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EUROPEAN ASSESSMENT OF GLOBAL PUBLICLY FUNDED AUTOMOTIVE RESEARCH

Publicly funded automotive research in Germany

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1 Introduction

1.1 Background

The FP7 project EAGAR benchmarks the current public automotive research activities at international level, in particular the European Union with Brazil, Canada, China, India, Japan, Malaysia, Russia, South Korea, the United States and 13 EU Member States.

EAGAR identifies the national road transport visions and roadmaps, research priorities, supported key topics, technology pathway, as well as the level of investment. This enables 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 Germany with respect to published vision statements, research targets and roadmaps, the national funding programmes of the past 4 years and the governance of automotive RTD funding in Germany.

The report is 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
- Highlight areas of strength and weakness | European RTD compared to the analysed countries
- Potential international cooperation areas from a European perspective

This study benefits the competitiveness of Europe and enables the stakeholders to adjust its visions & plans for the future. Date of publication: September 2010. It is available from the EAGAR website WWW.EAGAR.EU as deliverable D.5.1.

1.3 Methodologies

This country report is based on comprehensive investigations via desk research, information from the responsible programme managers and individual feedback from experienced project managers and researchers. The methodology used was developed in the first months of the project. It is consistent for all target countries. The data collection was mainly done from May to November 2009.

The four main categories are:

- 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 with dedicated calls or permanently open between in 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. Any quotation of the data in this document should make reference to the above disclaimer. 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.

2 Description of the main WP results

2.1 General Information and Automotive Data

Germany is a country situated in the middle of Europe. In the North it is bordered by the North Sea, Baltic Sea, and Denmark, in the South by Austria and Switzerland, in the west by France and the Benelux states, and in the east by Poland and the Czech Republic. Germany is part of the European Union and covers a total area of 357,021 km². With 82 million inhabitants it has the largest population of all EU Member States (EU MS).¹



Figure 1: German flag

In 2008 Germany had the largest economy in Europe, with a Gross Domestic Product (GDP) of € 2,422 billion. Moreover, Germany exported the most goods in 2008 in comparison to the other European countries.

The role and importance of road transport in Germany and significance of domestic automotive industry

There are 6 domestic OEMs and a strong market for supply as well as RTD in Germany. The 6 largest car manufacturers Audi, BMW, Mercedes, Opel, Porsche, and Volkswagen produce in Germany about 6 million cars per year, which is the largest amount in Europe and the fourth largest number worldwide. Besides the domestic OEMs many major automotive suppliers have their roots in Germany: for example: ZF, Bosch, and Continental.² Furthermore, 5.3 million employees helped to generate an automotive turnover worth € 284 billion in 2008. € 11 billion of this amount were reinvested in this branch. The export relies notably on the automotive sector: goods worth € 180 billion were exported 2008.

In 2007 501 cars per thousand inhabitants were registered in Germany travelling 880 billion passenger kilometres (2008). The number of newly registered passenger cars exceeded 3 million in 2008. Moreover, 261,000 motorised two-wheelers were sold along with 328,000 commercial vehicles.

National spending and funding for research and technological development

In 2008 the domestic RTD funds were about € 68 billion, which is a share of approximately 2.6 % of the GDP (€ 2,422 billion).³ 30 % of these funds came from the public sector with 70 % coming from private investors.

¹ Statistisches Bundesamt; <http://www.destatis.de>

² VDA, Jahresbericht 2009; Germany 2009,

³ European Commission, EU energy and transport in figures, statistical pocketbook 2009, Belgium, 2009.

2.2 National Funding Organisations and Hierarchies for Automotive Research

The structure and governance of the national funding system

The funding in Germany is conducted through different channels. On the one side funds are distributed by the different departments of the German government and on the other side money is allocated by the different states, which are partly sovereign according to the federal constitution of Germany. Basic research is mostly addressed by the German Science Foundation (DFG) with a bottom-up approach without a specific focus on the automotive sector. Figure 3 illustrates the structure of the German funding system. Due to the complexity of the funding system, only selected funding organisations and institutions were depicted.

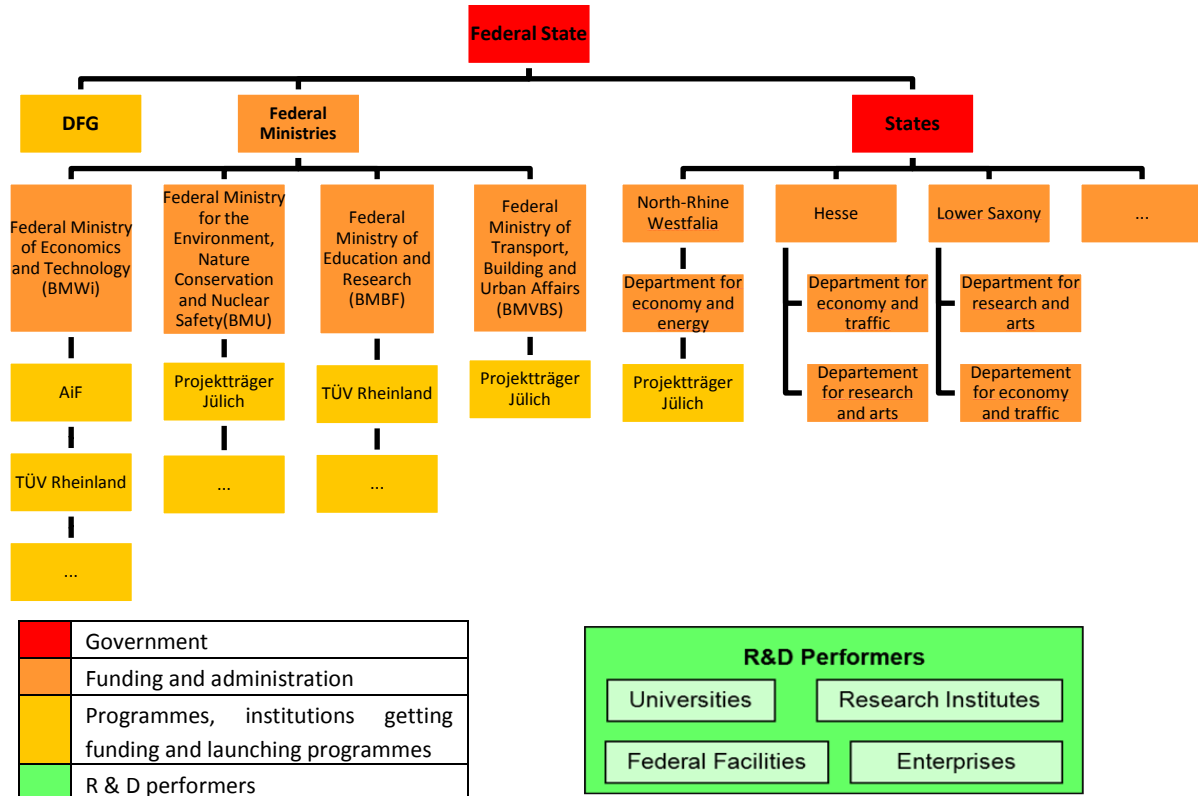


Figure 2: structure of the German funding system

Funding organisations and key players:

Bundesministerium für Wirtschaft und Technologie (BMWf) – Federal Ministry of Economics and Technology

The “BMWf” is the German department for economy and technology. It funds various projects conducted by medium sized companies. The main focus lies in supporting this economic branch.

www.bmwf.de

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) – Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety

Its principal functions are fundamental environmental policy issues, climate protection, environment and energy as well as noise abatement. The BMU funds mainly projects regarding the reduction of GHG emissions and fuel efficiency.

www.bmu.de

Bundesministerium für Bildung und Forschung (BMBF) – Federal Ministry of Education and Research

The main focus of the department of education and research (BMBF) lies in the long-term creation of growth, by creating new opportunities and improving the existing research and education structure. It wants to maintain Germany's competitiveness and create new jobs through innovative technologies and services.

www.bmbf.de

Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMVBS) – Federal Ministry of Transport, Building, and Urban Affairs

The areas of responsibility of the Federal Ministry of Transport, Building, and Urban Affairs are closely related to the basic requirements of the German citizens, namely housing and mobility. The BMVBS funds several projects concerning the improvement of infrastructure and in the transportation field.

www.bmvbs.de

For automotive RTD relevant departments of the federal states North-Rhine Westphalia, Hessen, Lower Saxony:

Ministerium für Wirtschaft, Mittelstand und Energie des Landes NRW

The department of commerce, middle class, and energy has the responsibility to create a strong and innovative economy site in the state of North-Rhine-Westphalia. In the centre of the sponsorships of the state are mainly small and medium-sized businesses in North-Rhine-Westphalia.

www.wirtschaft.nrw.de

Hessisches Ministerium für Wissenschaft und Kunst

The department of science and art is responsible for the sponsorship of sciences and arts, as well as controlling and organizing the higher education institutions. Therefore, funding of research projects lies mainly in its responsibilities.

www.hmwk.hessen.de

Hessisches Ministerium für Wirtschaft, Verkehr und Landesentwicklung

The department of commerce, traffic and land development of Hessen takes care of the needs of its inhabitants in these fields. Furthermore, projects regarding road transportation (like the programme "Staufreies Hessen 2015") are funded by this department.

www.wirtschaft.hessen.de

Niedersächsisches Ministerium für Wissenschaft und Kultur

Organizing the research institutions and universities in Lower Saxony is one of the main responsibilities of the department of science and culture. Besides these tasks the department also sponsors scientific programmes and projects.

www.mwk.niedersachsen.de

Niedersächsisches Ministerium für Wirtschaft, Arbeit und Verkehr

The department of Lower Saxony of commerce, work and traffic has three major fields: employment market, infrastructure and regulatory policy. Furthermore it sponsors different projects and initiatives in Lower Saxony regarding road transport.

www.mw.niedersachsen.de

(#12) Number of calls per funding organisation

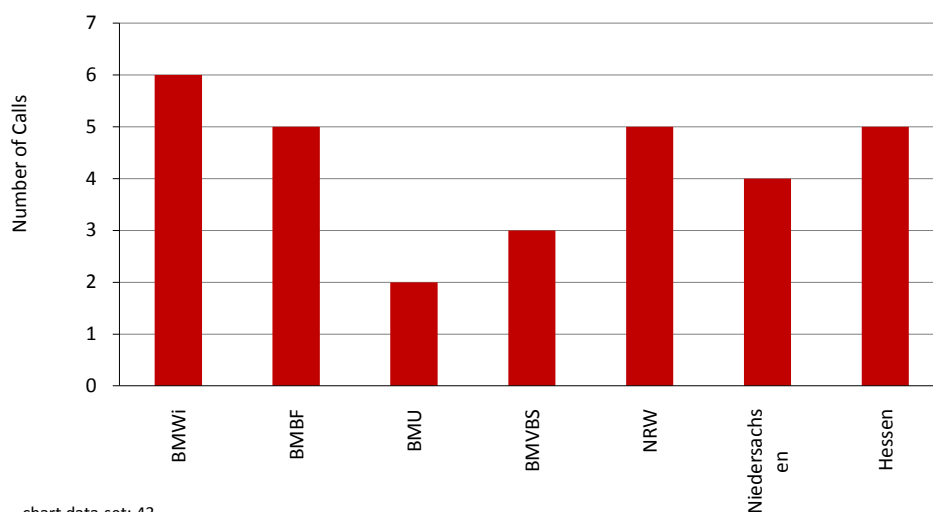


Figure 3: number of calls per funding organisation

Other funding and consulting organizations:

Deutsche Forschungsgesellschaft (DFG)

The DFG is a central research funding organisation in Germany. It funds and promotes research and education in all fields of sciences and humanities. 2008 over € 2 billion were given to the DFG to fund the various initiatives. The funds were contributed by the German government with 65 %. The rest came from the federal states and a small amount (0.3 %) was given by the EU or private investors. Besides the funding in the research sector an important focus lies in the academic funding. For the “German Universities Excellence Initiative”, which is conducted by the DFG, € 1.9 billion are available to support excellent academic projects and universities between 2006 and 2012.⁴
www.dfg.de

Arbeitsgemeinschaft industrieller Forschungsvereinigungen "Otto von Guericke" e.V. (AiF)

The AiF is a funding organisation mainly for small and medium sized companies in Germany. Its funding is contributed by about 50,000 medium-sized companies. Every year the AiF funds projects with € 350 million in many different research fields. Besides its own funding the Association conducts projects and calls for the various German departments.
www.aif.de

TÜV Rheinland

The „Projektträger Mobilität und Verkehrstechnologien“ (PT MVt) supports the Departement for economy and Departement for education and research concerning the funding of national and international R&D-projects within the topics of mobility, traffic and transport.
www.tuv.com/

Projektträger Jülich

The “Projektträger Jülich” conducts and coordinates projects for the German government. The Projektträger supports the national funding in various fields, like energy, material engineering, technology transfer, and especially in means of international and European funding. It has a great expertise in the coordination of international projects.
www.fz-juelich.de/ptj

⁴ DFG, Jahresbericht 2008

VDI/VDE Innovation + Technik GmbH (VDI/VDE-IT)

The VDI/VDE-IT is a reliable partner for the industry as well as for the political community in the means of research funding, technology policy, and innovation management. Especially in the field of microsystem technology the VDI/VDA-IT coordinates and conducts projects of the German government, in most cases for the BMBF. The targeted projects aim in most cases at active safety challenges.

<http://www.vdivde-it.de/eng>

VDA

The VDA (“Verband der Automobilindustrie”) is an interest group of the German automotive industry, which was founded 1901. The main focus of the VDA is the creation of a sustainable and modern mobility in Germany. The association is active in all fields of interest of the automotive industry and its related partners. Funding in automotive research projects is conducted by FAT.

www.vda.de

Forschungsvereinigung Automobiltechnik (FAT)

The FAT was founded 1971 as part of the VDA. Its mission is the funding of the automotive research in all fields of interest, especially in the fields of safety, environment, efficiency, and electronics.

<http://www.vda.de/de/verband/fachabteilungen/fat/index.html>

Bayern Innovativ

The “Bayern Innovativ” is an association for innovation and knowledge transfer in Bavaria. Founded more than 13 years ago, it conducts funding for the state of Bavaria as well as analyzes new innovations.

www.bayern-innovativ.de

Automotive Cluster NRW

The “Automotive Cluster NRW” is a knowledge base for the automotive industry and its supplier in North-Rhine Westphalia. The connection between research and industry lies in the focus of the cluster and is one of its main objectives. Moreover, it conducts and supports projects funded by the state of North-Rhine Westphalia.

www.autocluster.nrw.de

Remit for organisations & calls: overlaps or conflicts

The different federal ministries focus on different fields, which should prevent an overlapping of calls on the national level, however there is a conflict between the regional and the national calls, since both aim at alike objectives. The distribution of regional funds is mainly concentrated on local small and medium sized companies or universities, whereas the national funding addresses of course applicants in the whole country. Besides thematic conflicts, there is no differentiation between academic and industrial programmes. This is supposed to stimulate the academic landscape to strengthen their competitiveness. Moreover, collaboration between industry and academia is encouraged by this overlap. The administration of the programmes is often conducted by external agencies such as the research center Jülich, the TÜV Rheinland or the VDI/VDE-IT, which coordinate the public programmes for dedicated technology fields.

(#6) Number of Calls by
type of call window

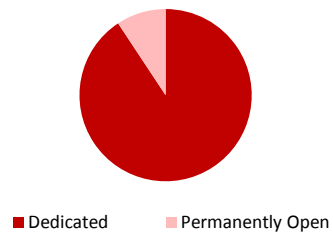


chart data set: 43

Figure 4: number of calls by type of call window

Most calls have a dedicated call window.

2.3 Automotive Visions and Strategic Research Agendas

Significant challenges for the national road transport sector

Most visions specified by the German government concern the safety of cars and the reduction of pollution as well as emissions. Moreover, mobility in the 21st century is a very important topic due to the fast growing amount of cars on the streets and the challenges which come along.

Most targets issued in Germany involve electro mobility. The German government, as well as the states of North-Rhine-Westphalia or Hessen for example, released different targets to boost the electro mobility in Germany and the local industries. Besides these initiatives the massive reduction of CO₂ in the next 10 years is another very important target, which goes hand in hand with the electro mobility objective. Local targets issued by the different states aim at strengthening the corresponding regions, whereas the government pursues the main goal of improving the industrial competitiveness.

Underlining these visions and targets different papers and programmes were published. Most of them aim at developing the mobility in Germany and boosting the electrification of road transport to suit future regulations regarding CO₂ emissions as well as strengthening the competitiveness of the German automotive market.

Overview of the German visions and the corresponding challenges:

Vision name	Corresponding challenge	Description	Year
0-fatality car	Safety & Security		2008 ⁵
0-failure car	Competitiveness		2008 ⁵
0-emission car	Fuel efficiency & GHG emissions		2008 ⁵
Entwicklungsplan Elektromobilität	Fuel efficiency & GHG emissions	Urban traffic widely free from fossil fuels by 2050	2009 ⁶
Staufreies Hessen 2015	Mobility		2003 ⁷

Visions & focused targets for road transport

In 2009 the “Nationaler Entwicklungsplan Elektromobilität” was issued by the German government. It comprises a very specific vision for the next 10 years, which is essential for the future of the German automotive market. The overall goal is the release of 1 million (German) electrified cars by 2020. This plan is an answer to the recent directives of the American, Chinese, and Japanese governments, supporting their research in the field of electro mobility and fuel efficiency. The different problems of electro mobility are considered with different targets, which underline its pragmatism. The goals targeted are major and current problems, which have to be solved, like the missing infrastructure so far or the search for a solution of the energy storage difficulties. This shows the actuality of the plan. It is the most important boost for the German automotive market in the next 10 years.

⁵ 3. Verkehrsforschungsprogramm der Bundesregierung

⁶ Bundesregierung, Nationaler Entwicklungsplan Elektromobilität; Germany 2009

⁷ Staufreies Hessen 2015, <http://www.staufreieshessen2015.de/>

Besides the important targets issued through the “Nationaler Entwicklungsplan Elektromobilität” the German government has pushed its efforts in the field of lightweight constructions and technologies immensely in the last years. Since the early 70s the German government has been promoting and funding programmes concerning the development of new technologies in this field. In 2004 the existing efforts were boosted with the issued WING (Werkstoffinnovationen für Industrie und Gesellschaft) target as part of the “Hightech Strategie” paper. For the first time this target combines the classic material research, chemistry, and the nanotechnology. The goal for the automotive industry is the development of new lightweight constructions in the construction of the chassis as well as the engine to enhance the efficiency of the vehicles.

The German government has launched the IKT 2020 programme, which is part of the “3rd Verkehrsforschungsprogramm”, to target the 0-fatality vision. It aims, among other topics, at the reduction of road transport accidents as well as enhancing the mobility in Germany, with the use of information and communication technologies (ICT). Moreover, a more efficient mobility and a reduction of GHG emissions are aspired and supported. The information and communication technologies enable a new anticipatory way of driving. In the future the exchange of information between cars and the transport infrastructure might be the key of securing and revolutionising the road transport.

Overview of the German targets in the next years:

Target	Description including addressed research themes, technologies
1.000.000 electric powered vehicles ⁶	<i>At least 1.000.000 electric powered vehicles by 2020</i>
Lead market for electric mobility ⁶	<i>Germany to become a lead market for electric mobility, thereby the leading role of the German motor-vehicle manufacturing and parts supply industry will be secured and extended.</i>
Competitiveness in the field of electric mobility ⁶	<i>Innovations are the key to maintain and expand competitiveness. The aim is to interlink industry and science as closely as possible.</i>
Implementing energy and climate policy goals ⁶	<i>Electric mobility will make a significant contribution to meeting climate protection targets</i>
“New mobility” ⁶	<i>Electric mobility to attenuate dependence on oil. Furthermore, electric mobility will help pave the way for a new culture of mobility and modern urban and development planning</i>
“Fostering social acceptance” for electric mobility ⁶	<i>To implement climate and economic policy goals, the forthcoming changes must gain social approval.</i>
Reduction of CO2 pollution by 40 % ⁸	<i>Reduction of CO2 pollution by 40 % in 2020</i>
250.000 electric powered vehicles (local target in NRW) ⁹	<i>At least 250.000 electric powered vehicles by 2020</i>
Increase market share of automotive suppliers (local target in NRW) ⁹	<i>Significant increase of market share of automotive suppliers within North-Rhine-Westphalia</i>

⁸ Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Klimaschutzpolitik in Deutschland; Germany 2009

⁹ Landesregierung Nordrhein-Westfalen, Masterplan Elektromobilität, 2009

EAGAR – Publicly funded automotive research in Germany

Provide support for founding of new automotive manufacturers (local target in NRW)¹⁰

Providing support for founding of new automotive manufacturers within North Rhine-Westphalia

¹⁰ Landesregierung Nordrhein-Westfalen, Masterplan Elektromobilität, 2009

2.4 Funding Programmes

The recent funding originates mainly in the large economy aid programme of the German government –the “Konjunkturpaket II”, which was launched by the government in 2009 with € 50 billion for the next years to fight the financial crisis. € 500 million of this fund go to the development and preparation of the launch of electrified cars in Germany and the creation of an infrastructure supporting the electrification of road transport.

Most calls are funded by governmental organisations in Germany. More than € 4 billion will be invested in the automotive sector over the next years, which shows the importance of this sector for

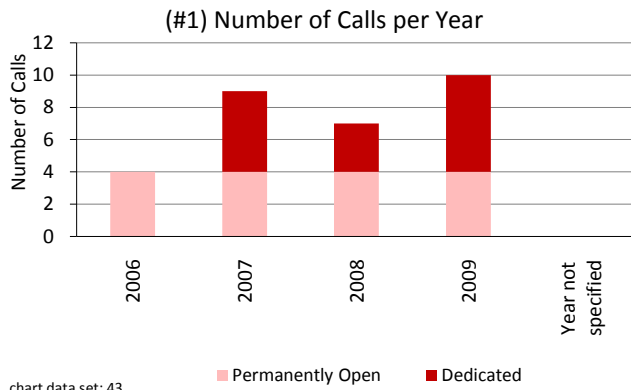


Figure 5: Number of calls per year

medium sized companies shall be encouraged to develop own R&D projects, by minimizing the risks for the companies.

Mobility is a very important aspect for the German economy and life. Therefore, the German government has published the “3. Verkehrsforschungsprogramm”. This programme has 2 precursors and focuses with its 3rd edition on the improvement of the conditions for innovations and technological progress. It promotes the better linkage between research facilities and the industry, the better implementation of R&D results on the market, and the strengthening of the innovation abilities of SMEs.

Taking a look at the distribution of the calls in the last years there is a slight rise in 2007 and 2009 (see Chart #1). In 2008 less dedicated calls were issued. The large number in 2009 can be traced back to the economic crisis worldwide. Germany launched many programmes to battle the outcomes of the financial crisis as well as boosting the development of new technologies regarding the reduction of Greenhouse Gas Emissions (GHG) and the electrification of road transport.

the German economy. The support of small and medium sized companies lies in the focus of the funding. The hierarchical funding structure of the German government can be seen in the scheme below.

In 2006 the German government issued the “ZIM” call aims explicitly at the encouragement of the small and medium sized companies. The first projects started in 2008 with the last ones closing in 2013. The main aspect of the call is the quick implementation of R&D results in products, which are close to the market. Moreover, the small and

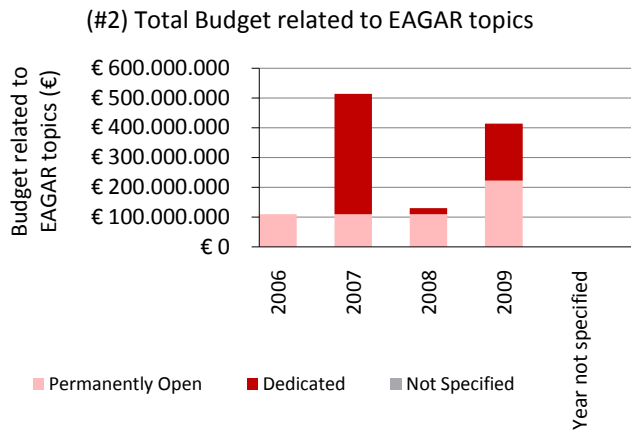


Figure 6: total budget related to EAGAR topics

This trend can be seen in chart #2 as well, which compares the EAGAR related budget in the last years. 2006 more than € 110 million were issued for the “ZIM call”, which is a permanently open call. The ZIM call is an innovative programme to support medium sized companies in conducting market oriented research. The large amount for 2007 can be explained with one large mobility programme, the

“2. Verkehrsforschungsprogramm”. It was issued to strengthen the German automotive market in matters of sustainability, safety, and competitiveness through intelligent traffic systems. The funds from the “nationaler Entwicklungsplan” issued in 2009 will be available over the next years, however the first calls were already released and closed in 2009, like the call for “Modellregionen Elektromobilität”, which supports the implementation of electric mobility and the creation of a functioning infrastructure in 8 model-regions in Germany with € 115 million.¹¹

The link between visions & targets and funding allocation

In general the stated targets are matched with funding programmes. The main directions were set by the German government (with its ministries) and the state policies. The current funding mainly originates in the large economy aid programme of the German government – the “Konjunkturpaket II”, which was launched by the government in 2009 with € 50 billion, to fight the financial crisis and boost the German economy in the next years.

Most calls are funded by governmental organisations in Germany. More than € 4 billion will be invested in the automotive sector in the next years, which shows the importance of this sector for the German economy. Small and medium sized enterprises are in many programmes especially encouraged to apply for funding. A clear dominance in the number of calls per challenge category cannot be seen. Moreover, the money is distributed among the different categories to strengthen the automotive industry

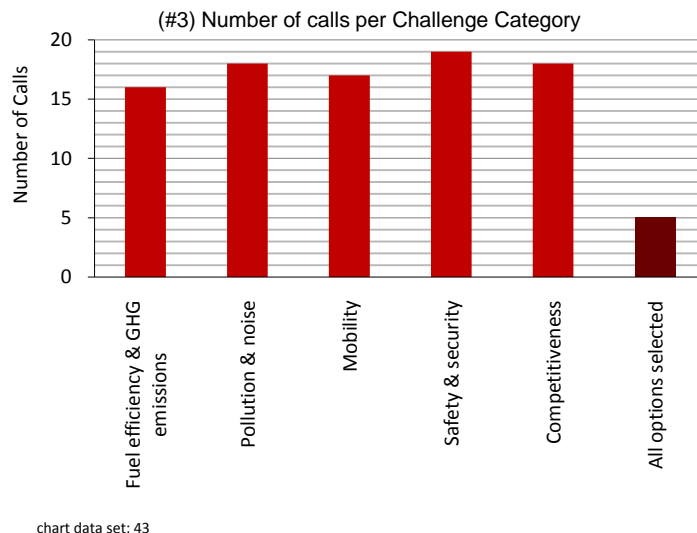


Figure 7: number of calls per challenge category

in all sectors and to strengthen the strong position in the international automotive market.

¹¹ Bundesregierung, Nationaler Entwicklungsplan Elektromobilität; Germany 2009

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

A clear dominance of applied research, industrialisation, and commercialisation & pre-competitive development can be seen when looking at the distribution of the calls per research stage. Only a few calls were available to fundamental research (chart #5). The German funding focuses at the moment on product-related research. This is important to implement results very quickly in new methods and new products.

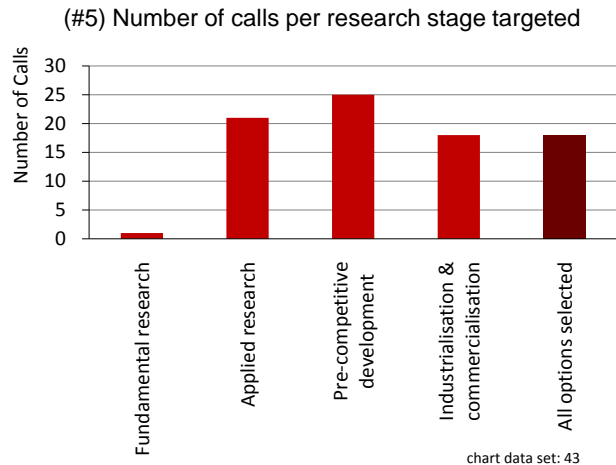


Figure 8: number of calls per research stage targeted

Most programmes are issued for collaborative initiatives and address the industry in general. Small, as well as medium-sized enterprises are favoured in some cases. Nevertheless programmes are generally open to all organisation types, as the following chart #4 illustrates. Academia can be often found in projects collaborating with industrial partners. With these collaborations a closer integration of the academia and its results in the industry should be triggered.

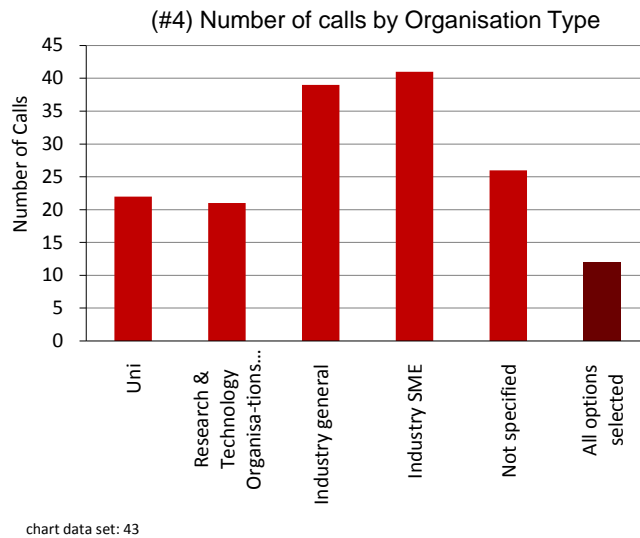


Figure 9: number of calls by organisation type

(#9) Project partnership targeted

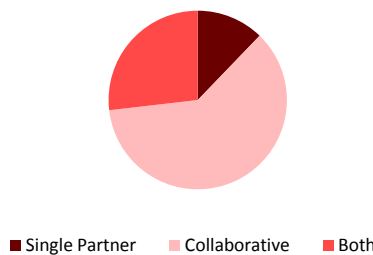


Figure 10: project partnership targeted

Overview of technology specific programmes for automotive RTD

Overview of the numbers of calls in the past 4 years per technology category:

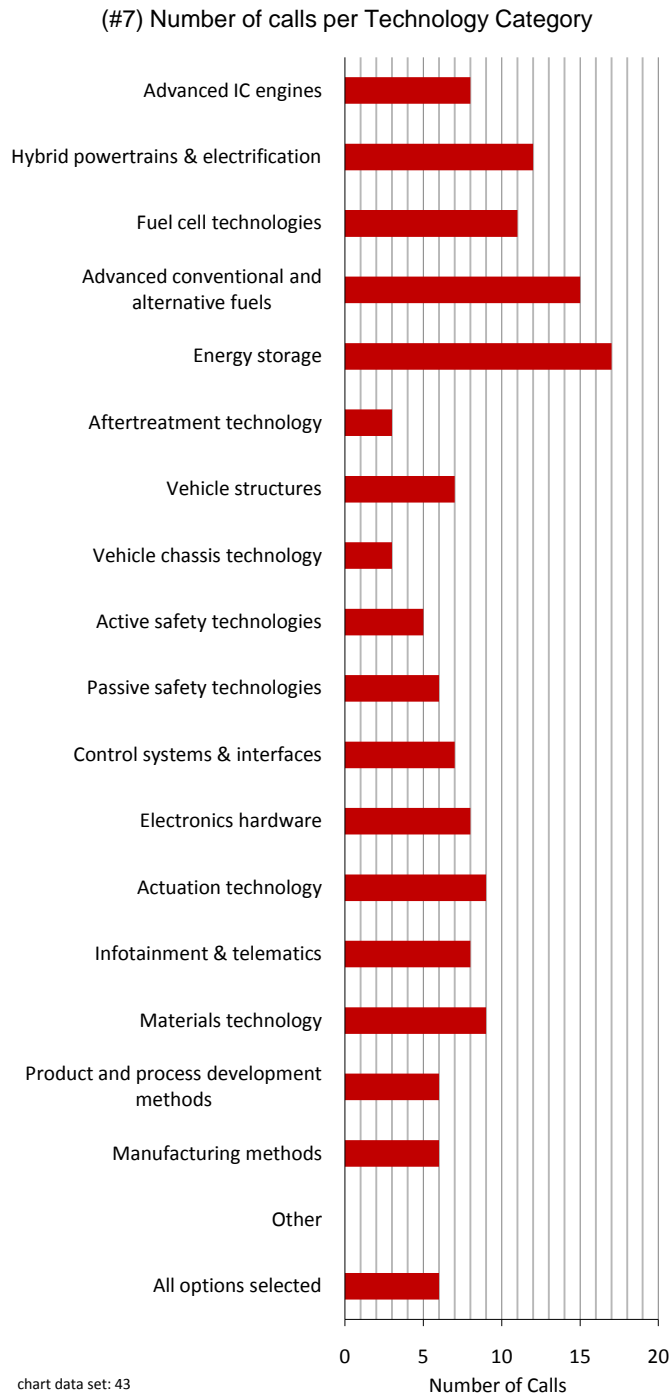


Figure 11: number of calls per technology category

The chart shows the distribution of calls per technology category in the last 4 years. Many calls meet the problems linked to the electrification of the automotive sector. Especially with the “Nationaler Entwicklungsplan Elektromobilität”, along with other issued plans, the German government tries to further the development of electrified cars and the congruent components in Germany to face the international competition, especially from Japan, China, and the USA. The greatest problem of the electrification of the automotive industry, the energy storage is targeted in most cases along with advanced conventional and alternative fuels, as well as the development of hybrid powertrains.

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

The flexibility to release new calls in response to changing situations

The “Konjunkturpaket II”, with the “Nationaler Entwicklungsplan Elektromobilität”, aims at fighting the world financial crisis as well as being a symbol against the climate change. This plan, as well as other targets and calls, help to support the German economy and strengthening Germany’s leading role in the automotive sector. New calls can reply quickly and flexible to new situations, as seen for example in the “ziel2” initiative, aiming at strengthening the local industry in its position in the field of electro mobility, which is one of the most important topics and challenges for the future market. The German funding landscape consists of many different independent stakeholders, which can also advise the German government in the funding of new technology fields, like the VDA. Various universities, research facilities, and industrial companies advise the ministries as well. This leads to a great flexibility, since the constant observation of the market by these conductors, leads to a short response time to new challenges.

The application process

One problem of the application process is the long time between calls within a specific programme. If a call has been missed, one has to wait up to two years for another open call addressing the same topic. However, in most cases the chance to apply again for a missed call is not given, since the following calls often have different objectives. The evaluation of the application takes between 3 and 6 months, which is in average the same time, you have to wait for the notification of a successful application in an FP7 call. In general the application process for German calls is regarded by scientific managers as a “straightforward” process.

All applications for a call issued by the German government or a German state are reviewed by an independent review panel of specialists for the corresponding research field.

The actual start of the project from notification of being funded takes over 6 months. With the transfer of the funds to the beneficiaries most applicants are satisfied.

Funding process - exploitation

Exploitation plans are always required by the funding organisation for German projects or calls.

Funding process – feedback

A feedback on the funding system can be rarely given.

Transparency & openness

In most cases only final reports are necessary to display the results of the programme, however several programmes do not require any data at all after the completion of the project. The results are sometimes publicly available.

The requirements and information on the different calls are always publicly accessible on the corresponding websites.

The programmes found are almost completely available by desk research.

Foreign collaboration

A foreign dedication in German calls is in general not permitted, due to IPR issues. Exceptions can be found in calls explicitly addressing a transnational collaboration. Especially, the calls of the German states require a registered address of the applicant in the specific state.

3 Discussion and Conclusion

With a long history in Germany, the automotive market still has a great importance for the German industry. More than 5 million people are employed in the industry itself or related suppliers. With a turnover of more than € 284 billion (2008) the automotive industry has a major contribution to the German economy. Germany is home to some of the largest and most profitable automotive manufacturers in the world.

The German automotive market reinvests a lot of money in RTD projects investing more than twice the amount the German government has spent in the last years. Therefore, many programmes with a close connection to the industry are offered. This strong bond between governmental and industrial funding is one of the main strengths of the German funding system. A collaboration of academia and industry is encouraged in many cases as well.

The German funds are distributed through a very hierarchical system. The government (“Bundesregierung”) issues the money, which will be spent and distributed through the different ministries. The various states in Germany have an own account and distribute their funds throughout a different funding system. The administration and surveillance of the programmes are conducted by independent external agencies like the research centre Jülich for example. Long latencies until the project can actually start occur and bureaucratic processes to claim expenses afterwards lead to delays in the projects and complicate a participation of small research executors.

The latency until an application is processed takes about 3-6 months; however the time until a project can actually start is much longer with up to 6 months. Besides the long latencies which are sometimes not tolerable for smaller research conductors the application process is regarded as straightforward. High success rates up to 50 % are given in these programmes.

After the completion of a project most programmes require a final report to be presented. Information and requirements on the initiatives are always publicly accessible for the applicants.

The most calls were issued in 2009 due to the large economy aid package. The most money however was available in 2007 with the big amount for the “ZIM call”. From the issued “nationaler Entwicklungsplan” about a fifth (€ 118 million) was available for calls yet. The rest of the funds will be available over the next years.

The main challenges in the German automotive market concern the reduction of automotive related GHG emissions and the electrification of road transport. The corresponding visions and targets underline the aim of the German government to strengthen and to improve the status of the German automotive industry on the world market, especially in the field of new technologies. The strong focus on electric mobility can also be seen in the distribution of calls in the last years. Apart from that, all categories regarding the decrease of GHG emissions as well as pollution and noise were favoured.

4 References

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5 Annex

Dedicated calls

Overall programme name	Programme call name	Call description	Funding organisation	Call End Date	Reference
2. Verkehrsforschungsprogramm	Mobilität und Verkehr	Sustainability, safety and competitiveness through intelligent traffic systems. Nachhaltigkeit, Sicherheit und Wettbewerbsfähigkeit durch intelligenten Verkehr	Bund	31.12.2007	www.bmwi.de/BMWi/Redaktion/PDF/mobilitaet-und-verkehr,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf
Staufreies Hessen 2015	DIANA	optimizing the acquisition of the Floating Car Data (FCD), Traffic jams should be prevented with these information	Hessen	31.12.2009	http://www.staufreieshessen2015.de/
Staufreies Hessen 2015	simTD Sichere und intelligente Mobilität	create a stage for an efficient car 2 car communication, sustainable safety and efficiency of the road traffic	Hessen/Bund	31.12.2012	http://www.staufreieshessen2015.de/
nationaler Entwicklungsplan Elektromobilität	Modellregionen Elektromobilität	creating an infrastructure in Germany to support electric mobility in the different regions	Bund	31.12.2011	http://www.bmvbs.de/Verkehr-,1405.1092406/Modellregionen-Elektromobilita.htm
nationaler Entwicklungsplan Elektromobilität	IKT für Elektromobilität	in addition to the E-Energy call	Bund	31.12.2011	http://www.bmwi.de/BMWi/Navigation/Technologie-und-Innovation/Informationsgesellschaft/multimedia,did=303492.html
nationaler Entwicklungsplan Elektromobilität	Elektrochemie Kompetenz-Verbund-Süd	development of an efficient and reliable lithium-ion battery	Bund	31.12.2011	no official website yet!
Niedersächsisches Vorab	Integrated Modeling for Safe Transportation	development and improvement of driver assistance systems	Niedersachsen	31.03.2010	http://www.mwk.niedersachsen.de/master/C22710416_N7008_L20_D0_I731.html
Klimaschutzinitiative/nationaler Entwicklungsplan Elektromobilität	Schwerpunktes Elektrofahrzeuge und Plug-In-Hybride im Kontext erneuerbarer	test run of a plug-in-hybrid fleet	Bund	31.12.2011	http://www.bmu-klimaschutzinitiative.de/de/projekte_nki?p=1&d=310

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	Energie				
nationaler Entwicklungsplan Elektromobilität	E-Energy	Find and develop intelligent systems controlling energy storage and consumption	Bund	31.12.2012	http://www.e-energy.de/de/index.php
nationaler Entwicklungsplan Elektromobilität	Innovation-sallianz zur Automobilelektronik	Energymanagement in the automotive sector-Energy efficiency with the help of power electronics	Bund	31.12.2020	http://www.eenova.de/
nationaler Entwicklungsplan Elektromobilität	Alternative Antriebe und Hybridkonzepte	proof that the gasoline emission can be lowered 30%	Bund/BMWi	31.12.2010	http://www.bmwi.de/BMWi/Navigation/Technologie-und-Innovation/Technologiepolitik/foerderbereiche,did=299210.html
nationaler Entwicklungsplan Elektromobilität	BMWi Stromspeicher	development of new strategies in the field of energy storage	Bund	31.12.2012	http://www.bmwi.de/BMWi/Redaktion/PDF/F/foerderkonzept-stromspeicher,property=pdf,be reich=bmwi,sprache=de,rwb=true.pdf
MPP-KMU Modellprojekte	Konzeptstudie Hessenbatterie	development of an innovative battery	Hessen	31.12.2011	http://www.innovationsfoerderung-hessen.de/dynasite.cfm?dssid=373&dsmid=12020#dstitle_73107
Landesinitiative Brennstoffzelle Niedersachsen	Landesinitiative Brennstoffzelle Niedersachsen	fuel cells	Niedersachsen	31.12.2009	http://brennstoffzelle-nds.de/
MPP-KMU Modellprojekte	Entwurf einer neuartigen Prozesstechnologie zur Herstellung eigenschaftsorientierter Profile für den Fahrzeugbau	layout for a new process technology to manufacture property-orientated profiles for the vehicle construction	Hessen	31.12.2010	http://www.innovationsfoerderung-hessen.de/mm/MPP_Projekte.pdf
MPP-KMU Modellprojekte	Schadstofflärm- und vibrationsarmes Flugzeug-Vorfeldfahrzeug	Pollution and noise recuded aircraft-ramp vehicle	Hessen	31.12.2011	http://www.innovationsfoerderung-hessen.de/mm/MPP_Projekte.pdf
MPP-KMU	Verfahrens-	development of a method to	Hessen	31.12.2010	http://www.innovati

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Modellprojekte	entwicklung zur Herstellung hochbelasteter Leichtbauteile komplexer Formgebung nach dem Schmelz-Press-Verfahren	manufacture highly stressed lightweight construction fragments with a complex design using the "Schmelz-Press-Verfahren"			onsfoerderung-hes-sen.de/mm/MPP_Projekte.pdf
	EI4921 - NONOXSYS-TINT	Develop An (Alternative) Eocv System Integration Method To Be Integrated In Existing Natural Gas Ices	EUREKA	05.01.2010	http://www.eureka.be/inaction/AcShowProject.do?id=4921
	EI4920 - LISE	Lightweight Seatbacks	EUREKA	01.10.2011	http://www.eureka.be/inaction/AcShowProject.do?id=4920
	EI3691 - OPTCABLES	Optimisation Of The Cable Harness	EUREKA	01.01.2010	http://www.eureka.be/inaction/AcShowProject.do?id=3691
	EI4513 - VSS	Vehicle Stability And Safety: Mobility Intelligence Using Load Based Lateral Stability	EUREKA	01.07.2010	http://www.eureka.be/inaction/AcShowProject.do?id=4513
	EI3722 - 4 SAVE	Development Of A Transporter Construction For Use In Case Of Disaster With A New Type Of 4 Stretcher Bearing	EUREKA	01.01.2008	http://www.eureka.be/inaction/AcShowProject.do?id=3722
	EI4070 - PRO-FACTORY CIDAFA7	Influence Of The Design And Process Variations On Noise Behaviour Of A Disc Brake	EUREKA	01.07.2010	http://www.eureka.be/inaction/AcShowProject.do?id=4070
	EI3968 - NANO COATING GLASS	Adhesion Promoting Nano-And Silicium (Apns) - Technology On Glass For Improved Composites And Road Marking Materials	EUREKA	06.01.2009	http://www.eureka.be/inaction/AcShowProject.do?id=3968
	EI4442 - MTT-CAP	Combined Apu And Parking Heater For Large Trucks, Based On Mtt Micro Gas Turbine	EUREKA	01.07.2011	http://www.eureka.be/inaction/AcShowProject.do?id=4442
	EI3873 - SUPER-CHARGE-POWERPACK	Development Of Fast Charging High-Power Li-Ion Powerpack With Integrated Battery Charger For Automotive Applications	EUREKA	01.11.2008	http://www.eureka.be/inaction/AcShowProject.do?id=3873
	EI3561 - DINAGAS	Direct Injection Of Natural Gas	EUREKA	01.09.2007	http://www.eureka.be/inaction/AcShowProject.do?id=3561
	EI3037 - TARBAM	Pain Effect Coatings For Cars	EUREKA	15.09.2007	http://www.eureka.be/inaction/AcShowProject.do?id=3037
	EI3598 - INTELLIROOF	Next Generation Roof System	EUREKA	01.08.2007	http://www.eureka.be/inaction/AcShowPr

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					oject.do?id=3598
	EI3672 - ALCOLOCK	Alcohol Ignition Lock System	EUREKA	01.01.2009	http://www.eureka.be/inaction/AcShowProject.do?id=3672
nationaler Entwick- lungsplan Elektromo- bilität	LIB 2015	Innovation Alliance Lithium-Ion Battery (LIB2015) Innovationsallianz Lithium-Ionen-Batterie (LIB 2015)	Bund	31.12.2011	www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/verkehrsforschungsprogramm-mobilitaet-und-verkehrstechnologien,property=pdf,be reich=bmwi,sprache=de,rwb=true.pdf
PRO INNO II		Aims to support small to medium-sized enterprises that are strengthening their competitiveness and innovative strength by innovations and future technologies.	Bund	30.06.2008	http://www.forschungskoop.de/10_proinno/10_start.htm
3. Verkehrsforschungsprogramm	Mobilität und Verkehrstechnologien	Innovation policy, information society, telecommunication	Bund	31.12.2011	www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/verkehrsforschungsprogramm-mobilitaet-und-verkehrstechnologien,property=pdf,be reich=bmwi,sprache=de,rwb=true.pdf
Nationalen Innovationsprogramm Wasserstoff- und Brennstoffzellentechnologie	Wasserstoff- und Brennstoffzellen	In collaboration with the industry the federal government supports within the "Hightechstrategie für Deutschland" the application-oriented research and development of power trains and stationary energy systems powered by fuel cell technologies. Gemeinsam mit der Industrie fördert die Bundesregierung im Rahmen der Hightechstrategie für Deutschland die anwendungsnahe Forschung für Antriebssysteme und stationäre Energiesysteme mit Wasserstoff- und Brennstoffzellentechnologien	Bund	31.12.2016	www.bmvbs.de/Klima_Umwelt-Energie/Mobilitaet-Verkehr/Wasserstoff-und-Brennstoffzell-2996.1043106/Foerderrichtlinie-fuer-das-Nat.htm
Ziel2	Automotive.NRW + Produktion.NRW 2007-2008	The combined funding competition "Automotive+Produktion.NRW" offers an ideal base for the development of excellent projects that strengthens the value	NRW	31.01.2008	www.ziel2-nrw.de/2_Wettbewerbe_und_weitere_Foerdermoeglichkeiten/2_Wettbewerbe_2007_2008/Auto

		added chains within the vehicle manufacturing and manufacturing engineering. Der gemeinsame Wettbewerb Automotive und Produktionstechnologie bietet einen optimalen Rahmen für die Entwicklung exzellenter Projekte, die die Wertschöpfungsketten des Fahrzeugbaus und der Produktionstechnik nachhaltig stärken			mo-tive_NRW/Automotive_Wettbewerbsaufruf_2007_10_26.pdf
Ziel2	Automotive.NRW + Produktion.NRW 2009	The combined funding competition "Automotive+Produktion.NRW" offers an ideal base for the development of excellent projects that strengthens the value added chains within the vehicle manufacturing and manufacturing engineering. Der gemeinsame Wettbewerb Automotive und Produktionstechnologie bietet einen optimalen Rahmen für die Entwicklung exzellenter Projekte, die die Wertschöpfungsketten des Fahrzeugbaus und der Produktionstechnik nachhaltig stärken	NRW	01.12.2009	www.ziel2-nrw.de/2_Wettbewerbe_und_weitere_Foerdermoeglichkeiten/1_Wettbewerb_2009/index.php
Ziel2	Energie.NRW 2007-2008	As the center of European energy business and an area of innovative technologies related to the energy sector Northrhine-Westfalia has quite good conditions to make important contributions regarding sustainable energy supplies by the use of efficient technologies with a low environment impact. Nordrhein-Westfalen als energiewirtschaftliches Zentrum in Europa und innovative Energietechnologieregion hat besonders gute Voraussetzungen, einen wichtigen Beitrag für eine zukunftsfähige Energieversorgung mit effizienten, umwelt- und Ressourcenschonenden, klimaverträglichen Technologien zu leisten	NRW	15.12.2007	www.ziel2-nrw.de/2_Wettbewerbe_und_weitere_Foerdermoeglichkeiten/2_Wettbewerb_2007_2008/Energie_NRW/Energie_Wettbewerbsaufruf_2007_09_14.pdf
Ziel2	Energie.NRW 2009	As the center of European energy business and an area of innovative technologies related to the energy sector	NRW	27.08.2009	www.ziel2-nrw.de/0_2_Aktuelles/00_Newsmedia/En-er-

		Northrhine-Westfalia is very well qualified for making important contributions regarding sustainable energy supplies by the use of efficient technologies with a low environment impact. Nordrhein-Westfalen als energiewirtschaftliches Zentrum in Europa und innovative Energietechnologieregion hat besonders gute Voraussetzungen, einen wichtigen Beitrag für eine zukunftsfähige Energieversorgung mit effizienten, umwelt- und Ressourcenschonenden, klimaverträglichen Technologien zu leisten			gie_2_Wettbewerbsaufuf_2009_05_15.pdf
Ziel2	ElektroMobil.NRW	Storage of electric energy, vehicle (technology), infrastructure and networks, environmental conditions, norms and standards Speicherung elektrischer Energie, Fahrzeug (Technik), Infrastruktur und Netze, Rahmenbedingungen, Normen und Standards	NRW	15.09.2009	www.elektromobilitaet.nrw.de

Permanently open calls

Overall programme name	Pro-gramme call name	Call description	Funding organi-sation	Call End Date	Reference
Landesinitia-tive Telematik	Landesinitia-tive Telematik	Establishment of the compa-nies in lower-saxony in the international market	Nieder-sachsen		http://telematik.niedersachsen.de/
LOEWE		innovative projects can re-ceive a subvention up to 50% of the total project costs	Hessen		http://www.hmwk.hessen.de/irj/HMWK_Internet?cid=a2396939885f8c8c0a3ba39bda517cbd
Stiftung Zu-kunfts- und Innovations-fonds Nieder-sachsen		sustainable sponsorship of innovative projects	Nieder-sachsen		http://www.zukunftsstiftung-niedersachsen.de/stiftung/ziele.html
ZIM	Zentrales Innovationsp rogramm Mittelstand	<ul style="list-style-type: none"> * encourage small and medium-sized enterprises to make more efforts to applied research, development and innovations * prevent technology-based projects from technical or economical risks that are related to research and development * bring research results to market ASAP * strengthen collaboration between SME and RTO and extend technology transfer * increase SME commitment related to research and development and innovative networks * improve SME innovation, collaboration and network management 	Bund		http://www.zim-bmwi.de/