apparatus, computers, software, and public information material; 4 years for other investments. The current projects are valued on the basis of spent, direct costs including a surcharge for the indirect costs, with deduction of invoiced periods. Possible losses are completely provided for and deducted from the current projects.

The other assets and liabilities are valued at nominal prices.

The income and expenses, taking into account the already mentioned statutory accounting principles, are allotted to the year in question.

Project profits are accounted for after a project has been completed.

Floating assets

The items 'Current projects' and 'Receivables concerning projects' (debtors) show per balance date, an decrease in existing receivables. The cause of this is mainly a decrease in receivables because of current and completed EU projects.

Other receivables and accrued income

The decrease in this item is the result of the decrease in SWOV's claim on the SWOV Reduced Pay Fund Foundation (STIWAS) from €252,943 to €17,431. The STIWAS refunds SWOV the reduced pay and termination payment that SWOV had originally made, and SWOV pays an annual premium to the STIWAS, based on the current unemployment premium.

Equity Capital

The mutation of the equity capital consists of the exploitation result of €510,575.

As already stated in the introduction, SWOV's Board of Governors decided to designate a portion of the equity capital to extra finance the subsidy programme. The Board regards an equity capital of about 12% of the average annual income necessary to be able to provide in SWOV's financing need because of investments in fixed assets, prefinancing EU projects, and repaying part of the subsidy amount. Of the total equity capital of €1,034,049, the sum provided for is €545,000. The rest, a sum of €489,049, is available for extra financing.

Designated Capital

The mutation of the designated capital consists of the contributions, minus the costs spent, of the RAI Association and the Royal Dutch Tourist Association ANWB. In 2005, the fund decreased by €8,250 to €170,450.

Equalization Reserves

In 2005 the costs assigned to the subsidy were greater than the awarded subsidy. In agreement with what had been agreed on here in the subsidy preconditions, the excess amount used can be deducted from the 'Equalization Subsidy Reserve'. Although the 'Equalization Subsidy Reserve' can also be a negative reserve, the deduction was limited to the previously accumulated amount with which the complete reserve had been used at the end of 2005.

In 2003, €43,000 of a one-off contribution from the Ministry of Transport was not used, and has been included in the equalization reserves. Up till now there has been no mutation in this item.

Provisions

The item 'Provisions' serves to achieve an equal distribution of those expenses considered and to cover the existing risks and obligations on the balance date. The provisions concern the accumulated vacation rights within the framework of the so-called 'save variant compensation days' of €84,300 and an own risk provision for illness of €115,807. The own risk provision for illness is reduced annually, and in 2005 an amount of €57,000 has come free for the exploitation. The remaining amount will become free during the next two years. The provisions, because of expected losses in projects, have been included in the item 'Current projects'.

Short term debts and accrued liabilities

Up to and including 2004, the Ministry of Transport dealt with the salary administration and payment. All relevant debts to the ministry have been settled in 2005 so that there are no outstanding debts to the ministry. As a consequence of the transfer of the salary administration from the ministry to SWOV, the accumulation of the 2004 vacation payment was paid out in December 2004 so that there was no remaining obligation to the employees. On the 2005 balance sheet is included, as usual, the accumulated right for the June-December 2005 period. In the other debts and accrued liabilities are also included, per balance date, existing rights of employees to accumulated and not yet taken vacation days (not being the save variant).

Obligations not apparent in the balance

For those projects carried out for the European Commission (EC), SWOV is obliged to provide a bank guarantee for the amount paid by the EC as 'advance'. To cover these bank guarantees, the amounts received in the bank account have to remain. Seeing as the amounts are necessary for financing the work, this presents a liquidity problem. To overcome this, what is known as a liabilities credit of €1,000,000 was taken out with the ABN-AMRO bank. The purpose of this credit agreement is only to ensure that the amounts received from the EC are, during the complete duration of the bank guarantee, not 'frozen' in the account.

Explanation of the accounting of income and expenses

ACCOUNT OF INCOME AND EXPENSES 2005

INCOME	<u>2005</u>	<u>2004</u>
Income of activities	5,501,031	4,716,282
Other income and expenses	22,388	36,880
	<u>5,523,419</u>	<u>4,753,162</u>
	=====	=====
EXPENSES	<u>2005</u>	<u>2004</u>
Salary costs permanent employees	3,528,144	3,287,412
General personnel costs	81,511	94,355
Housing costs	515,088	525,696
General office costs	106,185	113,041
Computer costs	162,416	139,697
Travel and hotel costs	35,754	61,465
Information and Communication	85,336	96,073
Documentation/Library	39,990	47,646

External financed projectsCompleted projects National

Turnover (= total income completed projects)		59,625	
Off: Cost price of turnover	61,152		
Result projects National			-1,527

Completed projects EU, incl. International

Turnover (= total income completed projects)		319,317	
Off: Costs of turnover	315,907		
Result projects EC, incl. International			3,410

Costs unaccepted tenders, incl. external costs			-2,718
Provision loss current projects			0

Results on projects			<hr/> -835
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EXPLOITATION BALANCE GENERAL COSTS			<hr/> 511,410
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TOTAL RESULT 2005 (Reserve) **510,575**

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€4,4647,471 was spent on subsidy activities in 2005. This was €571,495 more than the subsidy awarded by the ministry, increased by extra externally received contributions for subsidy activities. €340,493 of the 'more' has been charged to the 'Equalization reserve subsidy', and the difference of €231,002 has been included in our equity capital.

We received a total amount of contributions from RAI and ANWB of €42,227. The 'RAI and ANWB Fund' activities were charged with €50,477 in 2005. The balance of this fund is to be found in the item 'Designated capital'.

In addition to the subsidy we worked on a number of external projects. For those projects that were completed in 2005 a small negative result of €835 was booked.

In 2005 the 'General costs' were €38,567 less than the budget and there is €22,388 'over for Other income'. Because the 'Internal backing' was €436,813 more than the budget, the 'Exploitation balance general costs' were €497,768 greater than the budgeted €13,642 and amount to €511,410. After deduction of the project results, an amount of €510,575 has been added to the 'Equity capital'.