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EUROPEAN ASSESSMENT OF GLOBAL PUBLICLY FUNDED AUTOMOTIVE RESEARCH

# Publicly funded automotive research in the Netherlands

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**Authors:**

**Michiel Muller (TNO), Ton Versmissen (TNO), Simon Vinot (IFP), Jerome Sabathier (IFP)**

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**EAGAR Partner Organisations:**

- AVL LIST GmbH, AUSTRIA
- RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN, GERMANY
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# **1 Introduction**

## **1.1 Background**

The European FP7 project EAGAR has benchmarked the current public automotive research activities of the European Union with the national public research activities of Brazil, Canada, China, India, Japan, Malaysia, Russia, South Korea, the United States and 13 EU Member States.

EAGAR identified the national road transport visions and roadmaps, research priorities, supported key topics and technology pathways, as well as the level of R&D investment for each country investigated. This enabled a direct comparison of national automotive R&D policies relating to the environment, safety and congestion.

The EAGAR study provides a key perspective on global investments designed to improve automotive vehicle technologies for a greener, safer and smarter road transport system.

## **1.2 Objectives**

This deliverable report summarises the situation of the RTD funding system in the Netherlands with respect to published vision statements, research targets and roadmaps, the nationally funded RTD programmes from 2006-2009 and the governance of automotive RTD funding in the Netherlands.

The report is the basis for the subsequent benchmarking analysis, which delivers the key results of EAGAR addressing the following issues:

- Overview of national road transport visions, research agendas and roadmaps
- Comparison of automotive research priorities and investments focused on vehicle technologies
- Characteristics of national automotive research funding systems and approaches
- Highlighting areas of strength and weakness of the publicly funded RTD system in country assessed
- Potential international cooperation areas from a European perspective.

This report feeds into the benchmarking analysis work which will compare European public funding for automotive RTD with that of other developed and emerging economies. The benchmarking analysis is due to complete in September 2010 and the results will be made available from the EAGAR website [WWW.EAGAR.EU](http://WWW.EAGAR.EU) as deliverable D.5.1.

## **1.3 Methodologies**

This country report is based on comprehensive investigations of the strategy for automotive RTD in the Netherlands, based on data from the public domain, information collected from the responsible programme managers and individual feedback from experienced project managers and researchers. The methodology used was developed in the initial months of the project. It is consistent for all target countries. The data collection occurred from May 2009 to February 2010.

The four main categories for data collection were:

- General and automotive data about the country
- Published challenges, visions, targets for automotive research

- Funding organisations and hierarchies for automotive research
- National public funding programmes for the years 2006 to 2009.

#### **1.4 Disclaimer**

This document presents quantitative and qualitative data from various sources. Due to the complexity of the project and the large amount of sources of data, regularly changing during the duration of the project, it was not possible to thoroughly validate all details. The EAGAR project partners cannot guarantee that the data presented is either complete or correct. The value of some of these data is mainly explorative, as a first step in an indicators development process. In conclusion, the data provided here may be difficult to interpret, are not exhaustive and may need further development. Comments by stakeholders on the coverage, relevance and interpretation of the indicators provided, as well as observations on new indicators that could be employed to improve the analysis of publicly funded automotive research are welcomed by the EAGAR project consortium. The EAGAR project partners and EC accept no liability for any issues that arise from actions that may be taken as a result of reading this report.

Any quotation of the data in this document should refer to the above disclaimer.

## 2 Description of the main WP results



Figure 2.1 – National Flag for the Netherlands

### 2.1 General Information and Automotive Data

The Netherlands is a small country in North-western Europe, borders Germany to the east and Belgium to the south. The area of the Netherlands covers 41.500 km<sup>2</sup><sup>1</sup>. The capital of the country is Amsterdam, which is the largest city. The second largest city is Rotterdam. Rotterdam has a large harbour which is one of the main gateways to Europe for the transport of goods. The central government is not located in the capital, but in The Hague.

The Netherlands has a population of 16,4 million people (per 1/1/2008)<sup>1</sup>. The Netherlands had in 2007 the sixth largest economy of the EU with a GDP of 567,1 billion euro. Herewith, the Netherlands has the third largest GDP per head of the EU, after Luxemburg and Ireland<sup>1</sup>.



Figure 2.2 – Location of the Netherlands within Europe [Source: CIA World Factbook]

<sup>1</sup> EC, 2009

### ***The role and importance of road transport in the Netherlands and the significance of domestic automotive industry***

In total approximately 22.000 persons are working in the automotive industry in the Netherlands<sup>2</sup>. The turnover of the automotive industry is approximately 12 billion euro per year.

There are about seventeen big suppliers in the automotive industry in the Netherlands, among which Corus, Akzo Nobel, DSM, GE Plastics, Philips, Bosch and TomTom. They produce components, semi finished products or raw materials for clients in the automotive industry which are located mainly in Germany, Belgium and France.

There is one small-scale vehicle assembly plant in the Netherlands: the company Nedcar in the city of Born. At the date of publishing, this company is producing the Mitsubishi Colt and Mitsubishi Outlander. The turnover was 707 million euro in 2008 and the facility employs about 1500 people<sup>3</sup>.

The Netherlands is the third heavy truck producing country in Europe<sup>4</sup>. Main companies are DAF Trucks which is located in the city of Eindhoven and a large plant of Scania Trucks is located in the city of Zwolle.

The Dutch economy relies on the road transportation system. An important function of the road transport sector in the Netherlands is the distribution of goods from the two major mainports (harbour of Rotterdam and Amsterdam Airport Schiphol) to the hinterland. The amount of ton-km of goods transported by road by vehicles registered in the Netherlands is 78 billion tons-km per year<sup>1</sup>. The functioning of the two main ports and thus the connections to the back land are very important for the total Dutch economy.

Furthermore, the Netherlands has a dense highway network, which covers the entire country. The total length of all highways is 5076 km<sup>5</sup>. Beside of for the transport of goods, this network is used intensively for commuter traffic during peak hours, especially in the west of the Netherlands ('Randstad'). There is a high level of car ownership: there are about 450 passenger cars per thousand inhabitants in the Netherlands. In 2008 there were almost 500.000 new cars sold in the country. In 2007 there were 148,8 billion passenger kilometres travelled in the country.

### ***National spending and funding for research and technology development (general vs automotive sector)***

In the Netherlands every year about 6 billion euro is spent on research and development in general. About 60% of this amount is spent by the government, the other part is spent by private companies and other organisations<sup>6</sup>.

About 1,2% of the GDP is spent on RTD in general. About 0,09% of the GDP is spent on automotive RTD. The amount of money spend on automotive RTD is about 4,2% of the automotive industry turnover in the Netherlands<sup>6</sup>.

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<sup>2</sup> HTAS, 2006b

<sup>3</sup> NedCar, 2009

<sup>4</sup> HTAS, 2006a

<sup>5</sup> 'totaal Rijkswegen 2009', CBS, 2009c

<sup>6</sup> CBS, 2009a

## 2.2 National Funding Organisations and Hierarchies for Automotive Research

### The structure and governance of the national funding system

The diagram below shows the hierarchy in allocating money from public sources to automotive research<sup>7</sup>. On top of the diagram the ministries of the central government are shown. Three Ministries (of Transport, Education, Culture and Science and Economic Affairs) fund directly to the research institutes (in this case to the research organisation TNO) and universities.

Regarding the national research programmes in the Netherlands, the “NL Agency” distributes the funding from the Ministries to the applicants. In the case of automotive research the source for the funding is mainly the Ministry of Economic Affairs.

For the funding of PhD studies in the Netherlands one can apply to STW. STW is funded partly by the Ministry of Education, Culture and Science via NWO and partly by the Ministry of Economic Affairs.

sources of funding

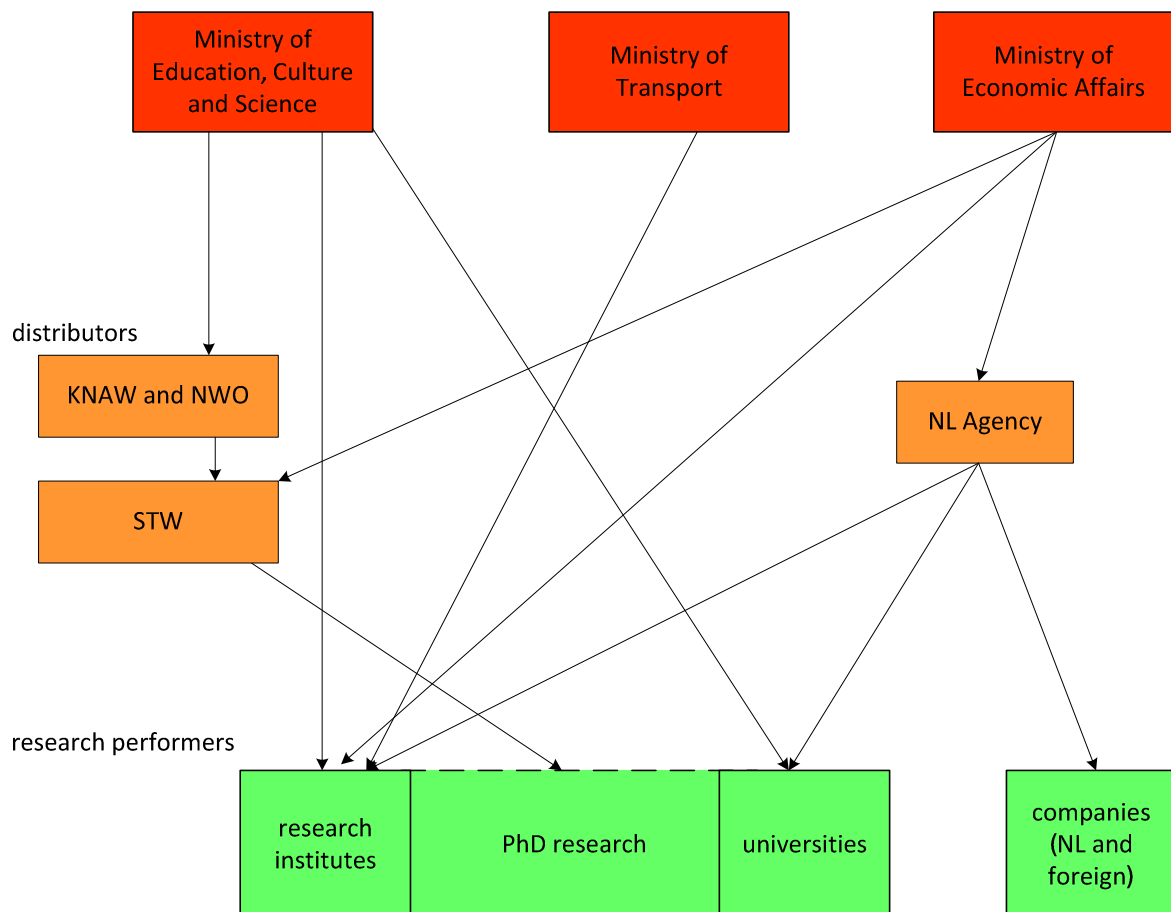


Figure 2.3 - Public funding structure & key players in the Netherlands [Source: EAGAR]

<sup>7</sup> KNAW, 2010



The flow from the Ministries of Education, Culture and Science, Transport and Economic Affairs to the research institutes mainly incorporates the flow from these ministries to the research organisation TNO. This flow is about 6 million euro per year for automotive research. This is based on the reports of TNO in which the spending of the public budget is justified. The indicated budget is the sum of the public budget of the following business cases: Efficient Powertrains, Cooperative Driving Systems, DECS, Human and Environmental state Estimation and Vehicle Dynamics, Estimation and Control<sup>8</sup>.

The universities (and “hogescholen”) receive direct funding of the Ministry of Education, Culture and Science. Universities are independent to choose how to spend this budget (“eerste geldstroom”). Therefore, the Ministry was not able to give information about the spending of these budgets.

STW receives money from NWO, which receives money from the Ministry of Education, Culture and Science (and some other sources). STW is also partly funded by the Ministry of Economic Affairs.

**Funding organisations and key players**

In the table below the mayor funding organisations and key players in the automotive research sector in the Netherlands are listed.

**Table 2.1 Funding organisations and key players in the Netherlands**

<i>stakeholder</i>	<i>description</i>	<i>interest in the funding of research</i>	<i>website</i>
Ministry of Economic Affairs	Ministry which has the mission to arrange the preconditions for sustainability, entrepreneurship and welfare in the Netherlands.	Funding of research.	<a href="http://www.rijksoverheid.nl/ministeries/ez">http://www.rijksoverheid.nl/ministeries/ez</a>
Ministry of Education, Culture and Science	Ministry which has the mission to make the people in the Netherlands more smart, capable and creative.	Funding of research.	<a href="http://www.rijksoverheid.nl/ministeries/ocw">http://www.rijksoverheid.nl/ministeries/ocw</a>
Ministry of Transport	Ministry which has the mission to support the quick and safe transport of people and goods and to protect the country from floodings.	Funding of research.	<a href="http://www.rijksoverheid.nl/ministeries/venw">http://www.rijksoverheid.nl/ministeries/venw</a>

<sup>8</sup> These business cases are part of the “Knowledge investment programmes” for “Automotive Control Systems (VP ACS)” and “Transport, Traffic and Logistics (VP VVL)”

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KNAW (Royal Netherlands Academy of Arts and Sciences)	Academy which has the mission to promote the quality of scientific and scholarly work and strives to ensure that Dutch scholars and scientists make the best possible contribution to the cultural, social, and economic development of Dutch society.	Advising to the government and assessing the quality of scientific research.	<a href="http://www.know.nl/">http://www.know.nl/</a>
NWO (Netherlands Organisation for Scientific Research )	Organisation which funds researchers at universities and institutes and steers the course of science by means of subsidies and research programmes.	Distributes the funding for scientific research at Dutch universities and institutes.	<a href="http://www.nwo.nl/">http://www.nwo.nl/</a>
STW (Technology foundation Spiegheling and Daet)	Technology foundation which funds the research and brings together researchers and potential users of the results of that research.	Distributes the funding for scientific research at Dutch universities and institutes.	<a href="http://www.stw.nl/">http://www.stw.nl/</a>
NL Agency (former “Senter-novem”)	NL Agency is a department of the Dutch Ministry of Economic Affairs that implements government policy for sustainability, innovation, and international business and cooperation.	Agency for applying the funding of research.	<a href="http://www.agentschapnl.nl/">http://www.agentschapnl.nl/</a>
TNO (Netherlands Organisation for Applied Scientific Research)	Research institute which applies scientific knowledge with the aim of strengthening the innovative power of industry and government in the Netherlands.	Applies research.	<a href="http://www.tno.nl/">http://www.tno.nl/</a>
Hightech Automotive Campus Helmond	The Campus in the city of Helmond is an area in which automotive knowledge and business companies and institutes work together. The leading international companies present include TNO Automotive, TTAI (TÜV Rheinland TNO Automotive International) and PDE Automotive.	Companies and institutes connected to / located in the campus apply research.	<a href="http://www.htacampus.nl/">http://www.htacampus.nl/</a>

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Federation Holland Automotive	The Federation Holland Automotive is a representative for the automotive industry in the Netherlands. The federation acts in the interest of relevant companies and organisations of all levels with the purpose of consolidating the Dutch automotive industry.	Represents the automotive industry in the Netherlands.	<a href="http://www.holland-automotive.nl/">http://www.holland-automotive.nl/</a>
RAI Association	Association of manufacturers and importers of cars, trucks, trailers, motorbikes and mopeds.	Represents the manufacturers and importers of cars, trucks, trailers, motorbikes and mopeds in the Netherlands.	<a href="http://www.raivereniging.nl/">http://www.raivereniging.nl/</a>

### **2.3 Automotive Visions and Strategic Research Agendas**

#### ***Significant challenges for the national road transport sector***

There are several challenges which have to be tackled in the road transport sector in the Netherlands. Four important challenges are listed described in this paragraph.

First, the congestion on the highways is increasing. Especially during the rush hours on weekdays the delays are large and the travel times are not reliable. There are large flows of commuter traffic which use the highways for relatively short distances. Furthermore, there is a lot of construction and maintenance works planned for the coming years, which cause extra delays. The use of porous asphalt on the largest part of the highway network makes more maintenance works needed, because of the shorter lifetime of this type of asphalt compared to asphalt concrete. The congestion on the roads causes high indirect costs due to the longer travel times for passengers and goods, a higher energy consumption and higher CO<sub>2</sub> emissions.

Second, the air quality in cities due to the traffic does not meet the European standards, as a result of the emissions of vehicles. A high number of cars is used for the transport of goods and people in cities.

Third, there is an increasing wish of cities to divert cars from the city centres (especially historical city centres) to make these city centres more attractive. The vehicles are diverted to ring roads. This leads sometimes to accessibility problems and an increase of congestion on ring roads. Beside of that, the space needed for the parking of cars is more and more indicated as a problem. City centres have sometimes small streets which have no room for the parking of cars. Also parked cars sometimes disrupt the views of historical city centres.

Fourth, there happen a number of accidents a year which causes fatalities (791 in 2007). It is a challenge to decrease this number of fatalities to maximum 500 in 2020.

**Visions & focused targets for road transport**

To tackle these challenges, the government in the Netherlands has a number of goals which are summarized in the table below.

**Table 2.2 Targets set in the Netherlands**

Target name	Corresponding challenge	Description including addressed research themes, technologies	By date	Year of publishing
Reduce emission of greenhouse gasses	environmental	Reduce the emission of greenhouse gasses by 30% <sup>9</sup> (base year 1990)	2020	2007
Number of fatalities on the road	safety	Reduce the number of fatalities in traffic to less than 500 <sup>10</sup>	2020	2008
Number of victims on the road	safety	Reduce the number of victims in traffic to less than 12.250 <sup>7</sup>	2020	2008
Nota Mobility	mobility	Travel time on the highways during peak hours has to be below the travel time during non-peak hours plus 50% <sup>11</sup>	2020	2004

To reduce the emissions of vehicles in the Netherlands, the government stimulates the use of efficient vehicles. This is done by lowering taxes on efficient vehicles and increasing the taxes on less efficient vehicles. For efficient vehicles no “BPM” (tax for new sold vehicles) and less (or no) “MRB” (monthly tax for the ownership of a vehicle) has to be paid. This makes efficient vehicles about 22% cheaper when newly sold. “Efficient vehicles” are petrol cars which emit 110 grams CO<sub>2</sub> per kilometre or less, diesel cars which emit 95 grams of CO<sub>2</sub> per kilometre or less and electrical vehicles. Also other financial incentives exist for vehicles with a Euro-6 qualification and for particle filters for diesel engines<sup>12</sup>.

For the introduction of Electrical Vehicles (EV’s) there are several initiatives going on in the Netherlands.

First, there is an action plan on national level which was agreed by the Ministries of Transport, Economic Affairs and Spatial Planning & Environment in July 2009. The action plan covers several steps for testing, research and implementation of Electrical Vehicles in the Netherlands. It incorporates total investments of the government of € 65 million for the period 2009 until 2012. This budget is intended to be used for stimulating the construction of a recharging infrastructure, support of investments in the production of EV’s, to give financial incentives for consumers to buy EV’s and the founding of the ‘Formula E-team’. This team will be formed by people which have a certain level of influence and has the goal to make agreements for the implementation of EV’s in the Netherlands.

<sup>9</sup> VROM, 2010

<sup>10</sup> V&W, 2008

<sup>11</sup> V&W, 2004

<sup>12</sup> Ministerie van Financiën, 2009

Second, there are some initiatives of municipalities. The first actual introductions of EV's are performed by the Municipalities of Amsterdam, Rotterdam and Den Bosch. They added some EV's in their own fleet. Furthermore, these municipalities invest in the construction of infrastructure for the charging of batteries.

Third, there are the activities of private companies. Several companies add (some) EV's to their fleets. Four private companies ('Urgenda', 'TNT', 'Eneco' and 'Tendris') decided to launch together a tender for the purchase of 3000 EV's.

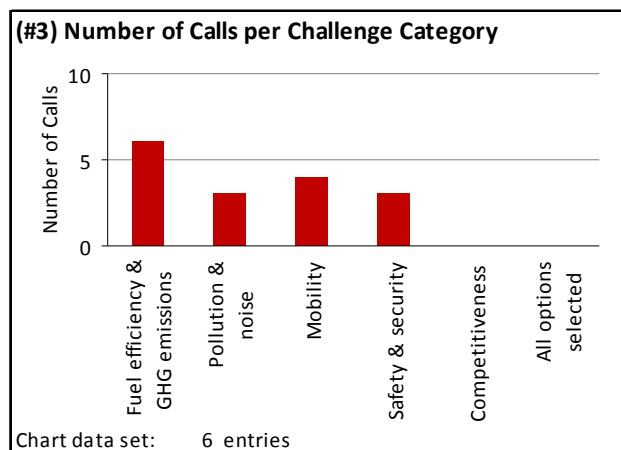
## 2.4 Funding Programmes

### *The link between vision & targets and funding allocation*

In the Netherlands, one mayor funding programme for automotive research exists: High Tech Automotive Systems (HTAS). The programme is established in 2006 and is funded by the Ministry of Economic Affairs. In line with the challenges which one in the Netherlands has to cope with, the focus of the HTAS (High Tech Automotive Systems) research programme is on vehicle efficiency and driving guidance. By improving the vehicle efficiency the emission of greenhouse gasses can be decreased and the air quality in the living environment can be improved.

By performing research and development to the driving guidance of vehicles one tries to enhance mobility by reducing congestion and to improve the safety by reducing the number of accidents. The latter will also lead to less congestion.

Beside HTAS, also the national research organisation TNO performs automotive research which is funded by the Dutch central government. Also some PhD-studies are performed with automotive related subjects (via "STW"). In the diagram below the focus of research in the Netherlands is showed.



**Figure 2.4 - Number of calls per challenge category [Source: EAGAR]**

### *Funding programmes and states of RTD as well as different types of instruments*

In the Netherlands the system of calls for proposals does not exist in the same form as used in other countries across Europe. Instead of that, in the Netherlands there are several research programmes for which one can apply by writing a research proposal. The mayor research programmes of HTAS and STW will be described below. Also automotive research at the Dutch research institute TNO will be described in this paragraph.

### **HTAS (High Tech Automotive Systems) research programme**

The Dutch Automotive Innovation Programme HTAS is established in 2006 and is funded by the Ministry of Economic Affairs. At the moment 33 projects are funded by the programme. The programme has defined the following goals<sup>13</sup>:

- Vehicle Efficiency: reducing fuel consumption through more efficient vehicles.  
*Objective: achieve a 20% increase in fuel efficiency in 2016, resulting in an improved competitive position and additional revenues of 1.5 billion euro.*
- Driving Guidance: enhancing mobility (significant reduction of congestion problems) through improved safety (reduction of traffic accidents) and use of advanced mobility information.  
*Objective: achieve a 25% reduction in travel time in 2016 based on current demands for mobility, resulting in an improved competitive position and leading to additional revenues of 1.2 billion euro.*

Beside of investing in these goals, the programme invests also in ‘enablers’: the transfer and knowledge between stakeholders and the education of people. Among the foreseen results there will be created a master-programme for students for automotive research. Furthermore, the ‘Grand Cooperative Driving Challenge’ will be organised. This challenges ‘aims to accelerate the implementation of these systems and to significantly contribute to alleviating traffic problems worldwide.’<sup>14</sup>

The programme HTAS is divided into two sub programmes for which companies or institutes can apply<sup>15</sup>. These programmes will be described below.

#### *HTAS Major breakthroughs (“Doorbraakprojecten”).*

The goal of this sub programme is to support projects which can have a significant impact on the goals of HTAS which are mentioned above. To make the connection between the market and knowledge institutes only consortia with at least one SME can apply. The budget of this sub programme is 4 million euro’s per year.

#### *HTAS International innovation projects*

The goal of this sub programme is to support the technological basis of the automotive (research) industry and to stimulate international cooperation. Beside of this, EUREKA projects can be subsidized by this programme. For the application some conditions apply: the project as to be state-of-the-art in international perspective, a good cooperation between partners and funding of the foreign partner, economic value of the project and the contribution in reaching the goals of HTAS. The budget of this sub programme is 3 million euro per year for all projects.

Next to these sub programmes, in 2009 a new programme has been launched in the HTAS framework: the Electrical Vehicle technology programme<sup>16</sup>. The goals of this programme are the following: the improvement of the connection of the international developments of Electrical Vehicles, to enstrongen the Dutch economy and to accelerate the Electrification in the Netherlands. This programme has a total budget of 14,7 million euro. The projects will run until 2012.

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<sup>13</sup> HTAS, 2006a

<sup>14</sup> HTAS, 2009

<sup>15</sup> NL Agency, 2010b

<sup>16</sup> HTAS, 2006c

### **STW (Technology foundation)**

For scientific research one can apply with 'STW'. STW is funded by the Ministry of Economic Affairs and NWO (on its turn, NWO is mainly funded by the Ministry of Education, Culture and Science<sup>17</sup>). STW organises the selection of proposals and brings together scientists and market parties. STW has two programmes for which one can apply<sup>18</sup>.

#### ***Open Technology Programme***

This programme has no specific topic. People can apply for this programme with any proposal which has a technical scientific aspect. To prove the usability for the society, four statements of potential users (companies) are needed. The programme is open all-year around.

#### ***"Perspective" programme***

The "Perspective" programme tries to bring developments of the Open Technology Programme further into practice. The programme is focused on solutions for problems regarding innovation, on the development of new technologies with a multi-disciplinary approach, on the cooperation between users, on the co-financing with private partners and on specific activities regarding valorisation and entrepreneurship. This programme has a yearly returning deadline.

Every year about 10 PhD studies in the field of automotive research are funded by STW. The yearly subsidy for a PhD study is about 60.000 euro.

### **Funding of research at TNO (Netherlands organisation for applied scientific research)**

TNO is the Dutch research organisation for applied scientific research. The organisation is founded by law and about 30% of its turnover is budget which is received directly from the central government in the Netherlands. Every four years TNO has to write a strategy-plan for research. This plan has to be approved by the government. According to this strategy, the public budget is divided between "knowledge areas". An independent review committee decides about the funding of projects and who has to report to the government about the spending of the money.

For automotive research two "knowledge areas" of TNO are relevant: "Automotive Control Systems"<sup>19</sup> and "Transport, Traffic and Logistics"<sup>20</sup>. The total yearly budget of these knowledge areas is 4,5 million euro for Automotive Control Systems and 3,9 million euro for Transport, Traffic and Logistics (2008). Not all projects which are funded by these "knowledge areas" belong to EAGAR-categories. It is estimated that in total about 6 million euro per year is available for EAGAR-topics via TNO. In the graphs below the two relevant "knowledge areas" of TNO are added as one call per year each.

### **Other research programmes**

Beside of the research programmes which are mentioned above, some more research programmes exist which focus not or not specific to the automotive research industry.

The programme "***Subsidiering sterktes in de regio (Pieken in de Delta)***" is intended for the funding of applied research for regions in the Netherlands for no specific sector. The total available budget is 26 million euro (for all regions together).

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<sup>17</sup> NWO, 2009

<sup>18</sup> STW, 2008, 2009, 2010a and 2010b

<sup>19</sup> "Vraaggestuurd Programma Automotive Control Systems"

<sup>20</sup> "Vraaggestuurd Programma Verkeer Vervoer en Logistiek"

The programme **“Kennis bij de buren”** is a funding programme which has the goal to share knowledge between companies and organisations in the Netherlands together with partners from Flanders (Belgium) and Nordrhein-Westfalen (Germany).

In the **“Point one”** programme industry, knowledge organisations, small and medium enterprises and governmental bodies work together intensively in the fields of nanoelectronics, embedded systems and mechatronics.

The programmes **“HighTech Topprojecten”** (ended in 2009) and **“Innovatiegerichte Onderzoeksprogramma's IOP's”** are not direct related to the automotive sector.

Finally EUREKA or EUROSTARS are programmes at the European level and not funded only by the central government in the Netherlands. Therefore in this report is not elaborated more on these programmes.

The graphs below show some statistics for the automotive research in the Netherlands. The number of calls (and the available budget) has increased from 2006 onwards, thanks to the introduction of the HTAS programmes. In 2009 the Electrical Vehicle technology programme has been launched which explains the peak in number of calls and budget for that year.

In the Netherlands there is no big focus on fuel cell technologies. Also the competitiveness of the automotive sector is no focus for research, because of the non-existence of large production facilities.

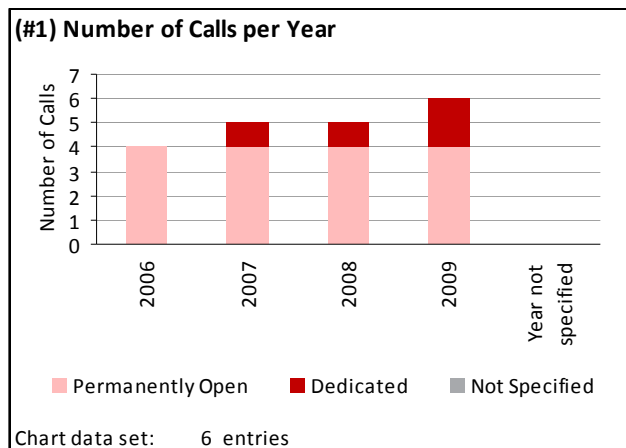


Figure 2.5

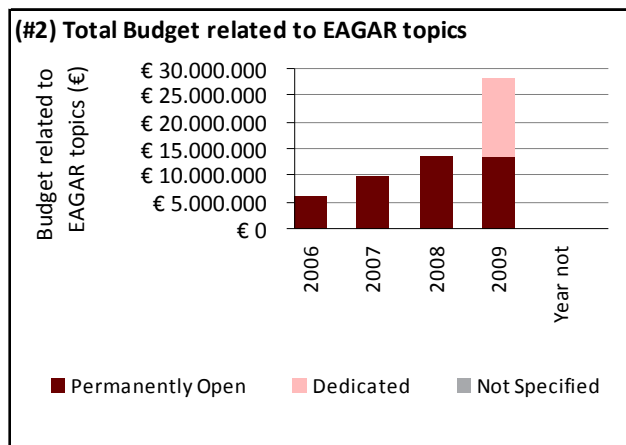
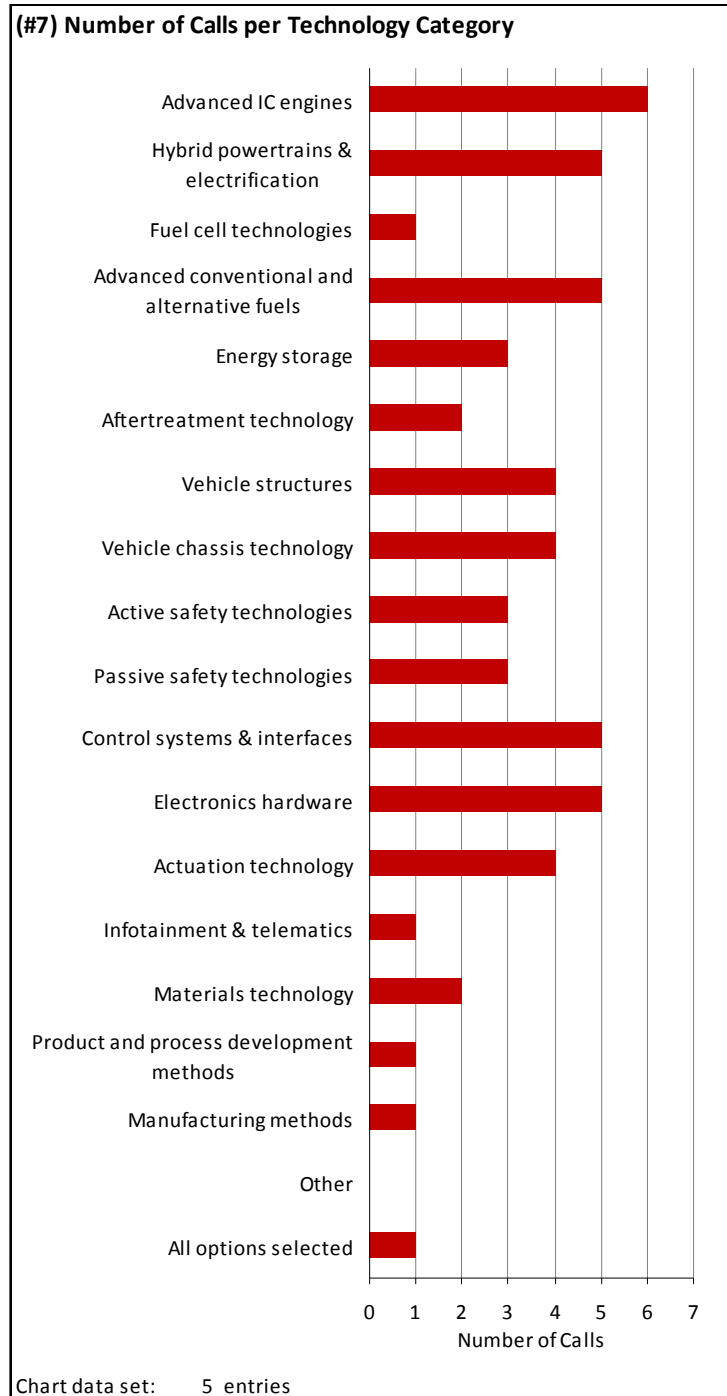


Figure 2.6



**Overview of technology specific programmes for automotive RTD**

In the diagram below the focus of the research programmes in the Netherlands is shown. For each of the research programmes (HTAS Major Breakthroughs, HTAS International Innovation Projects, HTAS Electrical Vehicle Programme, STW Open Technology Programme, TNO Automotive Control Systems and TNO Traffic, Transport and Logistics) it is indicated which technology category is addressed. The total of all programmes is the input for the diagram below.



**Figure 2.7 – Technology categories addressed by research programmes in 2006-2009 in the Netherlands [Source: EAGAR]. For the benchmarking analysis this information is compared with the number of research calls in other countries.**

## **2.5 The efficiency, flexibility, and experienced bureaucracy of the funding process**

The application processes for the different programmes in the Netherlands are not organised by the publication of calls. Instead of the use of calls, one can apply for a programme by getting into contact with the responsible organisation, then writing a proposal and giving (in most cases) an oral explanation. A jury, board or commission decides whether a subsidy is assigned or not.

For the HTAS programme information about the application process can be found on the website of NL Agency. This information is only available in Dutch. More information can be obtained by getting into contact with one of the employees of NL Agency, using the e-mail addresses and phone numbers which can be found on the website.

The application process for the Open Technology Programme is clearly described on the website of STW in both Dutch and English. The information of the Perspective programme of STW is only available in Dutch, because this programme is only open for scientific employees of Dutch universities. People can get easily in contact with STW using their contact details which are published on their website.

### **HTAS application process**

The application process for the HTAS programmes is organised by NL Agency. One can apply for the HTAS innovation programme by filling in a form and writing a project proposal. These documents have to be sent to 'NL Agency' and are discussed afterwards. The judgement of the proposals is done by an independent commission who uses the following criteria.

- capability of the consortium
- value of the technical innovation
- value for the economy
- contribution to the reach of the goals of HTAS.

The HTAS Mayor breakthroughs programme is open every year from February until October. Maximum 13 weeks after the application the result will be send to the applicant. The application for the HTAS international innovation projects has to be sent before mid-September. The result of the application procedure is then sent back before mid-December.

There is no formal feedback system for applicants to give feedback on the funding system. Within the programme of HTAS there is no possibility to add a new topic which does not contribute to one of the goals of HTAS (Driving Guidance and Vehicle Efficiency).

### **STW application process**

The STW Open Technology programme<sup>21</sup> is permanently open for application. STW aims for a processing period of 6 months. STW submits the research proposal to a number of national and international experts in the relevant specialist area. Thereafter, the application is judged by a jury of 10 to 12 independent multidisciplinary members. The members are highly educated and/or experienced people with an affinity for technology development. The entire procedure takes place in writing, without consultation. A jury member does not know the identities of other jury members in the same assessment round. Jury members are generally sent twenty research proposals with accompanying protocols.

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<sup>21</sup> This text has been copied from 'Guidelines Open Technology Programme' of STW, 2009 (STW, 2009).

The Perspective programme is only open for scientific employees of Dutch universities (STW, 2010). The applicant has to publish his/her initiative, organise a meeting to discuss the proposal with stakeholders and write a full proposal for the research programme. STW aims for a processing period of 6 months.

**TNO application process**

TNO has several on-going thematic research programmes on the basis of the four-year lasting TNO strategy. This strategy is approved by the Dutch central government. The research programmes are updated every year on the basis of input of the main stakeholders (governmental bodies and industry).

An internal review committee which is independent assesses the proposals for the projects and decides whether the project will be funded or not. If an approval is given, the project can start almost directly after that. During the running of the project, twice a year a review is held in which the progress of the project is checked.

**Experienced success rates**

The HTAS Mayor breakthroughs has a high succes rate up to 100%. For the HTAS international innovation projects the yearly success rate varies between 40% and 100%. For the programmes of STW no figures are known about the success rate. The succes rate of the application for funding of projects at TNO is not known.

### **3 Discussion and Conclusion**

In the Netherlands, automotive research is performed by a number of companies, universities, 'hogescholen' and research institutes. The major research institute for automotive in the Netherlands is TNO. TNO is partly funded by the central government. The allocation of public funding to automotive research which is open for all companies and/or organisations in the Netherlands is in hands of STW and NL Agency.

The largest flows of public funding from the central government to automotive research are from the Ministry of Economic Affairs to HTAS (about 7 million euro per year) and from the Ministries of Education, Culture and Science, Transport and Economic Affairs to TNO (about 6 million euro per year). There are two organisations with which one can apply for a research funding. These organisations are NL Agency (for the application to the HTAS programme) and STW. HTAS has set the goals to decrease the congestion on the roads, to make vehicles more efficient and to make vehicles safer. The programme is open for all proposals, with the precondition of the application by a consortium with at least one SME or one foreign company and as long as the proposal is intended to support one (ore more) of the goals of HTAS. The STW programme is open for all research and everyone can apply with a proposal.

Once one has found the mentioned organisations one can quite simply find general information about the research programmes. However, the information for application is (in case of HTAS via NL Agency) only available in Dutch on the website. The information on the Open Technology programme of STW is available in both Dutch and English. Detailed information about the application process of HTAS (which one certainly may need) can only be obtained by contacting an employee of NL Agency by e-mail or phone. The application process is rather short for HTAS (within 13 weeks) and 6 months for STW. The success rate for application to the HTAS programmes is high. For STW no figures are known.

The system is not structured in systematic calls, like it is commonly used in other countries. This gives possibilities to make proposals which have more freedom to be created by the applicants themselves. More creative or innovative proposals are therefore possible. However, this freedom is limited to the goal(s) of the research programmes.

The risk of the system is that there might not be enough competition between proposals, because they are not easy to compare. When proposals are not easy to compare, the selection process gets even more complex.

The budget for the HTAS programmes in the Netherlands is fixed to a certain amount of money per year which is 7 million euro's. This means that money can not be shifted to other programmes, be saved for coming years or being spent to other expenses which are in benefit of the society. The risk of this is that this way of funding may lead to approval of proposals which are not of a sufficient quality or of proposals which do not give a lot of support to reach the goals of the programme.

The Netherlands organisation for applied scientific research TNO has a special position in Dutch research. The organisation receives funding of the central government for research. An independent review committee decides (within the strategy which has to be approved every four years by the central government) which projects are funded. The projects are executed by employees of TNO. The yearly budget for automotive research via TNO in the Netherlands is estimated at 6 million euro.

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